Agricultural Commons and Intellectual Property Rights: An Anatomy of North-South Germplasm Politics and Cultural Change[1]

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Abstract

This paper examines intellectual property rights (IPR) regimes as they apply to agricultural germplasm in the context of global North-South relations. The issue is pertinent particularly since TRIPs (Trade-related Aspects of Intellectual Property Rights) became enshrined in the statutes of the World Trade Organization in 1994, institutionalizing the notion of 'germplasm as property' throughout the globe. I would contend that the idea of "germplasm as property" was originally a notion that resonated culturally only in the global North. Much of the world's important germplasm material originated in the South - in the Vavilovian 'centers of diversity' – yet the majority of germplasm patents are being held by North-based corporations. This paradox situates the contest for biodiversity resources in a historic-world context and undermines the declared reasons for germplasm IPRs. Besides, more than just a North-South conflict over resources, this episode features also a confrontation between competing worldviews of nature-human relations.

I. Introduction

The preponderant reason offered by the advocates for a system of intellectual property rights (IPR) is that it confers rights "to people for the creations of their minds."[1] The Trade-Related Aspects of Intellectual Property Rights (TRIPs) Agreement is one such regime of intellectual property rights protection that seeks to be legally binding worldwide via its enshrinement in the statutes of the World Trade Organization (WTO).

TRIPs has been at the forefront of the multilateral trading system operating under the aegis of the WTO since 1994 when corporations, particularly of the industrialized North, have increasingly become aware that in this stage of late capitalism it is not so much the material constituents of commodities per se but the ideas and knowledge contained in them that account for their value. According to a 2005 study by USA for Innovation, intellectual property in the United States, which exists predominantly in the form of patents, is valued at as much as $5.5 trillion, more than 40 percent of the nation's GDP (Bloomberg News 2007).

Given the stakes, corporations in the North engaged in the trade of knowledge-based products have pressed for an international, legally binding system of IPRs legitimizing their claims for remuneration whenever their products are used. Their demands have resulted in the institution of global IPR regimes, the most comprehensive of which is TRIPs.

This paper attempts to shed light on the history of the privatization of the seed and germplasm commons. The foremost intent is to reveal the circumstantial nature of such developments lest we think of them as inexorable. Secondly, and perhaps somewhat unwittingly, the paper also

reveals how socio-cultural conceptions of nature and the commons (the communal?) have been transformed in the South as it has integrated more fully into the capitalist world-system.

II. Brief History of US Agriculture

Since the push for the globalization of IPRs has come predominantly from major corporations in the global North, the lead nation of which is the United States, my appraisal of the history of intellectual property in agriculture here will focus quite exclusively on the US experience. Because of space constraints, I will present it via a series of illustrative *vignettes* that bring its essential moments into relief. Each of these snapshots corresponds to specific historical periods and highlights, firstly, the foreign origins of North American agricultural germplasm and, secondly, technology's influence on the public/private nature of germplasm research and diffusion.

Vignette One: Public procurement of seed and early plant introduction in newly-settled North America - The development of agriculture in North America was crucially dependent on the infusion of plant germplasm from other parts of the globe. Kloppenburg (1988:50) has reported that of the crops which were economically significant, only blueberry, sunflower, cranberry and Jerusalem artichoke originated in North America. Zeven and Zhukovsky (1975) propose that agriculture was introduced into North America from the region that today constitutes Bolivia-Peru-Chile in the third millennium B.C. They confirm Kloppenperg's thesis, noting that only a few important crops were domesticated in North America such as *Fragaria Virginian* (strawberry), *Helianthus sp.* (sunflower), *Prunus sp*. (cherry), *Vaccinium sp*. (huckleberry), *Vitis sp*. (grape) (*ibid*:173).

Given their paucity, introduction of germplasm from outside North America was imperative to make settlement possible. No wonder that Crosby (1972:107) observes the arrival of plants from the Old World doubling or even tripling the number of cultivatable food crops in the New World.

North America thus became a voracious recipient of generous amounts of plant varieties beginning from the time of settlement in the seventeenth century. New crops and cultivars were introduced with every wave of new migration. While many of these crops failed, the introduction of such crop diversity allowed American farmers to undertake breeding experiments with them. Where they did not fail, it became a practice to save the best individual plants as seed for the following year's planting.

Such experimentation to procure climatically suitable crops from overseas became institutional and "official" with the establishment of experimental farms: in 1699 by the Lords Proprietors of South Carolina, in 1733 with the Trustees Garden of Georgia, and in 1817 with the establishement of the Albermarle Agricultural Society of Virginia . These farms relied on the social prominence of their members to procure and disseminate plant varieties. The Albermarle Agricultural Society of Virginia that was established in 1817, for example, included not only Thomas Jefferson and James Madison but later, two governors, a future senator, a justice of the U.S Supreme Court, and other statesmen and professionals (Klose, 1950). The involvement of so significant a number of political luminaries meant that the separation of personal interests from those of the state was obscured, inadvertently resulting in greater *de facto* state (public) intervention in the procurement of plant germplasm. Hence, beginning with Washington's

presidency, the agricultural societies "solicited federal aid for the promotion of agriculture and for the introduction and trial of new crops and varieties." (Kloppenburg *op cit*.:53).

Vignette Two: The state, plant collection, and the art of plant breeding in the 19th C -The involvement of the state in agriculture was further entrenched in 1819 when Secretary of Treasury William L. Crawford requested that the nation's foreign consuls and naval officers assist in the process of seed (or germplasm) collection. Such state intervention was justified on the basis that there was a lack of incentives to stimulate private initiatives.

The granting of Crawford's request marked a significant moment in the public subsidy of agricultural research in the United States, and the collection and evaluation of plant germplasm proceeded apace thereafter. This process was further encouraged under the tutelage of Henry Ellsworth, the Commissioner of Patents between 1836 and 1849, when the Patent Office regarded novel plant varieties to be as important as mechanical inventions (Baker et al., 1963:5).

In 1838 the Navy became formally involved in the enterprise and authorized the first plant exploration expedition. Between 1839 and 1842 Commander Charles Wilkes' cruised the Pacific under orders to secure new agricultural plants (Klose, *op cit*). In 1853, Commodore Perry not only opened the ports of Japan to American commerce; he brought home a great variety of seeds and plant materials from Japan, China, Java, South Africa and Mauritius. America's foreign consuls also began sending wheat from Poland, Turkey, and Algeria, rye from France, sorghum from China, cotton from Calcutta and Mexico City, peppers and maize from Peru, and rice from Tokyo, while other

naval expeditions obtained plants from South America, the Mediterranean and the Caribbean (Kloppenburg, *op cit.*).

At home, Commissioner Ellsworth of the Patent Office ensured their widespread dissemination by personally sending them in the mail. By 1849, Ellsworth was gratuitously sending out 60 000 packages of seed each year. And while the Patent Office was instrumental in the distribution of seed and plant varieties from overseas, the important work of researching and developing these varieties– was undertaken by the nation's common farmers.

By 1860, foreign plant genes had been successfully domesticated and had become the foundation for a variety of regional agricultural economies. The symbiosis between state and farmer initiatives in procuring, disseminating, and developing seed appeared to be a resounding success, with national agricultural production supporting a population of 31.5 million and leaving a large enough surplus to be exported.

One should note that this success occurred to the dissatisfaction of the fledgling private seed trade that had so far been crowded-out. Also not entirely content were the many political and business elites connected to the farm as proprietors and landlords, who were supposedly unsatisfied with the trial-and-error nature of individual farmer practices. In keeping with the quickly-emerging capitalist *zeitgeist*, these political and business interests sought to maximize returns from the land and advocated for the systematization and institutionalization of agricultural research. This led to the funneling of more federal monies into agricultural research, most notably, by way of the establishment of agricultural schools in various states. In addition, due mainly to the lobbying of agricultural societies and journals (which served as the

institutional mechanisms to express the interests of their founders), the United States Department of Agriculture (USDA) was formed in 1862 to perform the work that had hitherto been undertaken by the Patent Office. This trend of state-supported agricultural research further continued with the passage of the Hatch Act of 1877, leading to the formation of state agricultural experiment stations. Throughout all this the private seed industry remained inconsequential.

Vignette Three: Art becomes science in the early 20th C - The simultaneous but separate re-discovery of Mendel's theory of heredity in the spring of 1900 by European botanists Hugo de Vries, Carl Correns, and Erich Tschermak brought plant breeding closer to the forefront of science. This discovery was a watershed, for the first time providing the plantbreeder with "a clear idea of how to proceed with crop improvement." (Wilkes, 1983:141).

Nonetheless, much theoretical work still had to be done to incorporate Mendel's ideas into a coherent body of theory, and it was to be thirty years before Mendelian ideas of heredity differences could be put into practice. When this occurred it was done in conjunction with Darwinian ideas of selection (Simmonds, 1979:13). The technique of "hybridization" was therefore complemented by "selection." According to Kloppenburg (*op cit.*, p.78) this new technique involved first the cross-breeding of two varieties by the combination of their heredity characters (to generate new genetic variability), followed by the application of single line selection to the progeny of the cross.

The marriage of Darwinian with Mendelian ideas and their practical application impacted plant breeding in several ways. But foremost were

changes in the institutional structure of plant breeding. Hence, corresponding to greater "scientification" of plant breeding, the USDA and the experiment stations grew in prominence over farms, just as the "scientific" plant breeders they employed displaced "dilettante" farmers to become the "official" plant breeders.

Despite this, the private seed industry remained marginal. Their exclusion was instituted by the policy of station administrators concerned about equity and the maintenance of quality. Public breeders were thus charged with setting standards on quality. Moreover, since new and successful breeding techniques were the fruits of public institutions, the private seed industry was effectively rendered irrelevant. In addition, because of inadequate legal protection covering newly developed varieties, the survival of the private seed industry was precarious. The ambitions of the private seed industry were therefore thwarted, and they remained inconsequential until as late as 1936. All this was to change with the introduction of hybrid corn.

Vignette Four: Seed becomes Commodity with Hybrid Corn - The development of hybrid corn has been considered one of the supreme accomplishments of public agricultural science. Corn yields, which had been declining in the US for three and a half decades (1900-1935), began to soar after the introduction of hybrid corn in the mid-1930s. Hybrid corn's impact on physical output was phenomenal: despite a reduction of 30 million acres on which grain corn was harvested between 1930 and 1965, the volume of production increased by over 2.3 billion bushels. Nonetheless, Berlan and Lewontin (1986) have cast doubts about the claim that hybrids increased

yields, citing not just a lack of evidence but also strong ideological and commercial motives for such a claim.

Indeed, what was particularly notable about hybrid corn was the manner in which it propelled the private seed industry from obscurity to the forefront of plant breeding and seed production. Steele (1978:29) reports that between 1934 and 1944, hybrid seed-corn sales went from virtually nothing to over $70 million as a multitude of new and established companies entered production. Kloppenburg (*op. cit.*) goes so far as to attribute the rapid growth of the American seed industry since 1935 to the development of hybrid corn.

But it was neither the supposed exponential yields nor the tremendous rate of return conferred by hybrid corn that can be said to be decisive in propelling the private seed industry into prominence. Rather, it was the technical properties of hybridization, ironically developed through public breeding efforts that opened the floodgates to the private seed industry.

Because a comprehensive understanding of the technical specifics of hybridization lies beyond the scope of this work, I shall here refer only to its most salient implications. To be sure, herein was the critical difference between open-pollinated and hybrid corn varieties: when saved and re-planted, seed from a hybrid corn variety exhibits a considerable *reduction in yield*. Kloppenberg thus (*op. cit*.: 93) writes, "Hybridization thus uncouples seed as 'seed' from seed as 'grain' and thereby facilitates the transformation of seed from a use-value to an exchange-value. The farmer choosing to use hybrid varieties must purchase a fresh supply of seed each year." (emphasis mine). Similarly, Berlan and Lewontin (*op.cit.*:43) point out that: "*Hybrid corn expanded the sphere of commodity production by creating a new and*

extraordinarily profitable commodity which could not have been produced by alternative breeding work." (authors' emphasis).

Hybridization thus became the choice method of breeding after 1935 because of its technical ability to disrupt nature by inhibiting the reproducibility of seed. It therefore provided the private seed industry with the means to commodify seed. Claims of the superiority and efficiency of hybridization (in terms of yields and rates of return) therefore obfuscate this fundamental *qualitative* transformation of plant breeding. The immediate objective at the time was to secure the means to commodify seed, and the technique of hybridization accomplished this. It was, in other words, not "objective" science but subjective, class-mediated capitalist imperatives that ultimately determined how plants were to be bred.

Vignette Five: Capital's Struggle for Dominion - Given the success and hegemony of public science in plant breeding up until this point, the ascendancy of the private seed industry and agribusiness generally, was destined to involve a struggle. Because the commodity (seed) that seed companies relied on for profits was publicly developed and widely available, an economic environment closely resembling the textbook model of 'perfect-competition' prevailed. In the absence of any product differentiation, it was natural that competition from farmers cut into the profit-margins of the private seed companies and thwarted the expansion and growth of the seed industry.

By crowding out private enterprise, state largesse in agricultural science constituted a fetter to private capital accumulation, and the private seed industry sought to find a way to dismantle it. Eventually, the private seed industry did this by appropriating public lines, then slapping on them a

proprietary designation. I will elaborate on these judicial/proprietary mechanisms later. For now, I will attempt to cast light on how the private seed industry was able to displace the hugely successful public breeding regime.

Given the success of public plant breeding, it is not surprising that its denouement had little to do either with its shortcomings or the virtues of a privatized breeding regime. Rather, the demise of public breeding was much the result of an intense ideological war that the private seed industry waged against the state. In this battle public agencies were urged by private breeders not to pursue activities that attracted private investment, but to concentrate on "basic" (as opposed to "applied") research. Public agencies were therefore encouraged "to develop inbred lines but to leave the decision as to particular combinations of inbreds to be marketed as commercial hybrids to private breeders." (Kloppenburg op. cit.:108).

By the early 1950s, the experiment stations in Illinois and Iowa had stopped the development of inbred lines altogether while the USDA followed suit in 1958. The dismantling of the nation's public research and breeding facilities, a good example of the state's capitulation to private capital, was an important watershed since it heralded a turning-point in U.S. (and by implication, global) agricultural development.

Of the several consequences of the state's capitulation to the private sector, perhaps the most significant was the reduction of open-pedigreed public varieties on offer. This occurred at the same time the range of (private) proprietary lines was expanding.

The state's withdrawal meant that public research and breeding were now subordinate to private enterprise. Whereas the dominance of public

breeding had previously allowed state (public) agencies to determine the extent of, and to discipline the market, these state agencies were now subordinated to the dictates of the market. Whereas the public agencies formerly dictated the research agenda, they now had to undertake research determined by the priorities of the private seed industry. In this fashion, the boundaries of research became tied to the commercial imperatives of private capital accumulation.

With public breeding now marginalized and subordinated to the profit motive of the private seed industry, the latter's rise to the top was secured. The initial barriers to the seed industry's ascendancy – its inability both to direct research and to claim proprietary rights - had now been circumvented. With that, the U.S. seed industry was now poised for the control of agriculture on a global scale. The following section will discuss how it has attempted this, via both technical and judicial means. Attention will be paid particularly to the latter by way of the institution of various plant breeder rights (PBRs) and other patent-like mechanisms.

III. Intellectual Property Regimes in Agriculture: Regulation or Cultural Usurpation?

Judicial and legal interventions corresponding to the foregoing developments in agriculture are of fundamental importance in modern societies since they help establish the rule of law and enable the claims of private property and ownership to be made. In the history of US agricultural development, such legal mechanisms were deployed as soon as the prevailing technology was able to intervene in nature's processes. That is to say, the conception of agricultural germplasm as private property was rendered feasible by the

introduction of hybridization as a breeding technique. Still, germplasm effectively became commodity only when the provisions for private property were mandated by law. This occurred in 1930, when the U.S. IPR regime in agricultural germplasm was inaugurated via the Plant Patent Act (PPA). I will here survey the features of such IPR regimes in agriculture from their inception with the 1930 PPA to their culmination with TRIPs in the mid-90s to highlight their ever expanding scope.

Plant Breeder Rights **-** As noted, intellectual property rights pertaining to agricultural germplasm resources first existed in the U.S. in the form of the 1930 PPA, a plant breeder right that conferred on the holder the exclusive right to reproduce, sell and use *asexually* propagated plants for 17 years. But the protection offered by the PPA was limited, covering only asexually reproduced crops, not plant parts, genes or traits and inapplicable to either germplasm or products of biotechnology (Butler, 1995).

The passage of the Plant Variety Protection Act (PVPA) by the US Congress in 1970 entailed more extensive plant breeder rights. The PVPA was conceived to offer protection to novel, uniform and stable varieties of plants that were *sexually* reproduced and could replicate 'truetype,' but which were not amenable to protection by the PPA. However, while now applying to seed-based, sexually reproduced crops, the 1970 PVPA remained limited. Its limitations were the result of two clauses; the first, known as the 'farmer's exemption,' allowed farmers to 'brown-bag' or save and sell the seed of the protected variety. The second clause was a 'research exemption' which conferred the owner of the plant variety certificate the right to use the

protected variety for the development and sale of new varieties (Santaniello et al., 2000:2).

Although the foregoing has focused on the history of agricultural development primarily in the U.S. context, it is important to note that the strategic use of the law to skew the conception of agricultural production as a private enterprise was by now becoming a trend not just in the U.S., but internationally. In fact the passage of the PVPA in the United States was not an international precedent but an event that followed the lead of 17 Western European nations (Kloppenburg, *op cit*.:130). The PVPA-specified breeder rights had also been adopted internationally by agencies such as the International Union for the Protection of New Varieties of Plants (UPOV).

The UPOV was established by the International Convention for Protection of New Varieties of Plants (the 'UPOV Convention') in Paris in 1961, entered into force in 1968, and subsequently revised in Geneva in 1972, 1978, and 1991 (http://www.mindfully.org/WTO/UPOV-Description.htm). The establishment of such supra-national institutions aimed at the expansion and harmonization of property rights regimes across the globe was an indication of the extent to which agriculture had become a global corporate enterprise. It was in this context of globalization that the need for globally harmonized IPR laws in agriculture became a matter of urgency, for insofar as corporations were engaged in international trade, local laws had to address their basic concerns, least of which was to guarantee their claims to property.

It was likely in response to such an imperative that in 1994, the 1970 PVPA was amended to bring US law into conformity with the UPOV convention of 1991. These amendments were substantive for they ultimately

resulted in the revocation of the 'brown bagging' aspect of the 'farmer's exemption' as well as the curtailment of the 'research exemption' clause of the original PVPA.

Utility Patents and the World Trade Organization's TRIPs Agreement - There are two specific events in recent history which led to the emergence of the TRIPs injunction of the WTO. As patent law in the US has evolved through case law (court rulings), the 1980 U.S. Supreme Court decision made in *Diamond*, Commissioner of Patents and Trademarks *v. Chakrabarty* served as a bellwether for later developments in intellectual property law. In this landmark case, the U.S. Supreme Court awarded a utility patent to Chakrabarty's genetically engineered oil–degrading micro-organism. This was unprecedented since utility patents had hitherto provided property protection exclusively to manufactures. The Supreme Court's decision was thus a legal precedent that heralded the new age of biotechnology by overturning the time-honored tradition that had excluded living organisms (life-forms) from patentability. It should be recalled that the Plant Patent Act of 1930, the first property rights regime to apply in agriculture, was explicit in excluding sexually-reproducing plant species, much less other living organisms from its purview. The Chakrabarty decision was also considered controversial because it was justified on the grounds that the oil-degrading micro-organism was a human invention (Anderson, 2000:83-84). Little heed was paid to the fact that micro-organisms were organisms, and as such, could not be human inventions.

The other historic event that is responsible for the TRIPs injunction is the 1994 Uruguay Round of negotiations of the General Agreement on Tariffs and Trade (GATT). The WTO emerged as the successor to GATT as a result

of these talks and a corresponding regime of intellectual property rights known by the acronym TRIPs became enshrined in its constitution. It was in this context that the evolutionary nature of U.S. patent regimes, by way of their development through case law, became pertinent.

According to Shiva (2001:95) and Balanya et al. (2000: 129) the basic structure of TRIPs was conceived of by the Intellectual Property Committee (IPC) of the U.S. and the industry associations of Europe and Japan. The IPC was a coalition of thirteen major U.S. TNCs which included Bristol Myers, General Motors, General Electric, Hewlett Packard, IBM, Johnson and Johnson, Rockwell International, Merck, Monsanto, and Pfizer, that was devoted to the implementation of an international property rights regime. Boosted by the legal precedent of the Chakrabarty ruling, the IPC particularly, and the Japanese and European industry associations jointly shaped and presented the guidelines of the TRIPs system to the GATT Secretariat in June 1988.

TRIPs was therefore not a result of negotiations among GATT member countries, much less that of a consultative process involving their citizens. Instead it was an imposition via legislative fiat of the will of a handful of corporations in the industrialized nations upon the rest of the world. In what is a telling indictment of the undue influence corporations wield in global affairs, James Enyart, a representative of Monsanto explains the life-science industry's attempts to put TRIPs on the GATT agenda as follows:

> Industry had identified a major problem in international trade. It crafted a solution, reduced it to a concrete proposal and sold it to our own and other governments… The industries and traders of world commerce have simultaneously played the role of patients, the diagnosticians and the physicians. (Enyart 1990: 53-6)

The 'Challenge' to the Ownership of Agricultural Germplasm **-** The fact that the TRIPs Agreement has been conceived to be legally effective globally should neither imply nor suggest the absence of alternative regulatory systems pertaining to agricultural germplasm. On the contrary, up until recently, tacit, consensual agreement existed within and across communities which regarded agricultural germplasm to be a common resource accessible to all. In other words, germplasm resources were traditionally considered to be our collective inheritance, freely shared, exchanged, and generally managed under what Raustiala and Victor (2004) refer to as a system of 'common heritage.'

Even in recent times, in the modern context of civil society and legal institutions, a variety of other regimes had existed prior to TRIPs to manage germplasm use and control (Helfer, 2004; Safrin, 2004; and Raustiala and Victor, *op. cit.*). The reason why such regimes lacked the legal force attained by TRIPs appears to stem from the immense power that private corporate interests wield over communal/collective concerns in the present socio-economic climate. Arguably, such corporate power can prevail in a material sense only if it is simultaneously sustained by society's ideological commitment to the canons of proprietary rights, private enterprise, and free markets. In other words, material interests (in the form of corporate power) reign here because they are undergirded by abstractions touting the superiority of private vis-à-vis collective forms of social organization. Corporate power prevails for it is exactly such tendencies toward a privatized/individuated social formation that constitute the ideological cornerstones (neo-liberalism) that define our times. In fact, as will soon be apparent, so pervasive is the latter ideology that even opponents of the concept of germplasm ownership

have begun - perhaps unconsciously - articulating their challenge in a neo-liberal lexicon.

I will examine here two such alternative germplasm-regulatory systems that preceded TRIPs, namely, the 1983 FAO International Undertaking on Plant Genetic Resources (henceforth, FAO Undertaking) and the 1992 UN Convention of Biological Diversity (CBD); and against the backdrop of the forces that constitute neo-liberal globalization, highlight the factors that led to their dissipation as credible challenges to the effort at instituting property rights in agricultural germplasm.

FAO International Undertaking on Plant Genetic Resources - The expansion of property rights regimes into the domain of agricultural germplasm throughout the 1970s which culminated with the strident nature of the 1980 Chakrabarty ruling generated widespread concern. Foremost among those aggrieved by this surreptitious incursion of property rights were many stakeholders in the typically gene-rich developing nations of the global South for whom agricultural germplasm resources were common heritage and subject to a system of open-access. With limited accessibility to international fora other than the United Nations organ, the UN Food and Agricultural Organization (FAO) became the natural platform for these countries to express their disdain at what was occurring. Indeed, the FAO became the site where the North-South conflict over germplasm resource management was played out.

In the context of the widespread adoption of IPRs in agricultural germplasm through agencies such as the UPOV in the 1970s, the 1983 FAO International Undertaking on Plant Genetic Resources (henceforth, FAO

Undertaking) may be seen as something of a countervailing response. Put on the FAO agenda by a coalition of developing countries and several sympathizers among the developed industrialized countries, the Undertaking articulated and promulgated the "universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction." (*Article* 1, http://www.fao.org/ag/cgrfa/IUhtml, last accessed 7 October 2007).

The Undertaking's "common heritage" approach was controversial because of its broad definition of plant genetic resources. According to the Undertaking, *all* germplasm, whether naturally-occurring (hence, "raw") or found in developed plant varieties ("developed" germplasm), were defined as common heritage and hence prescribed as a resource that ought to be available to all without restriction. As this stood in diametric opposition to the *raison d'etre* of plant breeder rights being formulated by the UPOV, which was to confer property rights in developed germplasm, the Undertaking was regarded by some to be an overt attempt to undermine the system of proprietary rights. Not surprisingly, the industrialized countries with established plant breeder rights systems vigorously opposed the Undertaking. Including the U.S., which was its most vociferous opponent, a total of eight industrialized countries issued formal objections and stayed away from ratifying it (Raustiala and Victor, *op. cit.*).

Nonetheless, by declaring agricultural germplasm to be humankind's common heritage, the Undertaking represented a symbolic victory of sorts for the developing countries. Importantly, it exposed the hypocrisy of the developed countries: eager to invoke "common heritage" on "raw" germplasm

but reluctant to do likewise when it came to "developed" germplasm. Since "raw" germplasm was considered freely appropriable, the aim of the Undertaking was to extend a similar consideration to "developed" germplasm; the reasoning being that the distinction between the two categories was arbitrary to begin with. What was perceived of as "raw" by the developed countries was, in most cases, the product of multi-generational, time-honored crop-improvement practices of traditional, collective, and community agricultural systems found in the developing countries.

Of course, the collective nature of crop-improvement in agriculture is hardly unique to the developing countries: one only has to review the history of U.S. agriculture above to be reminded that even the varieties that were the subject of the first U.S. plant breeder rights were built upon the collective yet largely unrecognized efforts of thousands of small-scale farmers throughout the country. It is, accordingly, difficult to claim any plant variety or germplasm to be "raw" per se. By the same reasoning, it is problematic to assert a certain plant variety or germplasm to be the product of any one person's labors exclusively. Germplasm resources are products of nature subject to subsequent collective human efforts at improvement. The "raw"/ "developed" dichotomy vis-à-vis agricultural germplasm appears to be a contrivance of self-interested entities hoping to reap even when they have not sown.

That the Undertaking represented *no more than a symbolic victory* for the developing countries serves as an indication of the stark political inequalities that characterize North-South relations. The asymmetry of power between the West and non-West may be underlined by the fact that unlike the

West European-backed PVPA, the developing-country sponsored Undertaking was *not* legally-binding.

But this is perhaps unsurprising. It would appear that the North, owing to its hegemony in the global political landscape, is conferred with the de facto power to write laws that set the limits of possible discourse and action. When the South is afforded the opportunity to respond, such a discourse invariably becomes the *lingua franca* that it adopts, and such limits become the boundaries it is constrained by. The 1992 Convention of Biodiversity is an apt illustration of such a reality.

The Convention on Biodiversity (CBD) - The "common heritage" concept of the Undertaking was dealt a fatal blow in the early 1990s. Ironically, its dissolution was a result of efforts at international environmental cooperation, which was spurred on by the growing consciousness in the 1980s, particularly in the global North, of the need for the protection of diverse ecosystems. At a conceptual level, the importance of targeting the ecosystem as a whole rather than aspects of it such as wetlands and particular animal species, which had hitherto been the focus of conservation efforts, may be credited to conservation biologists who were beginning to understand the inextricable interconnectedness of nature (Golley, 1993). At the practical level, the issue was forced onto the policy agenda in no small part as a result of heavy campaigning by civil society groups in the global North such as the International Union for the Conservation of Nature (IUCN).

Given this context, it is no surprise that as information about the erstwhile destruction of the tropical rainforests became widely publicized in the industrialized countries, the conservation of rainforests became part of the

larger movement calling for the protection of ecological diversity. Yet while this seemed like a logical extension of the concern for sustaining ecology and hence, a worthy cause for all thus inclined, it irked a number of developing countries in the global South which saw it as a violation of their sovereignty and an attempt to curtail their programs of national economic development.

The governments of countries such as Malaysia and India for instance, complained that it was unreasonable for civil society groups (such as the IUCN) and developed country governments to expect them to forsake their country's economic development in the interest of biodiversity conservation (Dutfield 2003:213). Given that these countries were resource rich, it was apparent that the proposed conservation, if implemented, would entail adverse implications for their forestry, agriculture, and mining sectors, and consequently, their economies. In casting the issue as one of national sovereignty, these developing-country governments argued that they had the right to determine how *their* resources were to be utilized. Moreover, since they often lacked the necessary technologies for resource exploitation, a part of their demands stressed technology transfer as a *quid pro quo* for developed-country access to their biodiversity resources.

Broadly speaking, the confrontation pitted the North against the South. It was a confrontation in which the North, largely through the activism of its civil society organizations, was concerned about biodiversity whereas the South, now a committed convert to the accoutrements of Western modernization, was concerned about the equitable sharing of the benefits that came from the exploitation of such biodiversity.

This prompted a long and difficult process of negotiations between the biodiversity- (or gene) rich countries of the global South and the gene-poor countries of the global North. Environmentalists, who were not spared the pervasive nostrums of mainstream economic theory, eventually ruled that instituting property rights in biodiversity, by way of their implicit accounting of the relevant benefits and costs, would provide the necessary incentives for ecological conservation.

The developing countries were thrilled by this prescription since it allowed them to benefit economically from their vast biodiversity resources while keeping foreign incursion and expropriation at bay. Hence, in an unprecedented move, the developing countries declared their sovereign control over forests and other biodiversity resources that lay within their national boundaries. Naturally, the developed countries were far less receptive to the idea: with their own interests in mind, they had hoped for the system of open-access in biodiversity to remain.

The ironies involved in the negotiations leading up to the adoption of the Convention of Biodiversity (CBD) should be apparent. By threatening the economic progress of the biodiversity-rich developing world, calls for ecological conservation led certain stakeholders in the former to embrace the notion of 'ownership' of biodiversity. This effectively undermined the system of 'common heritage' that constituted not only traditional practices, but which formed an inherent part of the cosmology of many communities in the global South. Significantly, in now conceiving of germplasm ownership and property rights as a tool of sovereignty, these developing countries were effectively dispensing with the 'common heritage' declaration they had worked so

assiduously, in the face of much developed-country opposition, to adopt as the central tenet of the Undertaking.

It is similarly ironic that as a result of its initiation of the CBD, the developed world had effectively undermined its ability to continue to freely appropriate the biodiversity riches of the developing world. Yet when framed in the context of the traditional North-South conflict pitting 'private property' against 'common heritage' practices of germplasm regulation, it may be argued that the global South had capitulated.

The issue at stake, after all, was not simply a matter of the developing countries accepting one mode of biodiversity regulation over another. It was more fundamental: it had to do with cosmology qua humanity's conception of nature; that is, with the very way nature was being perceived and related to.

The common heritage regime espoused by the developing countries pre-CBD and in the Undertaking was predicated on a philosophy that regarded humans to be a part of nature. This philosophy was congruous with the indigenous worldview and it is likely that the developing world's erstwhile conception of biodiversity as 'common heritage' owed to the lingering cultural memory of indigenous ways of life which were extant in these regions until their subsumption by nation-states. As Coates (2004:136) has put it, 'The manner in which different societies understood and understand their relationship to the physical world and the resources upon and within it sits at the heart of being indigenous and likewise, is one of the defining characteristics of surplus and industrial societies.'

The difference between the indigenous and the industrial-society worldviews cannot be more stark. Most of the developed countries of the

global North, whether consciously or otherwise, subscribed to notions of property rights in biodiversity on the basis of the Biblical assertion that humans have dominion over nature, thus separating them from, and justifying their exploitation of the natural world. In contrast, the indigenous perspective regarded humans as being "part of the 'land' and at best, as having stewardship responsibilities for their physical environment" (*ibid*). Accordingly, property rights in biodiversity would have been antithetical to the indigenous perspective.

At the core of this conflict was a battle of competing *worldviews* about the placement of human beings in the larger ecological order. In this context, the developing-countries' claim of sovereignty over the biodiversity found within their geographic boundaries was a negation of the indigenous perspective that had until now guided the biodiversity policies of these countries.

Seen in this light, the developing-countries' appeal to market mechanisms represented the global South's decisive capitulation to the ideology of unbridled material progress which, arguably, since the advent of European Modernity a few hundred years ago, has been relentlessly propagated by the global North. It is ironic that in its opposition to the North in the CBD negotiations, the South, which had by now been inured to a particular notion of progress (measured quite exclusively in terms of increases in Gross Domestic Product), had articulated its ideas of progress and development to the canons of Western modernization. In so doing, it not only surrendered the authorship of its future to the global North; it also severed what tenuous links it had with its indigenous heritage. Possessed of the fervor

to ‘develop,’ what little that remained of the indigenous vision of human-nature relations in the South was no longer tenable. Faced with the imperatives of Western-inspired modernization, indigenous perspectives had to give way to the materialist and rational conception of nature implicit in the industrial worldview.

Ironically, as a result of the so-called challenge posed by the developing countries in the CBD negotiations, the institution of property rights became accepted as the means by which the conservation of biodiversity would occur. In other words, the CBD regarded germplasm as a tradable commodity subject to national sovereignty rights, in the process granting the nations of the gene-rich global South the right to control their resources and to determine the conditions of access to them.[2]

The Convention on Biodiversity, however, included a caveat which urged states to ensure that the institution of such rights did not undermine the Convention’s larger, overall objectives.[3] But because this effectively sought to limit the right to germplasm ownership, the US, initially an enthusiastic proponent, refused to ratify the Convention.[4] Similarly, owing to the concern that this caveat would undermine the system of private property in biodiversity, the United Kingdom, France, Italy and Switzerland objected to it. It should be noted that these countries did eventually ratify the Convention albeit subject to certain interpretive statements.

The CBD’s acknowledgement of biodiversity as the sovereign claim of nation states implicated the regime of private property and in consequence, quashed the developing-world initiated Undertaking. In 1991, against the backdrop of negotiations taking place on the CBD, the FAO adopted an Annex

to the Undertaking which effectively dispensed with the concept of "common heritage", the principle around which the 1983 Undertaking was conceived. The Annex read: "the concept of mankind's heritage as applied in the International Undertaking on Plant Genetic Resources is subject to the sovereignty of the states over their plant genetic resources."

In one fell swoop, the common heritage approach that had guided the preservation of biodiversity in the global South over millennia was shunted out in favor of a market, property-based approach. Hereafter, the conception of germplasm as property (IPRs) became preponderant, laying the ground for their treatment in latter-day trade agreements such as TRIPs.

V. Conclusion

This paper has sought to reassess the purpose of IPR regimes in agriculture. Against their declared purpose of conferring rights to "people for the creation of their minds," which belies the distinct individualism and economistic-rationalism of a Eurocentric conception of society, I have argued and sought to demonstrate that IPR regimes are designed to facilitate the corporate expropriation of our germplasm commons. This expropriation has historically involved resource transfers from the South to the North, a trend still persisting today.

Moreover, the experience of U.S. agricultural development since its inception provides no basis for arguments that conceive of germplasm as " private property," which is the central feature of all IPR claims. Indeed, Crosby (1972) reminds us that as much as half of cultivable food crops in the New World were freely obtained from the Old World.

What is more, the history of early U.S. agriculture also refutes the individualist conception of innovation underlying all IPR regimes. Post-settlement U.S. agricultural development was predicated on the crucial symbiosis between a highly interventionist state procuring germplasm from abroad and the thousands of farmers across the country experimenting with it.

Meanwhile, we have seen countries in the global South dispensing with the open-access idea of germplasm as "common heritage" and, instead, articulating it in exclusionary, proprietary terms; that is, as a matter of national sovereignty. While this is understandably a means for them to safeguard *their* resources, it bodes ill for the prospect of sustaining any commitment to what was once the "commons" and the "communal," which raises a final question: Is there a way of overcoming the depredations of modernity without being depraved by it?

Notes

[1] http://www.wto.org/english/tratop_e/trips_e/tripfq_e.htm#WhatAre , accessed 4/26/2007. This is the 'natural rights' justification for patents, arguing that humans have a natural right in their ideas. Other common justifications include the 'distributive justice' argument, which regards the conferment of a patent as a just reward for the societal contribution made by the inventor. The 'utilitarian argument' posits that patents provide the necessary incentives for innovative activity and that correspondingly, innovation would stagnate in the absence of patents.

[2] For instance, article 15(1) of the CBD 'recognized the sovereign rights of States over their natural resources' and stated that 'authority to determine access to genetic resources rests with national governments.' By allowing the developing countries to regulate access to its resources and to share in the benefits that came out of their use (see for example, articles 16 and 19 regarding technology transfer and the distribution of benefits), it was hoped that the developing countries would be more inclined towards biodiversity conservation.

[3] Article 16(5) states: 'The Contracting Parties, recognizing that patents and other intellectual property rights may have an influence on the implementation of this

Convention, shall cooperate in this regard subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to its objectives.'

[4] Gerald Mossinghoff, who was the president of the pharmaceutical trade association and a former head of the U.S. Patent Office under the Reagan administration, wrote to President Bush, highlighting that the CBD 'would undermine the great progress your Administration has made in encouraging other countries… to strengthen their patent laws.' (Burk *et.al.*, 1993).

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