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The Commons Concept and Intellectual Property Rights Regime: Whither Plant Genetic Resources and Traditional Knowledge?

CHIKA B. ONWUEKWE*

I. INTRODUCTION

The classification of plant genetic resources (PGRs)¹ as the common heritage of humankind² continues to generate controversies.³ The debate is between developing countries that are the primary sources of these resources and industrialized, biotechnologically advanced countries that appropriate and utilize PGRs as raw materials for various commercial products, such as medicine, seed variety, or pesticides.⁴ Scholars of diverse

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1. In this article, the phrase "plant genetic resources" is used interchangeably with "germplasm," and occasionally, "plant plasm," "landraces," or "local cultivars." To a large extent, they mean the same thing. They also best describe the resources or actual materials at issue in the struggle for control of traditional cultivars or indigenous knowledge on the uses of germplasm. PGRs are defined to include microscopic cell samples to grow trees. In other words, anything that contributes to the development of new or improved plant varieties would be classified as PGRs. On the other hand, germplasm refers to the "genetic material encoded not only in seeds but in rootstocks and plant tissue of all kinds. . . ." J. Tevere MacFadyen, *A Battle Over Seeds: The Third World Asks for a Share of Gene Stocks Bred in Northern Laboratories - from Southern Seed* 256 *The Atlantic* 36, 38 (Nov. 1985).

2. In this article, "humankind," "mankind," and "humanity" are used interchangeably. They mean the same thing in our analysis of the "common heritage" concept.

3. Even amongst the Crucible Group, a private initiative's think-tank focusing on indigenous knowledge issues, plant biotechnology and intellectual property rights, there is no agreement on the modalities for resolving PGR controversy. They have found a way, however, to include dissenting opinions in their publications. See generally *Seedling Solutions: Options for National Laws Governing Control over Genetic Resources and Biological Innovations 2* (Crucible II, ed., Intl. Dev. Research Ctr. & Intl. Plant Genetic Resources Inst. 2001).

4. See generally Robin Pistorius & Jeroen van Wijk, *The Exploitation of Plant Genetic Information: Political Strategies in Crop Development* (CABI 1999). Furthermore, Stenson and Gray assert, "Traditionally, unmodified germplasm had been regarded as the 'common heritage of mankind'; the rise of intellectual property rights in modified germplasm, however, has led the developing world to reassess this situation. This reassessment has in turn led to a fundamental change in the status quo concerning genetic resources." Anthony J. Stenson & Tim S. Gray, *The Politics of Genetic Resource Control* 9 (Macmillan Press Ltd. 1999).

backgrounds⁵ express various opinions on whether PGRs obtained from plants found within a territory of a sovereign state should properly be designated “common heritage of humankind” or regarded as part of the “commons,” and therefore freely accessible. The debate also extends to and challenges the status of traditional knowledge on the uses of PGRs. The dominant but not necessarily the correct view is that such knowledge is information in the public domain, incapable of private ownership or control.

The above contentions are based on the general concept of the commons property system. Under this system, neither PGRs nor the indigenous knowledge on their uses qualify for private ownership;⁶ rather, PGRs and the traditional knowledge on their uses are mere “public goods,” freely accessible for the benefit of humankind. Consequently, the source communities or states, and the holders of traditional knowledge relating to the uses of PGRs do not have any prior claims to them or proprietary interests in them.⁷ Similarly, even when PGRs are improved or modified through genetic engineering technologies that utilize existing traditional knowledge no compensation accrues to source communities or states.

The denial of property rights (mainly comprised of ownership and control) over germplasm to source communities or states discountenances the past and ongoing intellectual input⁸ of local farmers on seed improvement and conservation.⁹ This development has far-reaching economic, legal, and social consequences on these societies.¹⁰ For instance, there is no recognition of cultural differences between developing countries and the technologically-advanced countries of the West. Traditional societies should be acknowledged and rewarded for their versatile knowledge on plant uses and for being sources and custodians of the rich food and medicinal plants that have become valuable in modern biotechnology development. For this reason, indigenous people and developing countries argue that the current IPRs (Intellectual Property Rights), regime endorsed by the *Agreement on*

5. Particularly those specializing in international law, international trade, international political economy, social institutions, anthropology and economics.

6. See Stenson & Gray, *supra* n. 4, at 137.

7. For a detailed analysis of the nature and scope of the bundle of legal rights in property, see Kevin Gray, *Property in Thin Air*, 50 Cambridge L. J. 252 (1991).

8. This intellectual input of local farmers differs from Western scientific methods.

9. See Jack Ralph Kloppenburg, Jr., *First the Seed: The political economy of plant biotechnology, 1492-2000*, (Cambridge U. Press 1988) [hereinafter Kloppenburg-*First the Seed*]; see also Ikechi C. Mgbeoji, *Patents and Plants: Rethinking the Role of International Law in Relation to the Appropriation of Traditional Knowledge of the Uses of Plants* (TKUP Nov. 2001) (a dissertation submitted for the Degree of Doctor in the Science of Law, Dalhousie University Halifax, November 2001. Copy on file with author.) [hereinafter Mgbeoji-*Patents and Plants*].

10. See generally Lawrence Busch et al., *Plants, Power, and Profit: Social Economic and Ethical Consequences of the New Biotechnologies* (Blackwell 1991).

Trade Related Aspects of Intellectual Property Rights¹¹ (TRIPs Agreement) cannot shield traditional “know how” from unrecompensed exploitation.

Knowledge is the primary factor on which patent protection of modern biotechnology is anchored. Not all knowledge in the biotechnology industry, however, qualifies for patent protection. In Canada, for example, to qualify for protection, the knowledge must, in addition to meeting two other criteria, be commercially viable.¹² It is often argued that this requirement of commercial viability (what economists refer to as utility dictated by the market) distinguishes modern, technical, or scientific usable¹³ knowledge from traditional knowledge.¹⁴ Under this assumption, knowledge, for IPR purposes, is not wanted for its intrinsic, communal, or social value but for its commercial worth. Economists also contend that because of the communal claims to traditional knowledge or PGRs it is difficult to isolate individual interests for compensation. Ironically, those who freely appropriate PGRs define PGRs and the traditional knowledge on their uses as the common heritage of humankind. Items of this nature do not qualify for patent protection under the current IPR regime.¹⁵

11. *Agreement on Trade-Related Aspects of Intellectual Property Rights*, (Apr. 15, 1994), http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm (accessed Feb. 25, 2004).

12. *Cf. Commr. of Patents v. Pres. and Fellows of Harvard College*, SCC 76 (2002). This recent decision in the Supreme Court of Canada, popularly known as the *Harvard Oncomouse*, dealt specifically with the patentability or otherwise higher life forms within the meaning of “invention” in section 2 of the Canadian Patent Act, 1985. The judgment (see paragraphs 178 and 185) suggests that although commercial viability is one of the criteria for granting patents it is not an overriding consideration, especially on sensitive issues such as life forms, which eventually reflects a country’s morality and values.

13. Based on the contemporary definition of knowledge as know-why, know-what, know-how and know-who, it follows that IPRs would only be granted if and when know-why, know-what and know-how are properly combined. See *The Biotechnology Revolution in Global Agriculture: Innovation, Invention and Investment in the Canola Industry* 25–26 (Peter W.B. Phillips & George G. Khachatourians eds., CABI 2001) [hereinafter *Biotechnology Revolution*]. This is why scientific theorems are not patentable. If it were otherwise, renowned scientists such as Einstein would have made huge money from patents. Morck and Yeung put it succinctly when they said: “We therefore rightly associate innovation with scientific, economic, and social progress.” Randall Morck & Bernard Yeung, *The Economic Determinants of Innovation*, 25 Indus. Canada Research Publications Program 1 (Jan. 2001).

14. See World Intell. Prop. Org., *Matters Concerning Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore* WO/GA/26/6 (Aug. 25 2000); Susan Young, *The Patentability of Maori Traditional Medicine and the Morality Exclusion in the Patents Act 1953*, 32 VUWLR 255 (2001); Vandana Shiva et al., *Biodiversity: Social and Ecological Perspectives* 43 (Zed Books Ltd. 1991); see also G. Utkarsh & S. Dasgupta, *Protecting People’s Knowledge in the Emerging Regime of Intellectual Property Rights (IPRs)* <http://nlsenlaw.org:8080/csi/biodiversity/articles/bioart5> (accessed Feb 25, 2004).

15. *Cf. R. E. Evenson, Intellectual Property Rights, Access to Plant Germplasm, and Crop Production Scenarios in 2020*, 39 Crop Science 1630 (1999). In this article, Evenson provides an illuminating account of how IPRs were extended to plant breeding activities in the United States through legislation (Plant Variety Protection Act, 1970) and the establishment of international institutions, such as the International Union for the Protection of New Varieties of Plants (UPOV).

Because of the commercial value attributed to usable or patentable knowledge, economists argue that patents are an incentive for cutting-edge industries to invest huge sums of money on research and development (R&D). They also contend that patentability ensures competitiveness of companies.¹⁶ For economists, therefore, marketable innovation has both a personal and a public attribute. On the personal side, marketable innovation assists industries in remaining competitive in addition to increasing their profit margin. On the public side, it provides consumers alternatives that could result in lower prices relative to other competing products or services.¹⁷

The disclosure requirement of the patent laws moderates the monopoly or exclusivity of use enjoyed by patent holders.¹⁸ Even at that, the monopoly or exclusivity of use granted to patent holders expires after a limited period of time. Upon expiration of that period, imitators may utilize such knowledge or technology without any obligation to the patent holder. Prior to the patent's expiration, the patent holder could, for a fee or royalty, grant third parties access to the process or product. This grant of access is usually achieved through a license agreement. In addition to the criterion of commercial utility, a product or process must also be novel and non-obvious to qualify for patent protection.¹⁹ The lack of these three criteria has been the basis for the non-extension of patent protection to PGRs and the traditional knowledge thereof.

Against this backdrop this article discusses the concept of the "commons" and its application to PGRs, or what is often referred to as landraces. The article adopts an interdisciplinary approach, making substantial references to agricultural, political, economic, anthropologic, sociologic, and legal literature due to the seamless connectivity of the arguments for or

16. See Joseph A. Schumpeter, *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and Business Cycle* (Redvers Opie trans., Harvard U. Press 1934) (cited in Morck & Yeung, *supra* n. 13).

17. See Peter W. B. Phillips, *The Theory of the Gains from Research* (cited in *Biotechnology Revolution*, *supra* n. 13, at 273-276).

18. Robert E. Evenson, *Economics of Intellectual Property Rights for Agricultural Technology* (NC-208 meeting at CIMMYT Mar. 1998) (cited in *Agriculture and Intellectual Property Rights: Economic, Institutional and Implementation Issues in Biotechnology* 91, 98 (V. Santaniello et al., eds., CABI 2000)).

19. This is the essence of Article 27.1 of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs Agreement) with respect to products or processes that qualify for patent protection. Under the TRIPs Agreement, plant varieties (but not raw germplasm) qualify for patent protection. In fact, Article 27.3(b) directs for a *sui generis* protection of plant varieties from countries that do not offer IPRs protection to such property. *Agreement on Trade-Related Aspects of Intellectual Property Rights* art. 27 (April 15, 1994), http://www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm (accessed Feb. 25, 2004); see also Peter W. B. Phillips & Grant E. Isaac, *Regulating International Trade in Knowledge-based Products* (cited in *Biotechnology Revolution*, *supra* n. 13, at 259).

against extending the commons paradigm to germplasm or to the traditional knowledge on the uses of germplasm.

For clarity, this article distinguishes between the concept of the “commons” and closely related terms often confused with it such as “open access,” “common property,” “shared resources,” and “communal resources” or “communal property.” This article argues that PGRs are not within the category of commons recognized under international law or any other known jurisprudence. It further contends that equating the “air” or “outer space” with “plant plasm” is a misnomer because such an approach undermines the concept of sovereign control of natural resources (renewable and non-renewable) within a country’s territory. Consequently, this article questions the justification for applying IPR protection as both a sword as well as a shield in the politics of genetic resource control.²⁰

Lastly, this article argues that classifying germplasms and the traditional knowledge on their uses as part of the commons advances the capitalist ideology, which Wallerstein defines as the endless accumulation of capital,²¹ notwithstanding the contents of paragraph nineteen of the Ministerial Declaration of the World Trade Organization (WTO) made at Doha, Qatar in late 2001.²² To contend otherwise would amount to ignorance of the economic interests that supports and nurtures the current regime of

20. The controversy over PGRs is both one of control as well as ownership. A relationship exists between the two notwithstanding that an entity may possess one but not the other. In the case of PGRs, the source countries are denied both. Fowler put the issues in context when he argued: “With modern plant breeding, firms gain the ability to fashion new plant varieties of economic importance. Farmers or Third World governments may own the same plant materials or have all the genes necessary for creating a new, improved plant variety in their hands. But without the ability to fashion the new variety, their control over their biological material is limited; and without the ability to market new varieties, the usefulness of that control is circumscribed Those who do have control do not actually have to own the plant species they now use as raw material. *They simply need access to the properties of the plants (through the genetic materials).* Ownership specifies certain relationships. But it does not strictly determine how or whether those relationships can be used to increase power, make gains, or further goals. *In other words, ownership can be a sterile and [virtually] powerless attribute without the ability to exploit it.* Such is the case of the Third World farmer and the risk of the Third World nation.” Cary Fowler, *Unnatural Selection: Technology, Politics, and Plant Evolution* 230-231 (Gordon & Breach 1994) (emphasis added). Fowler appears to miss the vital point on the legal bundle of ownership. Thus, although ownership may not necessarily connote utilization, but it definitely connotes some form of control. Under this circumstances, an owner may only relinquish control through proper assignment, sale or by the doctrine of *laches* and acquiescence. After all, possession, rather than ownership is nine-tenth of the law. The position is different with PGRs. The peculiar problem here, as this article argues, is the skewing of international institutions on germplasm in favor of the industrialized countries. For a detailed discussion on possessory rights in property, see David Kenneth Irving, *Should the Law Recognise the Acquisition of Title by Adverse Possession?*, 2 Australian Prop. L. J. 112, 112-119 (1994); see also *Mabo v. State of Queensland*, 175 CLR 1 (1992) (distinguishing ownership from occupation); Gray, *supra* n. 7.

21. Immanuel Wallerstein, *The End of the World As We Know It: Social Science for the Twenty-First Century* 57-58 (U. of Minn. Press 1999).

22. Paragraph nineteen instructed the Council for TRIPs to examine the relationship between TRIPs and the protection of traditional knowledge.

patents. The best compromise that the West may be willing to offer would be a new form of proprietary interest for traditional knowledge neither equal to patents nor greater than what plant breeders enjoy under the International Convention for the Protection of New Varieties of Plants (UPOV).²³ After all, as Marx rightly commented, property is an instrument of the powerful.²⁴ The unwinding nature of the ongoing multilateral trade negotiations together with the inconclusive recent (September 2003) WTO summit in Cancun, Mexico supports this contention.

II. THE ORIGIN AND MEANING OF THE COMMONS

The word “commons” in relation to property primarily refers to assets, resources, or things owned by nobody but available for use by all without restriction. Due to their peculiar characteristics, such assets, resources, or things are both non-excludable and non-rivalry. Non-excludable means that excluding others from using such properties would be expensive and almost impossible. Non-rivalry means that one person’s use does not diminish another’s use or access to them.²⁵ Properties of this nature are mainly public goods available for the benefit of humanity;²⁶ therefore, the outer space, the air, or the resources in the deep ocean seabed are classified as part of the commons.

“Communal” property or resource, however, differs from “commons” property or resource. Unlike the latter, the former simply refers to property or resource jointly owned by a community. For instance, until recently, land was held through communal ownership in most agrarian communities.²⁷ Similarly, traditional societies had joint ownership interests on land related resources, such as the village square, economic trees, and sacred or

23. *International Convention for the Protection of New Varieties of Plants* (October 23, 1978), <http://www.upov.int/en/publications/conventions/1978/pdf/act1978.pdf> (accessed Feb. 25, 2004) (The United States has not ratified the March 19, 1991 revision of the UPOV.).

24. See generally Maureen Cain & Alan Hunt, *Marx and Engels on Law* (Academic Press 1979).

25. See Shubha Ghosh, *Pills, Patents, and Power: State Creation of Gray Markets as a Limit on Patent Rights*, 53 *Florida Law Review* 790, at 797-780 (2001); See also Stéphane Lemarié, *Comparing Allocation of Resources in Public and Private Research* in Santaniello et al., *supra* n. 18, 155, 175; Adam Mossoff, *What is Property? Putting the Pieces Back Together*, 45 *Arizona Law Review* 372 (2003); John Vogler, *The Global Commons: Environmental and Technological Governance*, 4-5 (2d ed., John Wiley & Sons Ltd, 2000).

26. See Gray, *supra* n. 7.

27. See Dr. A. A. Utuama, *Customary Law and Land Use Act, 1978* (reprinted in *Towards a Re-statement of Nigerian Customary Law* 102-128 (Yemi Osinbajo & Awa U. Kalu eds., Fed. Ministry of Just. 1991)); see also Deborah Fahy Bryceson, *African Peasants' Centrality and Marginality: Rural Labour Transformations* (reprinted in *Disappearing Peasantries? Rural Labour in Africa, Asia and Latin America* 37 (Deborah Bryceson, Cristobal Kay & Jos Mooij eds., Intermediate Tech. Publications 2000)).

spiritual plants. These resources were for each society's mutual use and benefit. None of the co-owners could unilaterally exploit for personal use the communal property without the consent of the others. In other words, the idea of exclusivity of use did not *ipso facto* arise. Societies usually parceled-out such communal property amongst the communal owners for private use for a certain period. Land, for instance, was usually parcelled out during the planting seasons for cultivation. To ensure accountability and equitable access, the communal owners often entrusted the management of the communal resources to a community chief, elder, or any other recognized authority amongst them. Summarizing this system of property ownership, Posey and Dutfield stated:

Communal property is the prevailing system used in most traditional societies *to control access* to basic resources like food and fuel, but rights are multiple in that individuals, elders, women, clans, lineages, etc., each have ownership rights within a given resource area and over specified resources within them. Such rights may vary in their extent from one group to another, but they are inalienable (others cannot take away or undermine them).²⁸

In international law, "commons" or "common property" is synonymous with areas or resources beyond state jurisdictions or territorial boundaries. The high seas, the superjacent airspace, the living resources²⁹ thereof, and the moon, belong to this category of resources.³⁰ They are collectively referred to as the global commons. They are also regulated by international treaties.³¹ They are available for "legitimate and reasonable use by all states, and may not be appropriated to the exclusive sovereignty

28. Darrel A. Posey & Graham Dutfield, *Beyond Intellectual Property: Toward Traditional Resource Rights for Indigenous Peoples and Local Communities* 60 (IDRC 1996) (emphasis added). Furthermore, in the celebrated Nigerian case, *Amodu Tijani v. The Secretary, Southern Nigeria*, 2 A.C. 399, 404-405 (1921), Lord Haldane held, "[I]n every case the Chief or Headman of the community or village, or head of the family, has charge of the land, and in loose mode of speech is sometimes called the owner. He is to some extent in the position of a trustee, and as such holds the land for the use of the community or family. He has control of it, and any member who wants a piece of it to cultivate or build a house upon, goes to him for it."

29. See Moore, *Behring Sea Fur Seals Arbitration*, 1 Intl. Arbitrat. Awards 755 (1898), (cited in P.W. Birnie & A.E. Boyle, *International Law and the Environment* 141 (2d ed., Oxford U. Press 2002)).

30. Birnie & Boyle, *supra* n. 29 at 141.

31. See *United Nations Convention on the Law of the Sea* pt. XI (Dec. 10, 1982) http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf (accessed Sept. 28, 2003); *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (Jan. 27, 1967) 610 UNTS 205 (entered into force on Oct. 10, 1967); *Antarctic Treaty* (Dec. 1, 1959) 402 UNTS 71 (entered into force on June 23, 1961).

of any one state.”³² In the absence of sanctions for an unreasonable use of the “common property,” however, it may be difficult to control overuse.³³

Two peculiar characteristics distinguish commons resources from PGRs. Commons resources are public goods, excluding outsiders from using them is difficult and very costly. Public goods possess the characteristic of non-excludability. This characteristic of non-excludability makes commons resources susceptible to over-exploitation or abuse. Resources of this nature only become exclusive property through capture or taking, but until then, they are held in common. No identifiable state, user, or group may exercise exclusive control or ownership rights over commons resources similar to privately or communally owned property.

Plant genetic properties or information (such as the traditional knowledge on their uses) do not fit the above description of “commons” for a number of reasons. First, the resource (germplasm) is found in plants within the borders of a sovereign state. Second, source countries are not capable of protecting germplasm exploitation from outsiders in the same way as a copyright owner of computer software can prevent its pirating by unauthorized persons or entities. Both national and international laws are at the disposal of the software owner to enforce his property rights. On the contrary, PGR source communities or states cannot employ a similar protection. Third, the traditional knowledge on the uses and benefits of PGRs are not strictly in the public domain. Such knowledge is freely accessible amongst source communities because of their communitarian rather than liberal way of life. In other words, the practice buttresses their belief in communitarian relationship as opposed to the Western private ownership structure founded on the free market and the liberal economic model. This fundamental difference should be taken into consideration in efforts to develop international trade regulations or global property ownership structures.

Public goods also possess the characteristic of non-rivalry. This means that the consumption or use of the property or resource by one person neither diminishes its availability nor extinguishes another’s right to access or use it.³⁴ But this characteristic appears to no longer be tenable in view of Hardin’s seminal paper on the *Tragedy of the Commons*.³⁵ Hardin con-

32. Birnie & Boyle, *supra* n. 29, at 141.

33. On a similar note, Hardin questioned whether such words as “responsibility” (which in this case is “non-reasonable use”) are not attempts to “browbeat a free man in a commons into acting against his own interest?” For Hardin, “[r]esponsibility ... is an attempt to get something for nothing.” Garrett Hardin, *Tragedy of the Commons* 162 *Science* 1243, 1243 (Dec. 13, 1968).

34. See Alison Butler, *Environmental Protection and Free Trade: Are they Mutually Exclusive* (reprinted in Jeffrey A. Frieden & David A. Lake, *International Political Economy: Perspectives on Global Power and Wealth* 433, 436 (4th ed., Bedford/St. Martin’s 2000)).

35. Hardin, *supra*, n. 33.

tends that the problem with the commons is that access is not regulated.³⁶ Hardin asserts that non-regulated access results in overuse, and subsequently, to an end in the common resources.³⁷ From Hardin's analysis, both renewable and non-renewable resources are susceptible to overuse; however, assuming the non-rivalry characteristic of a public good is still valid despite Hardin's postulations, what is the basis for equating PGRs with public good resources?

This article argues the contrary largely because both the knowledge on the uses of PGRs and the genetic material itself are intertwined. Loss of one invariably necessitates loss of the other. After all, knowledge *per se* is non-rivalry yet scientific knowledge that leads to innovation is protected through IPRs for the sole benefit of the innovators or the corporation that funded the research. Furthermore, by virtue of the significance and spiritual attributes of most plants from which valuable PGRs are obtained, it is contended that for each genetic material removed from such crop or medicinal plants, the property's worth is grossly diminished. This contention that the worth diminishes is premised on the fact that in germplasm, the value of the whole is in the part.

Consequently, there is no legal, economic, or social basis for describing PGRs as the common heritage of mankind. In fact, the concept of the common heritage of mankind originated without any reference to germplasm. Although there is no consensus on the origins of this concept in international law, a brief summary of how it got into international law lexicon is imperative at this stage.

Arvid Pardo, the Maltese Ambassador to the United Nations during the 1968 debates on ownership of the seabed is usually credited with the origins of the concept of common heritage of mankind. Others attribute the concept's origin to Aldo Cocca's earlier statement in 1967 at the deliberations on the peaceful uses of the outer space. Nevertheless, it is clear that the concept in its present usage and form was unknown prior to 1967. On this basis, Mgbeoji argues that the concept could therefore "not have governed transactions on plants prior to its debut."³⁸

Just like Hardin is credited with the phrase, "tragedy of the commons"³⁹ it was Pardo who popularized the concept of the "common heritage of mankind" at the debate on the exploitation and uses of the re-

36. *See id.* at 1244 (stating "Freedom in a commons brings ruin to all.").

37. *Id.*

38. Mgbeoji-Patents and Plants, *supra* n. 9, at 239.

39. *See generally Valuing the Earth: Economics, Ecology, Ethics* 127-151 (Herman E. Daly & Kenneth N. Townsend eds., The MIT Press 1993).

sources of the seabed.⁴⁰ The international community agreed with Pardo that certain resources outside the territorial jurisdiction of states, such as the ocean seabed should be utilized in such a way as to benefit both the technologically advanced countries and those not too advanced. In other words, access to and exploitation of such resources should not be on the basis of the survival of the fittest, which is the hallmark of capitalism⁴¹ and trade liberalism.⁴² Rather, the concept endorsed “all states to share in the rewards, even if unable to participate in the actual process of extraction.”⁴³

Moreover, the concept of “common heritage” differs both in meaning and character from “open access property,” “common property resources,” and “communal ownership” or “communal resources.” For instance, “communal resources” or “communal ownership” is noted for having an identifiable leader or management that oversees their uses. This is not an attribute of “open access property,” “common property resources,” or resources within the common heritage paradigm. Notwithstanding this difference, the principle of benefit sharing is a characteristic that permeates communal ownership resources, shared natural resources, and common heritage resources.⁴⁴

Besides UNCLOS, there are other international agreements that espouse and incorporate the common heritage concept.⁴⁵ Under these international agreements, the common heritage principle “implies a common responsibility”⁴⁶ consisting of common management through the mechanism of international institutions, equitable sharing of benefits,⁴⁷ and non-

40. *The Third United Nations Conference on the Law of the Sea* (Dec. 10, 1982) http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm (accessed Feb. 25, 2004) [hereinafter *UNCLOS III*]. *UNCLOS III* orchestrated the debates on ownership of the seabed. By virtue of Articles 136 and 137 of the 1982 UNCLOS, the resources of the deep seabed beyond national jurisdiction (the Area) have been pronounced the “common heritage of mankind” vested in mankind as a whole.

41. See Martin O'Connor, *Introduction: Liberate, Accumulate—and Bust?*, in *Is Capitalism Sustainable?: Political Economy and the Politics of Ecology* 1-19 (Martin O'Connor ed., The Guilford Press, 1994); see also Wolfgang Sachs et al., *Greening the North: A Post-Industrial Blueprint for Ecology and Equity* (Zed Books 1998).

42. See generally Immanuel Wallerstein, *Geopolitics and Geoculture: Essays on the Changing World-System* (Cambridge U. Press, 1991).

43. Birnie & Boyle, *supra* n. 29, at 143.

44. See Judge Shigeru Oda, *NIEO, Law of the Sea and Common Heritage of Mankind: Some Comments in Legal Aspects of the New International Economic Order* 171-173 (Kamal Hossain ed., Francis Pinter 1980)).

45. See *Agreement Governing the Activities of States on the Moon and the Other Celestial Bodies* (Dec. 5, 1979); *UNCLOS III*, *supra* n. 40, at part IX; *Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies* (Jan. 27, 1967), 610 U.N.T.S. 205; *The Antarctic Treaty* (June 23, 1961), 40 U.N.T.S. 71.

46. *Biodiversity and International Law: The Effectiveness of International Environmental Law*, 86 (Simon Bilderbeek, ed., IOS Press 1992) [hereinafter *Biodiversity and International Law*].

47. See *International Treaty on Plant Genetic Resources for Food and Agriculture*, Preamble, art. 9, 10 (Nov. 3, 2001) http://pgrc3.agr.gc.ca/itpgrfa/treaty-traite_e.html (accessed Feb. 25, 2004). On details

appropriation, amongst other things.⁴⁸ This may be the basis of Stenson and Gray's contention that the concept of "common heritage assumed by Pardo and his supporters was not one of free access or common property but of common benefit."⁴⁹

In practice, it is difficult to make the subtle distinction between these two concepts, namely "common property" and "common heritage of mankind" notwithstanding that managing common property resources is harder than managing common heritage resources. For common property resources, there is no restriction on uses and therefore capacity to exploit is vital.⁵⁰ In contrast, the concept of common heritage acknowledges the weaknesses of some of the "common" owners and therefore endorses the principle of benefit sharing. Under this arrangement, it is irrelevant that any particular state lacks the capability to exploit the resources described as common heritage. Furthermore, for this category of property there is an inbuilt responsibility to exploit the resources in a sustainable manner because common heritage resources are available for both the living and those yet unborn. In contrast, common property resources are available for the living, albeit the most capable because of this thin line distinction between these resources that Birnie and Boyle warned: "The common property doctrine is not to be confused with the more recent 'common heritage' concept, a specialized regime applied to certain mineral resources, nor with 'shared natural resources', where, ... rights are shared by a limited number of states."⁵¹

Under international law, common property resource is synonymous with "open access" regime. Often, the cost of maintaining exclusive rights over this resource outweighs any benefits that may accrue from taking such a protective step; therefore, common property resources encourage free riders,⁵² those who have contributed nothing but benefit from the resources as much as those who have contributed.⁵³ On the contrary, there is some form of access regulation for "common heritage resources." Without a

of an international agreement on benefit sharing of gains from the uses of germplasm, the International Treaty on Plant Genetic Resources for Food and Agriculture (popularly dubbed the Global Seed Treaty) clearly aligns with the UN Convention on Biological Diversity (CBD) in recognizing national sovereignty over plant genetic resources within state borders. The treaty does not regard PGRs as part of the commons rather as a property, albeit a resource, belonging to farmers, through the trust system of state sovereignty.

48. *Biodiversity and International Law*, *supra* n. 39, at 87.

49. Stenson & Gray, *supra* n. 4, at 137.

50. See Wolfgang Sachs, *Planet Dialectics: Explorations in Environment and Development* 87 (Zed Books 1999).

51. Birnie & Boyle, *supra* n. 29 at 141.

52. Friedman & Lake, *supra* n. 30 at 436.

53. For a concise definition of free rider concept, see GameTheory.net, <http://www.gametheory.net/Dictionary/FreeRider.html> (accessed Feb. 25, 2004).

mechanism for policing exploitation, it may be difficult for all of the interested parties to share in any accruing benefit from exploitation. Thus, the scope of the common heritage concept under international law is limited. As Birnie and Boyle noted:

Although the term 'common heritage' is frequently used loosely by environmentalists to refer either to all the living and non-living resources of nature or to the global environment as an ecological entity, for legal purposes the term is currently confined to the *narrow meaning attributed to it in two conventions*, namely, the 1979 Moon Treaty and the 1982 UNCLOS. Though both apply the concept to areas beyond national jurisdiction, they relate in this respect only to their non-living resources, to which in the latter treaty a precise and narrow definition is given.⁵⁴

In non-international law parlance, such as sociology and anthropology, common property resources have a different meaning from what we have described above. Simply put, commons are areas or resources "co-owned and actively stewarded by a specific community."⁵⁵ Under these disciplines, "common property" is nearer in meaning to "communal property resources" than "open access resources." For sociologists and anthropologists, common property owners enjoy the benefits of a determinate management that is compensated for overseeing the common property. With such management, there is no likelihood of overuse occurring.

Consequently, Hardin's commons would be interpreted differently in legal and non-legal disciplines. For instance, common property in international law signifies availability of a free resource susceptible to over-exploitation. There is no doubt that this is a resource to which Hardin's *Tragedy of the Commons* applies.⁵⁶ It is such resources' character of "open access" that may have triggered Hardin's concern. In sociology and anthropology, however, Hardin's tragedy of the commons would only apply to "open access" resources and not to "common property resources" because unlike the commons resources, the common property resources have identifiable owners and determinate management.

In view of the foregoing, classifying PGRs or the traditional knowledge on their uses as part of the commons would be inappropriate. With adequate legal protection, both have the characteristics of excludability and

54. Birnie & Boyle, *supra* n. 29, at 143 (emphasis added).

55. M. Patricia Marchak, *Who Owns Natural Resources in the United States and Canada?* 3 (Working Paper No. 20, N. Am. Series, Oct. 1998) <http://www.wisc.edu/lc/wp20.html> (accessed Feb. 25, 2004).

56. *Cf.* James M. Buchanan, *Symmetric Tragedies: Commons and Anticommons*, 43 J. of L. & Econ. 1-13 (U. of Chicago Press 2000).

rivalry, the hallmark of items capable of ownership, including patent protection. The current classification of PGRs as items of common heritage of humankind is not only arbitrary but lacks justification within the sphere of available property jurisprudence. For instance, the resources are found within the boundaries of sovereign states. Additionally, local conservation mechanisms of indigenous people and local farmers in source communities have been instrumental to the discovery of the utilitarian values of these resources. Traditional knowledge on the value and uses of these resources is passed down from one generation to the other through oral tradition or other methods of record keeping that is unknown to Western science and epistemology. Under the arrangement, PGR source communities enjoy not only communal ownership to these resources but also the indigenous knowledge on their uses. This relationship is different from that described under international law with respect to common property or common heritage.⁵⁷ In the former, the communal relationship of traditional communities is imbued with identifiable resource leader or management.⁵⁸

Communal ownership of property is not an anathema.⁵⁹ It appears, however, that biotechnology rich countries relish the current non-propertyization of PGRs or the traditional knowledge on their uses because, besides providing unfettered access to these valuable products and information, the current practice weakens the principle of benefit sharing enunciated in the Convention on Biological Diversity (CBD).⁶⁰ Unlike PGRs, open access resources are not “containable within national or regional boundaries.”⁶¹ There is, therefore, no legal basis for pigeonholing PGRs into the commons concept.

Currently, only the CBD and the International Treaty on Plant Genetic Resources for Food and Agriculture (Global Seed Treaty)⁶² are the foremost international instruments that ascribe proprietary character to PGRs. These two instruments acknowledge a source country’s sovereign owner-

57. See The Rural Advancement Found. Intl., *Enclosures of the Mind: Intellectual Monopolies* 26 (1996).

58. Marchak, *supra* n. 55, at 3.

59. See J.W. Harris, *Property and Justice* 139-161 (Oxford U. Press 2001) (providing a detailed analysis of the term “property” and its various meaning depending on use and application).

60. *Convention on Biological Diversity* (Jun. 5, 1992), <http://www.biodiv.org/doc/legal/cbd-en.pdf> (accessed Feb. 25, 2004).

61. Marchak, *supra* n. 55, at 3. Consequently, Hardin could have talked of the “Tragedy of Open Access Resources” as against the “Tragedy of the Commons.” For a criticism of Hardin’s error in this regard, see Pauline E. Peters, *Embedded Systems and Rooted Models: The Grazing Lands of Botswana and the Commons Debate* (reprinted in *The Question of the Commons: The Culture and Ecology of Communal Resources* 171-175 (Bonnie J. McCay & James M. Acheson eds., The U. of Ariz. Press 1987)) [hereinafter *Embedded Systems*]; see also Ralph Townsend & James A. Wilson, *An Economic View of the Tragedy of the Commons* (reprinted in *Embedded Systems*, *supra* n. 61, at 311).

62. Although a binding agreement when it becomes operational, the Global Seed Treaty is yet to come into force.

ship of germplasm found within its territory in addition to an ownership interest in *ex-situ* germplasm kept in overseas gene banks. Admittedly, the CBD and the Global Seed Treaty respectively focus on biodiversity and food security. Nevertheless, both recognize the proprietary interests of source communities and states to their germplasm together with the traditional knowledge on their uses. Despite the contents of these international instruments, the industrialized capitalist nations have conveniently, and without any juridical support, extended the commons concept to traditional knowledge of local farmers and indigenous peoples on the uses of their PGRs. Kloppenburg identified the reason for this one-sided approach when he said: “[t]he ideology of common heritage and the norm of free exchange of plant germplasm have greatly benefited the advanced capitalist nations, which not only have the greatest need for and capacity to collect exotic plant materials but also have a superior scientific capacity to use them.”⁶³

Although the principle of state sovereignty is no longer absolute,⁶⁴ nevertheless, it is still universally accepted as one of the attributes of state independence. Consequently, under customary international law, states have permanent sovereignty over natural resources (both renewable and non-renewable) found within their border and continental shelf.⁶⁵ But there are instances where states have a joint or shared ownership to natural resources. For example, where natural resources do not fall exclusively in one territory there is an understanding for joint but exclusive control of such natural resources by the resource-sharing countries. Even at that, shared natural resources still fall outside the purview of common property of all states⁶⁶ because, as Birnie and Boyle stated, “[t]he essence of this concept is a limited form of community interest, usually involving a small group of states in geographical contiguity, who exercise shared rights over resources in question.”⁶⁷ Consequently, states in this category also share any burden that may arise from their joint exploitation of shared resources.⁶⁸

63. Kloppenburg-*First the Seed*, *supra* n. 9, at 167.

64. With the proliferation of environment concerns worldwide, states are now required to be responsible in exploiting the natural resources within their territories. For a detailed discussion of this issue, see Birnie & Boyle, *supra* n. 29, at 139.

65. See *Anglo-Norwegian Fisheries Case*, I.C.J. Rep. 116 (1951).

66. Birnie & Boyle, *supra* n. 29, at 139.

67. *Id.* at 139.

68. See the UN General Assembly Resolution 3129 XXVIII (1973) on the adequate international standards for the conservation and utilization of natural resources held in common by two or more states; see also Article 3 of the 1974 Charter of Economic Rights and Duties of States, for a similar provision.

Ignorance or lack of the technology to exploit natural resources within a country's territory is not reason to deny any country control of its resources. Upon discovery of natural resources, an entity (foreign or local) may apply for and be granted a license to exploit the resources subject to payment of a royalty or resource rent to the source state. It does not matter if the resources are renewable or non-renewable. Treating these resources differently from PGRs⁶⁹ amounts to a forceful appropriation without any support in law; therefore, Aoki's caution on the legitimacy or otherwise of cultural appropriation is germane:

We need to be careful about constructing the public domain to avoid conceiving of the biological and cultural resources of the Third World as belonging to the "common heritage of humanity," thereby effectively putting them up for grabs by entrepreneurs from the developed countries eager to turn such public domain items into private intellectual property. There is a paradoxical need to simultaneously rein in the maximalist impulse in the intellectual laws of the developed countries and to imagine ways to protect the cultural and biological resources of the developing and least developed countries. In particular, there is a very serious question whether the category of "property," or the historically contingent and individualistic notion of "property," that has arisen in the West, is even appropriate when discussing things like agricultural practices, cell lines, seed plasm, and oral narratives that "belong" to communities rather than individuals. If we are not capable of acknowledging the existence of different life-worlds and ways of envisioning human beings' relationship to the natural world in our intellectual property laws, then unfortunately, it may be late in the day for biodiversity and hopes for genuinely multicultural world.⁷⁰

In addition, recent literature on ecology and environmental science now use the phrase "common concern" to refer to endangered species and issues on environmental degradation.⁷¹ Also, the Global Seed Treaty uses this phrase in preference to the phrase common heritage concept.⁷² The

69. Cf. Fowler, *supra* n. 20, at 230-231.

70. Keith Aoki, *Nationalism, Anticommons Property, and Biopiracy in the (Not-So-Brave) New World Order of International Intellectual Property Protection*, 6 *Ind. J. Global Leg. Stud.* 11, 46 (1998), <http://www.law.uoregon.edu/faculty/kaoki/site/articles/notso brave.pdf> (accessed on Feb. 25, 2004).

71. Birnie & Boyle, *supra* n. 29, at 608; see also Sachs, *supra* n. 50, at 173; Vogler, *supra* n. 25, at 2-19; Fikret Berkes, ed., *Common Property Resources: Ecology and Community-Based Sustainable Development* (Belhaven Press, 1989); *Embedded Systems*, *supra* n. 61.

72. See Global Seed Treaty, *supra* n. 47, at third preamble.

idea behind the phrase, "common concern" is that although a resource may fall within a state's territorial jurisdiction, nevertheless its exploitation may be of "common concern" to other countries because of its habitat, biological, natural, economic and/or social values to the world community, or in view of its potential environmental hazard.⁷³ Unlike the concept of common heritage, however, the phrase, "common concern" does not remove ownership and control from source communities.

Based on the foregoing, the concept of free and fair trade orchestrated by the World Trade Organization (WTO) is tainted with inequity. The WTO, as an institution, is currently devoid of a level playing field for all of its members. This makes it an unattractive institution because it is incapable of carrying out the duties outlined in its creating treaty in an unbiased manner. For their part, non-governmental biotechnology organizations, in partnership with PGR source states or communities, have continued to pressure biotechnology rich countries through lobbying, organized demonstrations, and petitions.⁷⁴

III. EXTENSION OF THE 'COMMONS' CONCEPT TO PGRs

Most economists argue that the non-propertization of germplasm has no effect on traditional farmers and source communities.⁷⁵ As earlier stated, they contend that taking a few cell lines from local plants does not diminish the subsequent uses of such plants by local farmers or communities. It is also their opinion that patent protection on the resulting processes or products only excludes the appropriation or uses of the elite products without the consent of the patent holder. A similar protection is not available for the local cultivars as the right of local farmers and communities to their landraces is not exclusive and mostly remains encumbered. This dichotomy between the treatment of landraces and elite crops is typical of capitalist ideology. This is rooted in the perceived inequality of cultures, which the IPR regime has exacerbated. Wallerstein described this devel-

73. See David A. Andow, Simon A. Levin, & Mark A. Harwell, *Evaluating Environmental Risks from Biotechnology: Contributions of Ecology in Application of Biotechnology: Environmental and Policy Issues* 125-144 (John R. Fowle III, ed., Westview Press, 1987).

74. See e.g. Doha WTO Ministerial Declaration of November 14, 2001, ¶ 19 http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm (accessed Feb. 25, 2004) (perceived as one of the efforts by these groups to ensure that PGRs, biodiversity, traditional knowledge and folklore are protected and rewarded appropriately).

75. See William Kingston, *Innovation, Creativity and the Law* 107-134 (Kluwer Academic 1990); *Biotechnology Revolution*, *supra* n. 13, at 25-26.

opment as the capitalist approach to creating and maintaining “legal monopolies and/or other forms of constraint of trade.”⁷⁶

Some economists also contend that because of the nature of PGRs and the traditional knowledge of their uses, it is difficult to exclude third parties from freely accessing them. Their argument is based on the fact that several people in the community already have access to these resources. They also contend that traditional knowledge of the uses of PGRs belong to the public domain and therefore require no protection.⁷⁷ These are some of the reasons why communal property rights over PGRs or the traditional knowledge of their uses have been rejected in the Western property paradigm.⁷⁸

The above arguments ignore the holistic nature of communal property ownership over resources. As already noted, communally owned resources have an identifiable management structure that oversees the resources for the benefit of the communal owners. It is this attribute that distinguishes these resources from other resource ownership structures, such as “common heritage” or “open access” resources. Similarly, the contention that the appropriation of a portion or single cells from germplasm does not diminish the entire PGRs stock begs the issue at stake. This is because the peculiar nature of germplasm means that the value of the whole is in the part.⁷⁹

Source countries or communities are unable to enforce their right of excludability over PGRs against third parties mainly due to the current international institutions that undermine their communal property rights. Based on recent developments and awareness, there is a consensus that traditional societies have past, present, and future input in the enrichment of PGRs and their conservation.⁸⁰ What is absent is adequate compensation, which would flow back to them from the users of such germplasm and knowledge. Perhaps the recent Global Seed Treaty will be able to redress the present unjust and asymmetrical arrangement when it comes into

76. Immanuel Wallerstein, *The Capitalist World-Economy* 149 (Cambridge U. Press 1979).

77. See generally Patrick Cohendet & Pierre-Benoit Joly, *The Protection of Technological Knowledge: New Issues in a Learning Economy* in *The Globalizing of the Learning Economy* 65, 65 (Daniel Achibugi & Bengt-Ake Lundvall, eds., Oxford University Press, 2001); Aoki, *supra* n. 70, at 43-45; cf. Graham Dutfield, *TRIPS-Related Aspects of Traditional Knowledge*, 33 Case W. Res. J. Intl L. 233, 254-255 (2001); Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (Between the Lines 1997).

78. See Iain J. Davidson-Hunt, *The State, the Village and the Commoner in the Western Himalaya in Sustainability of Mountain Environments in India and Canada* 187, 188 (Fikret Berkes & James S. Gardner eds., U. of Manitoba 1997).

79. See e.g. Meenakshi Ganguly, *Descendants of “God’s Physician” Share Their Secrets*, *Time International* (Nov. 9, 1998) 38 (The article chronicles how the Kani tribe in India is receiving royalties from the sale of an anti-fatigue herbal preparation, formerly unknown to non-Kani indigenes).

80. See Shiva, *supra* n. 77, at 69-72.

force. In fashioning a mechanism for calculating the quantum of such compensation, Sedjo made germane comments:

Biological and genetic resources, including plant germplasm, clearly have economic value. Germplasm, the substance in the plant cells by which hereditary characteristics are transmitted, is the fundamental material of life. The stock of genetic resources comprises a vast reservoir of heritable characteristics that have actual and potential use. The characteristics have potential use in development of improved crops, pharmaceuticals, and other natural products as well as plant species capable of restoring depleted soils.⁸¹

It appears that the concept of common heritage of humankind is contrary to the principle of sovereignty and territorial integrity.⁸² By virtue of the principle of state sovereignty in international law, states are entrusted with natural resources within their borders. This is still the position. Since germplasm is found in plants located within the territory of states it cannot qualify as an open access resource. Mgbeoji's analysis on this issue is apt:

[I]t is thus apparent that the notion of common heritage of mankind is the very opposite of principles of international law governing access to, control or dominion over assets or properties which fall within the jurisdiction of a recognized state. In effect, sovereignty and jurisdiction over a territory is an infeasible aspect and character of statehood and whatever falls within the boundaries of a state is subject to the amplitude and magnitude of state jurisdiction.⁸³

Unlike Kloppenburg⁸⁴ and Mgbeoji,⁸⁵ other commentators, such as Stenson and Gray, contend that the principle of state sovereignty is not antithetical to the common heritage concept.⁸⁶ For this group, the only way inconsistency may arise is by classifying all germplasm (both landraces and elite seeds) as common heritage of mankind.⁸⁷ It is also their view that if the concept is seen in its fullest sense "of common benefit,

81. Roger A. Sedjo, *Property Rights and the Protection of Plant Genetic Resources*, in *Seeds and Sovereignty: The Use and Control of Plant Genetic Resources* 293, 295 (Jack R. Kloppenburg ed., Duke U. Press 1988).

82. *Id.* at 295.

83. Mgbeoji-Patents and Plants, *supra* n. 9, at 240.

84. Sedjo, *supra* n. 81, at 295.

85. Mgbeoji-Patents and Plants, *supra* n. 9, at 240.

86. Stenson & Gray, *supra* n. 4, at 137.

87. As incorporated in the 1983 Food and Agric. Org. of the U. N. International Undertaking on Plant Genetic Resources.

then national sovereignty and common heritage are by no means incompatible.⁸⁸

The above position is contestable in view of the available jurisprudence on resource ownership and control. First, Stenson and Gray, and those sympathetic to their opinion, fail to acknowledge the-all-time principle of a country's sovereignty over natural resources in its territory. Second, they are unable to demonstrate any justification for their position except for the huge research and development costs invested in biotechnology inventions. But huge research and development costs are neither synonymous with innovation nor one of the criteria for patent protection. Third, they provide no significant differences between the prior and ongoing intellectual contributions of local farmers and indigenous communities to landraces, and the work of laboratory scientists with respect to elite cultivars. Without any such clear distinctions there are no justifiable basis to ascribe the common heritage concept only to landraces. It is even inequitable when these landraces are the bedrock of the elite crops or most laboratory-processed medicines.

Most patented drugs were developed from the cells of local plants after corporations obtained relevant local information or traditional knowledge of the uses of these plant resources.⁸⁹ For instance, it was on this basis, in addition to proof of the existence of prior knowledge on the medicinal properties and uses of neem tree in India, that the European Patent Office, Munich revoked⁹⁰ the patent⁹¹ granted in 1994 to W.R. Grace, a United States firm. This patent had protected the use of Indian neem tree (*Azadirachta indica*) oil as an antifungal agent.⁹² In cases like this, traditional societies should at least be entitled to compensation for uses emanating from their PGRs or the traditional knowledge of them. To achieve this will involve long-term acceptance of the inherent communal property owning system.

Therefore, notwithstanding the trial and error mechanism of Western science in pharmaceuticals and agricultural biotechnology, raw materials used for such experiments belong to a particular locality, for which compensation is appropriate.⁹³ Until this happens, Fowler and Mooney will

88. Stenson & Gray, *supra* n. 4, at 151.

89. Shiva, *supra* n. 77, at 69-72.

90. Effective May 10, 2000.

91. European Patent No. 436,257.

92. See Anonymous, *Neem Tree Free*, 30 *The Ecologist* 8 (June 2000); Anonymous, *European Patent Office Rejects Neem Tree Patent*, *Synthesis/Regeneration* 48 (2000).

93. See Janet McGowan & Iroka Udeinya, *Collecting Traditional Medicines in Nigeria: A Proposal for IPR Compensation*, in *Intellectual Property Rights for Indigenous Peoples: A Sourcebook* 57-68 (Tom Greaves, ed., Socy. for Applied Anthropology 1994) (for suggestions on a model contract for compensating indigenous communities for uses of their PGRs).

remain correct that the controversies surrounding the control of PGRs and their consequential description as part of the commons is "biopolitics." According to them:

[F]rom the earliest times, ownership and control of plants and their diversity have been much more than merely scientific or technical concerns. They have been and will continue to be profoundly political. The strength of nations has risen and fallen; great fortunes have been made and lost; and people have enjoyed plenty or suffered hunger at best in part because of, who owned, controlled, used, and benefited from genetic diversity, and who did not.⁹⁴

IV. PGRS AND THE POLITICS OF NON-PROPERTIZATION

It is doubtful that the denial of proprietary rights and the incapacity of the market to deal with PGRs are a result of any difficulty in apportioning monetary value to germplasm. As previously argued, PGRs do not have the unique attributes of the commons.⁹⁵ The incessant demand for PGRs by multinational seed and pharmaceutical corporations is an indication of their inherent economic, social, and medicinal values. Moreover, biodiversity and PGRs conservation are perceived worldwide as a means of solving the world's food and agriculture problems. In addition, the value and potential of PGRs as a source of modern medicinal discoveries cannot be overemphasized.⁹⁶ But if germplasm is inferior to elite plants, then why is the international community interested in biodiversity? Furthermore, if PGRs do not have economic value why were some European countries, particularly the Dutch and French, so protective of their germplasm during the colonial era? Kloppenburg and Kleinman assert that these countries went "to a great lengths to prevent their competitors from obtaining useful plant genetic materials."⁹⁷

94. Cary Fowler & Pat Mooney, *Shattering: Food, Politics, and The Loss of Genetic Diversity* 200 (The U. of Ariz. Press, 1990).

95. The "commons" characteristics include free availability without restriction; one person's use does not diminish what is available to others; and cost of preventing third party use, preserving it or providing it, is exorbitant.

96. As Sedjo rightly noted: "[W]hile today germplasm from many organisms is considered to be of no economic importance, some of it may eventually become useful in genetic engineering. Hence, species that have no current commercial application or are as yet undiscovered nevertheless have value as a repository of genetic information that someday may have direct commercial and/or social value." See Sedjo, *supra* n. 81, at 296.

97. Jack Kloppenburg & Daniel Lee Kleinman, *Plant Genetic Resources: The Common Bowl, in Seeds and Sovereignty: The Use and Control of Plant Genetic Resources* 1, 5 (Jack R. Kloppenburg ed., Duke U. Press 1988).

It has also been argued that even if PGRs are propertized, the traditional knowledge of their uses was not the discovery of one person, but that of a whole community and of generations too numerous to acknowledge or compensate.⁹⁸ Indigenous knowledge of germplasm is communally experienced and shared, however, this does not make it any different from shareholders who have stakes in companies and are paid dividends.⁹⁹ It is also no different from scientists in various disciplines or universities who collaborate in research for mutual benefit. Such collaboration is made without sacrificing researchers' independence.¹⁰⁰ Unlike the commons resource, there is an identifiable management responsible for coordinating the interests of the communal owners of the resources. Therefore, the refusal to extend exclusive proprietary rights to PGRs based on the pretext of an inability to isolate individual ownership is not fortuitous, but a calculated means of exploitation by the West. After all, the "common knowledge" of laboratory innovators is not a basis for the denial of patent protection to laboratory-driven inventions.

While purportedly difficult to delineate the specific individual proprietary owners of PGRs, it should be noted that patent protection is no longer strictly a reward to individual inventors. Indeed, "the contemporary reality is that since the legal fiction of an employer's ownership in the employee's invention, and the economies-of-scale of group research, a community of scientists working away in huge laboratory complexes has driven the concept of the solitary inventor to virtual extinction."¹⁰¹ It is therefore inequitable to use the communal or collective nature of the development and improvement of PGRs in traditional societies as one of the basis for non-extension of patent protection to germplasm.¹⁰² At no occasion in the history of patents has the choice to exchange ideas been a precursor for non-patentability of innovation. The free exchange of knowledge by and

98. Depending on who is making the argument, the entitlement theory has been used to support and to oppose compensating local farmers for their input on PGRs. See e.g. Stenson & Gray, *supra* n. 4, at 89-91; Peter Drahos, *A Philosophy of Intellectual Property* (Dartmouth, 1996).

99. See Bernard Bonnet, *Shared Management of Common Resources: Strengthening Local Skills*, http://www.iied.org/docs/drylands/dry_ip94eng.pdf (accessed Feb. 25, 2004) (for a detailed analysis of shared common resources in traditional communities).

100. Mgbeoji was very persuasive when he said that arguments to the contrary are fallacious. As he noted, "[T]he villages or local communities of the indigenous and local peoples engaged in innovations of biological diversity may be likened to a huge laboratory complex in a developed nation. Information on innovations, valuable discoveries and applicable technology are generally discussed and passed around informally by people in both systems." Ikechi Mgbeoji, *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 Leg. Stud. 163-186 (2001).

101. Ikechi Mgbeoji, *Patents and Plant Resources-Related Knowledge: Towards a Regime of Communal Patents for Plant Resources-Related Knowledge*, in *Environmental Law in Developing Countries* 81, 103 (Françoise Burhenne-Guilmin ed., IUCN 2001) [hereinafter Mgbeoji-PPR].

102. *Id.* (for a detailed argument on this point).

amongst traditional communities should not *ipso facto* confine traditional ideas in PGRs to public domain.¹⁰³ Similarly, rejecting the proprietary nature of such knowledge on the basis of non-documentation is testimony to the difficulty of the West to accept diversity in its real sense. After all, writing is unknown to many traditional societies. Therefore, as Posey and Dutfield stated, “any legal instruments aimed at protecting cultural knowledge must accommodate cultural and local variation in the forms of such systems.”¹⁰⁴

Notwithstanding the entity with the proprietary interest in PGRs,¹⁰⁵ abrogating the concept of common heritage will ensure that these resources are only utilized with the owner’s consent. Invoking Article 27(3) of the TRIPs Agreement by attaching an “effective” *sui generis* type of proprietary right to PGRs is a tempting alternative. Under this arrangement, countries will be at liberty to set their own intellectual property regime for PGRs. As magnanimous as this provision appears, it lacks any specificity particularly with respect to the meaning of either “effective” or “*sui generis*” as they are not defined in the TRIPs Agreement. Moreover, there is no guarantee that whatever is adopted as *sui generis* would be acceptable to other countries, particularly in the West. Of particular interest is the fact that the United States and other Organization for Economic Co-operation and Development (OECD) countries clearly favor a *sui generis* regime that complies with the provisions of UPOV convention. This is because these countries insist that PGRs do not meet the criteria for IPRs protection. Chambers and Bertram provide a background for the United States’ position that PGRs are part of the commons.¹⁰⁶ They suggest that the United States perceives free accessibility, *in situ* and *ex situ*, as the key to benefit sharing of biotechnology gains by all the stakeholders, particularly developing countries.¹⁰⁷

Notwithstanding the above position, there is a subtle consensus that compensating developing countries for the use of their genetic resources could act as incentive for further conservation of biodiversity required for biotechnological inventions and research. But there is no agreement yet on either the items for which compensation is due or the modalities for determining the compensation. Attaching economic value to PGRs and also acknowledging the proprietary rights of source communities to PGRs and

103. See generally Dutfield, *supra* n. 77, at 237-238.

104. Posey & Dutfield, *supra* n. 28, at 60.

105. Whether nation states, communities or individuals.

106. See Judith Chambers & Robert Bertram, *The U.S. Position on the Consultative Group on International Agricultural Research*, in *Intellectual Property Rights III Global Genetic Resources: Access and Property Rights* 59, 73-75 (Steve A. Eberhart, et al. eds., Crop Sci. Socy. Am. 1998).

107. *Id.* at 62.

traditional knowledge thereof may be a viable alternative. These and other options should be extensively considered at the ongoing multilateral trade negotiations orchestrated by the 2001 Doha WTO Ministerial Declaration. The benefit sharing provision in the CBD and the Global Seed Treaty provide good basis for negotiation on this issue, but requires the buy-in of industrialized countries through their ratification of these conventions.¹⁰⁸

As such, the current multilateral trade negotiation provides developing countries an opportunity to lobby for changes on the status of genetic resources. The World Intellectual Property Organization (WIPO) and other expert institutions have done extensive work on traditional knowledge and folklore. For instance, the WIPO report on traditional knowledge supports changes that involve propertization of PGRs.¹⁰⁹ According to Wilder:

The work that WIPO has done in the field of traditional knowledge, which is also informed by years of development for cooperation experience, leads me to believe that the anxieties identified above cannot simply and quickly be allayed. Further, while the source of the anxiety may be global –the TRIPs Agreement for example –but the solutions depend on an inclusive, scientific, rigorous, and very local approach...¹¹⁰

On another note, the usual agreement between gene banks and biotechnology companies or private research institutions should also be harmonized in content and use. The agreement should comply with the provisions of the CBD and the Global Seed Treaty by specifying clearly that the consent of source countries is required before any material (*ex-situ* PGRs) obtained from such centers for research can be patented.¹¹¹ Although the ongoing round of trade negotiations is dubbed the “development round,”¹¹² it can only be so in reality if biotechnology countries endorse changes in the ownership status of raw PGRs. The change must be capable of vesting PGRs with a proprietary interest even of a different character. The credit-

108. The United States has reiterated that it will not be a party to any convention that undermines the TRIPs Agreement. In some ways, the CBD and the Global Seed Treaty resemble such a convention.

109. See Richard Wilder, *Global Harmonization of Intellectual Property*, in *Foundations and Perspectives of International Trade Law* 516, 528-530 (Ian Fletcher, Loukas Mistelis & Marice Cremona, eds., Sweet & Maxwell 2001).

110. *Id.* at 530 (outlining the three elements that a collaborative and inclusive solution must contain).

111. See Susan H. Bragdon, *Recent Intellectual Property Rights Controversies and Issues at the CGIAR*, in Santaniello et al., *supra* n. 18, at 77, 81-82.

112. This terminology was developed prior to the 1999 Seattle WTO meeting. Due to the disruption of the meeting by activists, however, the first “development round” never came to be; therefore, it is a carry over term. The term represents or refers to a trade round in which developing countries are expected to gain some concessions on their demands, particularly on the reclassification of germplasm for patent purposes.

ability of the WTO,¹¹³ however, will be challenged and maybe undermined if the concerns of developing countries are not fully addressed in this round.¹¹⁴

In the interim, the extension of the commons concept to local cultivars, while shielding elite plants from such description, may be attributed to the strong United States' hegemonic control over the international institutions overseeing germplasm collection. Both the United States, and other OECD countries jealously protect their seed companies. In the process, these countries ignore the beauty of the modern world, its diversity. The principle of diversity is that no system should be ignored or denigrated. At the same time, no system should be seen as superior to others. Rather a system of mutual respect and tolerance should be encouraged. Unfortunately, issues on the control of germplasm have not been treated in this manner. None of the current institutions appear to satisfy the whole parties –North and South inclusive. As already noted, however, paragraph nineteen of the November 2001 Doha (WTO) Ministerial Declaration may be a magic wand for redressing the current asymmetrical benefit from germplasm. This is in view of the mandate to the council responsible for reviewing the TRIPs Agreement in order to re-examine the possibility of harmonizing TRIPs and CBD. Whether the WTO is the proper forum to achieve this equality of treatment of resources is not the focus of this article. Suffice to say that the power imbalance in international institutions may be a hindrance for an impartial mediation of this controversy through the WTO. After all, the WTO is not immune from the politics of germplasm. The future is uncertain in this regard and like Polanyi, "I am primarily concerned in this note with the effect of current scientific principles on our culture at large, where the disregard of truth in favor of hard-boiled scientific ideas has spread confusion and led eventually to sinister results."¹¹⁵

V. CONCLUSION

This article has attempted to discuss, from an interdisciplinary perspective, the origins and meaning of the commons in relation to PGRs. It also analyzes the different ideological debates on the status of PGRs in connection with IPRs protection. It appears that both developing countries and

113. See e.g. *The Role of the World Trade Organization in Global Governance* (Gary P. Simpson ed., U.N. U. Press, 2001).

114. See Sylvia Ostry, *The Post-Cold War Trading System: Who's on First?* (U. of Chicago Press, 1997).

115. Michael Polanyi, *Knowing and Being: Essays by Michael Polanyi* 43 (Marjorie Grene ed., U. Chicago Press, 1969).

rich biotechnology countries have continuously played the “commons” card whenever it has suited their interests. The West, however, has been the most successful in these circumstances. Furthermore, in the struggle for the control of PGRs, the West has done little to acknowledge or compensate the source countries for their valuable germplasm freely obtained for biotechnology research.

In explaining this injustice,¹¹⁶ Marchak asserts that property rights are social institutions that “exist as long as the society is willing to enforce them.”¹¹⁷ What ends up being enforced, however, are the wishes of the most powerful nations.¹¹⁸ This is because international affairs and the promotion of economic interests of nations are based on lobbying and negotiations, which often are not democratic and equitable. Thus, in multilateral or bilateral negotiations, powerful states dangle promises of aid (economic or military) or the threat of sanctions in a carrot and stick approach to achieve their goals.¹¹⁹

The question of the “commons” with respect to plant genetic resources is not different. Hence, one can conclude that social institutions, such as the one on property rights, last as long as powerful states are willing to sustain it. Moreover, as Harris noted, “intellectual property was created historically always in societies in which advanced property institutions over tangible resources were entrenched, and, to varying degrees, absorbed the existing mental frameworks of those institutions.”¹²⁰ Although changes may occur, it may take a long period of time.¹²¹ This is the fate of developing countries in relation to control and propertization of PGRs for IPRs purposes. Consequently, the politics of germplasm control vindicates Polanyi that “[r]ightness is no longer achieved then by the triumph of utility over prejudice, but by the triumph of one class over another ...”¹²² Similarly, as Drahos contends, “[t]he dramatic expansion of intellectual prop-

116. Wallestein was clear that “world inequality is a phenomenon about which most men and most groups are quite conscious.” Immanuel Wallestein, *The Capitalist World Economy* 49 (Cambridge U. Press 1979).

117. See Marchak, *supra* n. 55, at 1.

118. See Susan Strange, *States and Markets* (2d ed. Pinter, 1994); Robert Gilpin & Jean M. Gilpin, *The Political Economy of International Relations* (Princeton U. Press, 1987).

119. As Knorr argued, “[I]t will be readily agreed that any threat to cut off economic aid, unless certain conditions are met, is coercive, and so is any termination of aid accompanied by statements that its resumption depends on the recipient’s behaviour in certain respects.” Klaus Knorr, *Power and Wealth: The Political Economy of International Power* 169 (Basic Books, 1973).

120. Harris, *supra* n. 59, at 47.

121. Marchak lists seven ways by which changes may occur to redefine an existing property regime. They are changes in “market conditions, popular sentiments, scientific knowledge, new technologies, lobbying, or legal battles.” Marchak, *supra* n. 55, at 10.

122. Polanyi, *supra* n. 115, at 43.

erty regimes, both nationally and internationally, in recent decades is in Marx's terms an important superstructural transformation."¹²³

Therefore, notwithstanding how the current round of multilateral trade negotiation progresses or turns out, the fact that developing countries have been provided opportunity to bargain on the future status of traditional knowledge (PGRs) in relation to IPRs is a welcome development.¹²⁴ We hope they do not come out worse than they were initially.

123. Drahos, *supra* n. 98, at 99.

124. *See* Young, *supra* n. 14 (for a discussion of intellectual property on traditional knowledge).