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Monocultures of the Law: Legal Sameness in Restructuring of Global Agriculture

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MONOCULTURES OF THE LAW: LEGAL SAMENESS IN THE RESTRUCTURING OF GLOBAL AGRICULTURE

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I. INTRODUCTION[1]

My objective with this paper is to examine the role of global laws in shaping how a particular type of transnational legal activity – multilateral intellectual property ("IP") agreements – is transforming the lives of ordinary people; in this case, by altering traditional agricultural practices within small-scale subsistence farming communities. That is, by disseminating within *communal* set-

1. This paper was presented at both the Eighth Annual Meeting of the Association for the Study of Law, Culture and the Humanities (March 11-12, 2005) and at the Canadian Law & Society's 2005 annual conference entitled "Law's Empire: A Critically Engaged Social-Legal Conference" (June 28-30, 2005). In addition to the many stimulating comments voiced during these two conferences, this paper has benefited from feedback from Rosemary J. Coombe and Allan Hutchinson. I thank all for their help.

tings an *industrial* agrarian model of monocultures, cash crops, and market primacy, to what extent is the global IP model a likely conduit for the reshaping of local sociocultural contours? I answer this question by examining prevalent international IP norms and their impact on the ways everyday people build their social and cultural spaces. In keeping with the efforts of an expanding network of sociolegal scholars and activists (often one in the same), my objective with this paper is to elevate the subject position of the poor and the powerless by examining the limits imposed by global law – a tool of the wealthy and powerful – on the lives of people in economically peripheral settings.

II. BACKGROUND

A. *Importance of IP to Global Capital*

Trade in the IP industry represents a key area of economic and political growth for agribusiness.[2] Like other industries, the dominant trend is one of consolidation of the major national players into a small number of transnational corporations, each with substantial vertical and horizontal integration.[3] The resulting concentration of economic might has permitted a small number of corporate conglomerates to acquire significant clout in the agriculture and IP industries.[4] In addition to the use of mergers and acquisitions to solidify their economic ascendancy, these agricultural industrialists tirelessly lobbied – in domestic and international settings – for the linking of IP related issues to the broader theme of international trade.[5] In tangible terms, they, along with other IP-dependent industries, sought to strengthen the depth of IP protection by empowering the World Trade Organization ("WTO") with adjudicatory powers, effectively acquiring a

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2. John A. Armstrong, *Trends in Global Science and Technology and What They Mean for Intellectual Property Systems*, GLOBAL DIMENSIONS OF INTELLECTUAL PROPERTY RIGHTS IN SCIENCE AND TECHNOLOGY 192, 194 (Mitchell B. Wallerstein, Mary E. Mogee, & Robin Schoen eds., 1993).

3. ETC GROUP, *Oligopoly, Inc. – Concentration in Corporate Power: 2003*, COMMUNIQUE, Nov./Dec. 2003, at 2, http://www.etcgroup.org/documents/ Comm82Oligop-NovDec03.pdf.

4. Susan K. Sell, *What Role for Humanitarian Intellectual Property? The Globalization of Intellectual Property Rights*, 6 MINN. J.L. SCI. & TECH. 191, 199 (2004) [hereinafter Sell, *What Role for Humanitarian IP*] (noting that six industrial groups control most of the technology and they are (i) Agrevo Plant Generic Systems; (ii) DuPont and Pioneer; (iii) EN, DNAP, Asgrow and Seminis; (iv) Monsanto, Calgene, DeKalb, Agracetus, PBI, Hybritech and Delta and Pine Land Co.; (v) Novartis; and (vi) Zeneca, Mogen and Avanta).

5. *See, e.g.*, Susan K. Sell, *Industry Strategies for Intellectual Property and Trade: The Quest for TRIPS, and Post-TRIPS Strategies*, 10 CARDOZO J. INT'L & COMP. L. 79, 89-98 (2002) [hereinafter Sell, *Industry Stategies*].

kind of trade sanction trump card.[6] They were successful across the board.[7] As a result of their efforts, IP is now a central component in the new multilateral trading system.[8] This summary of well-known developments in international trade is important to the forthcoming discussion because it provides context to the changing nature of agrarian food systems and background to the broader globalization debate as a whole.

B. *A Short Historical Review*

"If you eat you are involved in agriculture."

Until the trinity of colonization, industrialization, and urbanization took hold of the modern era, agriculture in both the South and the North was very much the responsibility of small farmers and their communities; research in the agricultural sector was carried out *by* farmers and *for* farmers.[9] For millennia then, agriculture was to be characterized by family-oriented, subsistence farming practices that "suited local conditions, culture and climate."[10] The developments of the European industrial revolution during the eighteenth and nineteenth centuries coupled with population explosions in both Europe and North America (unintentionally) changed this model by inaugurating the modern metropolis.[11] Shortly after the demographic remapping commenced, condensed population forces began to exact considerable pressure on the agricultural sectors of socie-

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6. *E.g.*, Peter Drahos, *Global Property Rights in Information: The Story of TRIPS and the GATT*, 13 PROMETHEUS 6, 12 (1995) (stating that the U.S. wanted to be included in the GATT because of the high standards of protection and enforcement); SUSAN K. SELL, PRIVATE POWER, PUBLIC LAW: THE GLOBALIZATION OF INTELLECTUAL PROPERTY 9 (2003) [hereinafter SELLS, PRIVATE POWER] (noting that the TRIPS Agreement "makes the WTO's dispute settlement mechanism available to address conflicts arising under TRIPS").

7. *E.g.*, Drahos, *supra* note 6, at 6-7 (noting the benefits of the GATT/TRIPS agreement for intellectual property); SELL, PRIVATE POWER, *supra* note 6, at 9.

8. *See* Sell, *Industry Strategies*, *supra* note 5, at 97-98 ("[T]he TRIPS agreement affirms the principle of national treatment and Article 33 mandates a 20 year minimum period for exclusivity of patent rights from the date of filing the patent application.").

9. *See, e.g.*, MIGUEL A. ALTIERI, AGROECOLOGY: THE SCIENCE OF SUSTAINABLE AGRICULTURE, 29 (2d ed. 1995) ("[M]odern agriculture entails increased distancing between . . . researchers and practioners."); VERONIKA BENNHOLDT-THOMSEN & MARIA MIES, THE SUBSISTENCE PERSPECTIVE: BEYOND THE GLOBALISED ECONOMY, 17-23 (Patrick Camiller, Maria Mies, & Gerd Weih trans., 1999) (1997). *See also* Victor Davis Hanson, *California Farming in a Classical Context*, 6 NEXUS 49, 50 (2001) (arguing that small family farms are disappearing because of the rise of the global market and vertical integration in the agricultural sector).

10. JOHN MADELEY, FOOD FOR ALL: THE NEED FOR A NEW AGRICULTURE 11 (2002).

11. *See* RODNEY R. WHITE, NORTH, SOUTH, AND THE ENVIRONMENTAL CRISIS 104 (1993).

ties which were expected to respond to the shifting feeding patterns: "[c]ities no longer evolved as a result of what the agricultural sector made possible. People living in cities decided what they needed, and then they determined how agriculture would make the necessary contribution."[12] In simpler terms then, the changing structure of society brought with it changes to the organization of farming; more specifically, the need for larger quantities of food gave rise to processes capable of intensifying crop productivity.[13] In addition to population pressures, global transformations in "social and political relations" and the expansion of an "externally-controlled international market system" also heavily impacted traditional farming systems.[14] Combined, these factors led to at least three radical developments in popular agrarian practices: the mechanization of farming procedures,[15] the consolidation of farmland,[16] and the transformation of farming production from intercropping to monocroping systems.[17] In no uncertain terms, these steps represented a complete reversal of the practices that were the norm during the earlier agricultural revolution.[18] To best ascertain the link between agriculture and global IP, I will focus exclusively on the third development.

C. *Monocroping vs. Intercropping*

Central to systems of subsistence farming are the following three practices: 1) "Inter or multi-cropping" (the growing of two of more crops simultaneously); 2) "Crop-rotation" (the alternation and the mixing of different crops); and 3) "Field fallow" (the ploughing and temporary abandonment of un-seeded fields during at least one growing season).[19] These practices were developed over nu-

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12. *Id.*

13. *See, e.g., id.*

14. COEN REIJNTJES ET AL., FARMING FOR THE FUTURE: AN INTRODUCTION TO LOW-EXTERNAL INPUT AND SUSTAINABLE AGRICULTURE 7 (1992).

15. *See, e.g.*, JACK KLOPPENBERG, FIRST THE SEED: THE POLITICAL ECONOMY OF PLANT BIOTECHNOLOGY: 1492-2000 117 (2001); Jerry Mander, *Machine Logic: Industrializing Nature and Agriculture, in* FATAL HARVEST, THE TRAGEDY OF INDUSTRIAL AGRICULTURE 17, 17-18 (Andrew Kimbrell, ed. 2002). During the Industrial Revolution in the eighteenth and nineteenth centuries agriculture became more mechanised, but small fields continued to be the norm. In the late nineteenth and twentieth centuries, the best land was set aside for export crops; limiting food crops. MADELEY, *supra* note 10, at 13-14.

16. *See, e.g.*, Steven J. Laurent, *Michigan's Right to Farm Act: Have Revisions Gone Too Far?*, 2002 L. REV. MICH. ST. U. DET. C.L. 213, 215 (2002) (citing Margaret Rosso Grossman & Thomas G. Fischer, *Protecting the Right to Farm: Statutory Limits on Nuisance Actions Against the Farmer*, 1983 WIS. L. REV. 95, 99 (1983)).

17. MADELEY, *supra* note 10, at 27-28.

18. *See, e.g., id.* at 11.

19. *See, e.g.*, ALTIERI, *supra* note 9, at 112-113, 234-239, 130. A similar procedure, known as "shifting cultivation," is also a popular practice in managing soil fertility. "Shifting

merous phases of trial and error by farming communities the world over.[20] Ultimately, it was determined that the application of these measures, in contrast to the continuous or consecutive planting of like crops, permitted the land to recover from the previous harvest thereby improving soil fertility,[21] providing better control over insects and diseases,[22] and optimizing long-term productivity.[23] These traditional farming techniques supplied farmers with stable (and sustainable) levels of crops for interminable periods of time without the use of mechanization or chemical inputs.[24]

In contrast, the core of industrial agriculture is monocroping: the intensive and continual farming of one type of crop or one variety of seed on each plot of land.[25] Monocroping is different from intercropping not only in the manner in which the land is utilized but also in the type of seeds that are sown and the kind of inputs applied: "[monocroping] requires high technology, chemical fertilisers, high-yielding seeds, irrigation, and labour-saving machinery."[26] These measures are necessary so as to breed crop varieties that exhibit persistent genetic uniform-

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cultivation involves an alternation between crops and long-term forest fallow. In a typical sequence, forest is cut and burnt to clear the land and provide ash as 'fertiliser' or 'lime' for the soil. Crop yields are typically high for the first few years but then fall on account of declining soil fertility or invasion of weeds or pests. The fields are then abandoned and the farmer clears another piece of forest. The abandoned field is left to fallow for several years or decades and thus has a chance to rebuild fertility before the farmer returns to it to start the process again." REIJNTJES, ET AL., *supra* note 14, at §3.2, *available at* www.ciesin.columbia.edu/docs/004-176a/004-176a.html.

20. *See, e.g.*, ALTIERI, *supra* note 9, at 107 (noting that small farmers have developed methods to meet their needs for centuries).

21. *E.g.*, James Stephen Carpenter, *Farm Chemicals, Soil Erosion, and Sustainable Agriculture*, 13 STAN. ENVTL. L.J. 190, 222-24 (1994). *See generally* ALTIERI, *supra* note 9, at 107-10 (noting that small farmers' practices were once regarded as "primitive," but are now recognized as legitimate). *See also* Katherine Spengler, *Expansion of Third World Women's Empowerment: The Emergence of Sustainable Development and the Evolution of International Economic Strategy*, 12 COLO. J. INT'L. ENVTL. L. & POL'Y 303, 324, n.175 (2001).

22. CARY FOWLER & PAT MOONEY, SHATTERING: FOOD, POLITICS, AND THE LOSS OF GENETIC DIVERSITY, 46-47 (1990) ("Mixed cropping made it difficult for pests and diseases to build up excessively . . . In a field of [diverse plants] a pest might gobble up one plant but find the next one different enough to be distasteful."); *e.g.*, ALTIERI, *supra* note 9, at 118-122.

23. *See generally* MADELEY, *supra* note 10, at 11. ("It was soon discovered that a crop grown in the same field for even two years in succession did not yield as well in the second year, and that fields benefited from a rest after a number of years.").

24. *E.g.*, ALTIERI, *supra* note 9, at 107; BENNHOLDT-THOMSEN, *supra* note 9, at 86-89.

25. *See, e.g.*, Carpenter, *supra* note 21, at 221 (after the second World War, inexpensive chemical inputs encouraged the shift to monocropping).

26. MADELEY, *supra* note 10, at 28.

ity: *an apple is an apple is an apple.*[27] In market-led agriculture, genetic uniformity is desirable because:

> [u]niformity translates into predictability of yield and ease of cultivation, which further translates into profit. If all plants within a monocultured crop bear the same requirements for water, nutrients, growing season length, etc., farmers can maximize growing and harvesting conditions simultaneously, without having to custom-tailor cultivation programs to different varieties.[28]

Though the transformation from a diversified agriculture to one of monocroping began during colonialism[29] – forced labour and excessive taxation are two examples of the tyrannical tactics used during colonial times to *persuade* resistive native populations to adopt this method[30] – monocroping became the standard system of agricultural production during the second half of the twentieth century; the period otherwise known as the "Green Revolution."[31] The Green Revolution is:

> the name given to the agricultural modernisation programme that swept across the South, and Asia in particular, CGIAR, in the 1960s and 1970s. Initiated by Northern institutions and powered by the [Consultative Group on International Agricultural Research], it encouraged countries to shift to monoculture farming dependent on chemical fertilisers and pesticides with the purported goal of increasing yields and agricultural profitability.[32]

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27. Klaus Bosselmann, *Plants and Politics: The International Legal Regime Concerning Biotechnology and Biodiversity*, 7 COLO. J. INT'L ENVTL. L. & POL'Y 111, 129 (1996) ("Genetic uniformity arises when many individual plants in a single crop have common parents and, as a result, a very similar genetic composition."). The problems with plant uniformity are colossal. In addition to narrowing our common genetic base, they also leave us vulnerable to widespread crop failures; that is, in a land where uniformity is sovereign, crops may be devastated by a single threat. For instance, in 1845 Ireland, the potato industry – which relied heavily on a very narrow number of potato types – was infected with an uncontrollable potato blight known as *Phytophtora infestans*. The result: one of the most severe famines of the nineteenth century and the deaths of between one and two million people. FOWLER & MOONEY, *supra* note 22, at 42-45.

28. Holly Saigo, *Agricultural Biotechnology and the Negotiation of the Biosafety Protocol*, 12 GEO. INT'L ENVTL. L. REV. 779, 793-94 (2000).

29. *See* Frances Moore Lappé & Joseph Collins, *Why Can't People Feed Themselves?*, *in* GLOBAL BACKLASH: CITIZEN INITIATIVES FOR A JUST WORLD ECONOMY, 81-82 (Robin Broad ed., 2002).

30. *See, e.g.*, WALTER RODNEY, HOW EUROPE UNDERDEVELOPED AFRICA 149, 164 (1982).

31. Genetic Resource Action Int'l, *What's in a Name? (More That You Might Think)*, SEEDLING, Jul. 2004, at 13, http://www.grain.org/seedling_files/seed-04-07-03.pdf.

32. *Id.* The Green Revolution was motivated by two distinct yet complimentary goals. On the one hand there was the humanitarian goal of feeding the hungry by developing high-yielding varieties of grain. On the other, there was the political goal of forestalling populist and communist revolutions. Quoting John King in the journal, *Foreign Affairs*, "[t]he major problem in

It should also be noted that this period produced the current *agribusinesses* phenomenon,[33] which is broadly defined as the rise of large agrochemical conglomerates in the global agricultural economy and the transformation of agricultural systems worldwide.[34]

To recap then, the industrial model of standardized crops and market-inspired yields stands in stark contrast to the agrarian one of locally adapted production and subsistence food systems. As will be made apparent in the forthcoming analysis, these two models embody a range of competing priorities: survival versus expansion and needs versus wants.[35] It is towards this ideological variance in which I turn my attention.

III. OF LAW AND CONFORMITY

In the first half of this section, I consider macro level consequences of the widespread adoption of monocroping such as the degradation of biological diversity and the current threat to global food security. In the second, I examine micro level effects; that is, the impact monocroping has had on local lifestyles, particularly within the *Global Souths*.[36]

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the struggle to keep South and Southeast Asia free of Communist dominations, is the standard of living of these peoples. The struggle of the East versus the West in Asia is in part a race for production, and rice is the symbol and substance of it." FOWLER & MOONEY, *supra* note 22, at 56. Accordingly, in their rush to quiet "political opposition in the countryside," Northern governments began to establish global crop breeding and research institutes that could create the means to "increase food production and still the radical fervor in Asia and Latin America" simultaneously. *Id.* at 56-57. "The green revolution answered the problem of hunger and rural unrest with increased production, not with land reform or employment projects; essentially it offered a technological solution to a social and political problem." *Id.* at 59; *see also* PETER PRINGLE, FOOD, INC.: MENDEL TO MONSANTO – THE PROMISES AND PERILS OF THE BIOTECH HARVEST 44-45 (2003) (offering a brief explanation of the green revolution).

33. *See, e.g.*, Vandana Shiva, *War Against Nature and the People of the South*, VIEWS FROM THE SOUTH: THE EFFECTS OF GLOBALIZATION AND THE WTO ON THIRD WORLD COUNTRIES 91, 104 (Sarah Anderson, ed., 2000) [hereinafter Shiva, *War Against Nature*].

34. *See generally* Bosselmann, *supra* note 27, at 129 (defining "agribusiness" as the existence of "the large, high yielding, intensive forms of farming that have developed in the West"); Shiva, *War Against Nature*, *supra* note 33, at 104 (noting that "Monsanto is the world's largest biotechnology corporation").

35. *See generally* David Fazzino, *The Meaning and Relevance of Food Security in the Context of Current Globalization Trends*, 19 J. LAND USE & ENVTL. L. 435, 442, 445 (2004) (contrasting the current goals of agricultural biotechnology, which are to serve the needs of transnational corporations by producing cash crops that are genetically modified to subsistence farming, with the differing goals of traditional productions systems).

36. *Id.* at 439, n.28 (" 'Global Souths' include not only the 'periphery' areas of the globe, which have been referred to as less (or least) developed countries, third world countries and undeveloped countries but also periphery areas in the 'developed' countries such as the United

A. *The Destabilization Effect*

1. *The disappearance of agricultural diversity*

"[T]he single greatest threat to our agricultural heritage comes from agriculture itself, from the replacement of traditional seeds and farming practices by modern, inbred crop varieties."[37]

First, agricultural diversity or agrobiodiversity is being obliterated.[38] In one of her many books, *Monocultures of the Mind*, environmental activist and corporate globalization critic Vandana Shiva makes a convincing argument that current threats to planetary ecological health should be considered in light of the global ascendancy of Western-style monocroping.[39] Shiva's research has established that monocroping is a root cause in an ongoing evolutionary blight.[40] The displacement of traditionally grown crops and wild plants – varieties characterized by their richness of diversity and depth of adaptability – has resulted in the extinction of countless plant types and, correspondingly, the loss of invaluable genetic information.[41] Let me explain. From a botanical perspective – and contrary to the agricultural industrialist viewpoint – plants are more than just food crops or potential window dressing; they are akin to *biodatabases* because of the profound evolutionary records they enclose.[42] Just as we as a civilization regard historical documentation as crucial for our *cultural* survival, plants enclose information that is essential to our *physical* survival. In effect, the knowledge these plants contain secures the "capacity of agricultural ecosystems to continue producing renewable resources."[43]

States. Rather than viewing the life circumstances of those in these 'Global Souths' as an inherent component of systems of economic domination, they have been viewed predominately by the fields of history and anthropology as a 'cultural problem' which can only be addressed by changing the backward or 'redneck' ways of 'locals.'" (citing PEM DAVIDSON BUCK, WORKED TO THE BONE: RACE, CLASS, POWER, & PRIVILEGE IN KENTUCKY 7 (2001)).

37. FOWLER & MOONEY, *supra* note 22, at 78.

38. *See, e.g.*, VANDANA SHIVA, MONOCULTURES OF THE MIND: PERSPECTIVES ON BIODIVERSITY AND BIOTECHNOLOGY 12, 13 (1993) [hereinafter SHIVA, MONOCULTURES OF THE MIND] (noting and showing the disappearance of the very conditions for alternatives to exist).

39. *Id.* at 12.

40. *Id.* at 51-52 (noting that monocultures act against nature's process; pointing to the experience of PICOP and a 50 per cent drop in yield of useful wood after first cut).

41. *See id.* at 12 (monocultures of new plants destroy local plant diversity).

42. *See generally* RONNIE VERNOOY, SEEDS THAT GIVE: PARTICIPATORY PLANT BREEDINGS 2-5 (2003) (describing "genetic erosion" as the loss of variety in plants, animals, and evolution).

43. *Id.* at 5.

There are numerous benefits to a healthy ecosystem. For instance, the dynamic evolution of diversity or "biological cross-breeding" is only possible when plants are permitted to grow unfettered.[44] This freedom promotes the development of organic resistances to both diseases and pests, essentially strengthening their natural defenses to predators and climactic hardships.[45] Another advantage is the equilibrium that diversity creates among pests and diseases. These plights are only known to attack very specific species of plants suggesting that mass crop failure rarely occurs in a varied environment.[46] Through the imposition of uniform varieties on vast expanses of land, monocroping has essentially eroded this biodiversity by forcing into extinction an array of wild plants and unpopular domesticated ones.[47] In contrast to this industrially favored approach, subsistence practices such as crop rotation and multicropping help enrich plant diversity by "maintaining the genetic variation that is essential to continued evolution and adaptation of plant genotypes."[48] Simply put, multicroping and diversity promote a healthy ecological balance; monocroping and uniformity do not.[49]

2. *Tearing down gastronomic traditions*

Second, on a world scale, agriculture is being transformed from heterogeneous local *food* systems to homogenous industrial *production* systems.[50] The distinction is important. In the former, traditional ecological agriculture and the cultivation of culturally appropriate staples are given precedence: for instance, though decreasing, in most subsistence farming communities "[s]taple foods [destined for local consumption] cover about 62 per cent of the arable area."[51] In the latter, however, staples and native food crops are gradually replaced with luxury (high-profit) export-oriented commodities – *cash crops* – such as coffee

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44. *See* FOWLER & MOONEY, *supra* note 22, at 60-61 (noting that the greatest wealth of diversity was in Third World countries before U.S. or European intervention).

45. *See* ALTIERI, *supra* note 9, at 307-308; VERNOOY, *supra* note 42, at 5 (loss of diversity resulted in decreased resilience).

46. *See, e.g.*, ALTIERI, *supra* note 9, at 309, 311 ("Genetic diversity offers great potential for genetically controlling pathogens." "In Iowa, since 1968 eleven multiline oat cultivars have been introduced, and are grown on about 400,000 has, so far without loss from crown rust.").

47. SHIVA, MONOCULTURES OF THE MIND, *supra* note 38, at 56.

48. VERNOOY, *supra* note 42, at 5.

49. *See* ALTIERI, *supra* note 9, at 112-14 (outling the advantages of crop diversity).

50. *See generally* FOWLER & MOONEY, *supra* note 22, at 75 (describing the challenges faced by Third World farmers, who had to learn new skills because of challenges to traditional, subsistence agriculture); Shiva, *War Against Nature*, *supra* note 33, at 94.

51. MADELEY, *supra* note 10, at 21.

and cocoa beans, sugar, shrimp, beef, cotton, rubber, and tobacco.[52] Promises of higher income persuade many farmers to abandon the cultivation of traditional crops and adopt these unsustainable alternatives, essentially causing communities to, somewhat masochistically, destroy the very agricultural diversity on which their livelihoods depend.[53] Indeed, from the perspective of small-scale farmers, monocroping is opposite of financial autonomy as it destroys the conditions of renewability of forest ecosystems, an attribute essential to subsistence farming communities who continue to rely on local plant biodiversity for their dietary sustenance:[54] "[p]eople in many parts of Africa and Asia still use wild plants for food and derive important nutritional value from them."[55] As the habitats of these wild plants are cleared for commercial monocroping, nutritionally essential plants are eclipsed, harming household food security and leaving behind a void in native diets.[56] Stated otherwise, when lands are converted to export-driven monocroping, their availability for domestic food cultivation diminishes, heavily impacting the food security of local populations and endangering their self-sufficiency.[57] Ultimately, as agriculture becomes more capital-intensive, the focus shifts toward "the interests of higher income markets . . . resulting in the development of crops unsuitable for subsistence and smallholder farming and a dearth of research beneficial for less lucrative micro-climates."[58]

Crop genetic diversity enables farmers to adapt crops suited to their own ecological needs and cultural traditions. Communities that lose traditional varieties, adapted over centuries to their needs, risk losing control of their farming systems and becoming dependent on outside sources of seeds and the inputs

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52. *Industrial Agriculture Will Feed the World,* FATAL HARVEST: THE TRAGEDY OF INDUSTRIAL AGRICULTURE 50, 51 (Andrew Kimbrell ed., 2002); MADELEY, *supra* note 10, at 24-26.

53. *See generally* FOWLER & MOONEY, *supra* note 22, at 76-77.

54. SHIVA, MONOCULTURES OF THE MIND, *supra* note 38, at 50.

55. FOWLER & MOONEY, *supra* note 22, at 77.

56. Wild plants serve another critical role in maintaining a healthy balance within the many different ecosystems. Not only do people derive their dietary requirements from them, but the genes of wild plants are also essential for the improvement of popular crop plants, particularly because of their innate genetic resistance to pests and disease. "Such uses of wild genes underline the need to conserve wild species as resources for the plants that sustain humankind." *See, e.g.*, OTTO H. FRANKEL, ANTHONY H.D. BROWN & JEREMY J. BURDON, THE CONSERVATION OF PLANT BIODIVERSITY 11 (1995).

57. MADELEY, *supra* note 10, at 23-24 (it should be noted that food security is both a fundamental concern and a fundamental human right as reflected in Article 25 of the Universal Declaration of Human Rights and Article 11 of the International Covenant on Economic, Social and Cultural Rights).

58. Sell, *What Role for Humanitarian IP*, *supra* note 4, at 200.

needed to grow and protect them. Without an agricultural system adapted to a community and its environment, self-reliance in agriculture is impossible.[59]

It is of course ironic (in a macabre sort of way) that the core component of *modern* agriculture, allegedly developed to alleviate global famine, has actually produced greater food *in*security than what existed prior to its introduction.[60]

3. *Monocroping a barrier to self-sufficiency*

Third, as successful monocroping is only possible through the application of costly (patented) externalities such as high-yielding and disease-resistant seeds, chemical fertilizers, pesticides and herbicides, and soil fumigation compounds, small farmers are increasingly being buried under an inescapable mountain of debt.[61] In essence, shortly after the initial transition (the Green Revolution), farmers came to discover that "[a]chieving high yields [through monocroping] required fertilizer and irrigation. Fertilizer and irrigation nourished weeds as well as crops, creating the need for herbicides. And pests found the uniformity of new varieties appetizing, which necessitated the use of insecticides as well."[62] As additional expenditures compel additional costs, the bulk of which are beyond the means of most small-scale farmers,[63] this aggressive need for inputs severely disrupted farming communities throughout the world by entrenching economic and class divisions.[64] "The [United Nations Food and Agriculture Organization's] much heralded Green Revolution, with its technologically generated maximum yields, has led in India, Thailand, Mexico and elsewhere to the concentration of land among those with the most capital, and to a veritable army of

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59. Hope J. Shand, *Intellectual Property: Enhancing Corporate Monopoly and Bioserfdom*, FATAL HARVEST: THE TRAGEDY OF INDUSTRIAL AGRICULTURE 321, 323 (Andrew Kimbrell ed., 2002).

60. *See generally* Ellen Messer, *Food Systems and Dietary Perspective: Are Genetically Modified Organisms the Best Way to Ensure Nutritionally Adequate Food?*, 9 IND. J. GLOBAL LEG. STUD. 65, 66-67 (2001) (noting the debate between proponents and opponents of GMOs and its effects on the global economy, most notably the small local farmers); Fazzino, *supra* note 35, at 445-446 (highlighting the importance of the "traditional production systems" used by local farmers around the world, and how it not only benefits them in regard to food security, but also increases this food security at the global level).

61. *See generally* Jason Waanders, *Growing a Greener Future? USDA and Natural Resource Conservation*, 29 ENVTL. L. 235, 240 (1999) (arguing that commodity programs require the use of chemical fertilizers and pesticides in order to maximize yields, but this is expensive and depletes the quality of the soil).

62. FOWLER & MOONEY, *supra* note 22, at 58.

63. Shiva, *War Against Nature*, *supra* note 33, at 94-95.

64. *See, e.g.*, PRINGLE, *supra* note 32, at 53 (describing disparities between rich and poor farmers).

landless peasants."[65] To complete the vicious cycle, farmers end up borrowing money from the companies that sell the seeds and pesticides, leaving them more indebted and less self-sufficient than they were before making the transition.[66] There is more.

The expansion of global IP regimes has not only encouraged this particular agricultural production system but also accelerated the solidification of asymmetrical power relations in the agricultural industry.[67] In addition to holding the patents to the only seeds suitable for monocroping, the same small number of global corporations also have title to the chemical inputs necessary to achieve the marketed levels of performance.[68] Indeed, due to vertical integration within the seed and chemical industries – widespread merger activity between chemical companies, biotechnology firms, and seed suppliers – the leading corporations now command unprecedented power in the shaping of social and economic policies within all aspects of the agricultural sector.[69] For example, the top three agrochemical companies - DuPont-Pioneer, Monsanto and Novartis – are also the top three seed controlling companies worldwide and the top three suppliers of the chemical inputs on which high-yielding seeds depend.[70] By providing multinational corporations with the tools to "dominate both seed production and crop chemicals," plants are now being "bred to grow most effectively in association with pesticides and herbicides."[71] This development is far from "the best option

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65. BENNHOLDT-THOMSEN, *supra* note 9, at 82.

66. Shiva, *War Against Nature*, *supra* note 33, at 95.

67. *See, e.g.*, FOWLER & MOONEY, *supra* note 22, at 76 (describing the change in cultures, values, and power relationships as part of this expansion).

68. *See, e.g.*, Robert Scott, *Exported to Death: The Failure of Agricultural Deregulation*, 9 MINN. J. GLOBAL TRADE 87, 91 (2000).

69. Genetic Resources Action Int'l, *Turning the Paddy Gold: Corn in Southeast Asia*, SEEDLING, Sept. 1999, http://www.grain.org/seedling/index.cfm?id=98.

70. *See generally id.* (stating that the majority of patents are held by only a few big U.S. agrochemical corporations, and its these same corporations that also control the seed trade worldwide); Carmen G. Gonzalez, *Trade Liberalization, Food Security, and the Environment: The Neoliberal Threat to Sustainable Rural Development*, 14 TRANSNAT'L L. & CONTEMP. PROBS. 419, 425 (2004) (arguing that farmers in developing countries face an uphill battle because large transnational companies are engaging in vertical integration, which allows them to dictate prices for agricultural inputs); Fazzino, *supra* note 35, at 443 (explaining that Article 27(3)(b) of the Agreement on Trade-Related Aspects of Intellectual Property protects agribusiness by ensuring that a country adopts a patent regime of IP rights). It should also be noted that the world's top ten seed corporations accounted for one-third of global commercial seed sales, with even greater concentration prevailing in the world's largest food crops such as maize and soybeans. According to Monsanto, only four companies control upwards of seventy-five percent of the global maize seed market (excluding China), and eighty-six percent of the commercial maize germprasm is controlled by seven companies. ETC Group, *supra* note 3, at 6.

71. Bosselmann, *supra* note 27, at 128.

either for the local environment or local farmers" particularly since "[c]heaper and more environmentally friendly options such as crop rotation, inter-cropping, and growing different crops [are being] overlooked."[72] To summarize, while subsistence farming empowers communities by making agricultural self-sufficiency and economic autonomy possible, monocroping has the opposite outcome by increasing local dependency on foreign export markets, foreign technology, and foreign food imports, hence, the global economy.[73]

4. *Pseudo-benefits of industrial agriculture*

I have just examined how traditional agrarian practices are being challenged by the neo-liberal vision of agricultural development. Overall, this vision of agricultural development embraces a capital and chemical intensive approach to farming which has had numerous deleterious effects on traditional agrarian practices.[74] I argue the most detrimental feature of this new era is monocroping, primarily because it disengaged food production from food consumption. Unsurprisingly, this disengagement undermined the autonomy on which subsistence farming communities depend.[75] With this in mind, and before proceeding to the IP portion of the paper, I would like to clarify a couple important points.

Despite the extremely damaging effects of monoculture production systems, it would be deceptive to disregard the (few) advantages occasioned by the industrial agricultural model. For example, many benefits have been derived from the global interchange of exotic crops.[76] Various farming communities, such as those in Talea, Mexico, have succeeded in appropriating and integrating *foreign* crops while maintaining their traditional subsistence cultivation, thus improving household food security and local food bases.[77] Moreover, the introduction of foreign crops into non-native parts of the world has, on at least a minor level, advanced agrobiodiversity by familiarizing local farmers with varieties of foreign crops they would otherwise not have had access to.[78] This new diversity is being utilized by local farmers to strengthen indigenous varieties through

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72. *Id.*

73. Shiva, *War Against Nature*, *supra* note 33, at 98-99.

74. MADELEY, *supra* note 10, at 14.

75. Shiva, *War Against Nature*, *supra* note 33, at 94 (stating that industrial agriculture has made it extremely difficult for small self-sufficient farmers to survive).

76. *See, e.g.*, PRINGLE, *supra* note 32, at 50 (highlighting that the distribution of the dwarf rice in the Phillipines during the 1960s led to it becoming self-sufficient in rice production for the first time in decades, and similar results were seen in Colombia).

77. Fazzino, *supra* note 35, at 446.

78. PRINGLE, *supra* note 32, at 50.

cross-breeding and enhanced intercropping.[79] Next, the initial rise in food accessibility this new method netted cannot be denied.[80] During the 70s and 80s, the total amount of food available for each person on the planet did in fact increase by 11 percent, while the "number of hungry people fell from 942 million to 786 million, a 16 percent drop."[81] Though yields have since declined,[82] to the hungry of the world even a brief respite is cause for celebration.[83] From a policy perspective, another (debatable) benefit is the rise in foreign currency earnings occasioned by the adoption of an export-oriented agricultural program.[84] In certain countries, this policy has led to a boost in individual purchasing power of imported foreign products (conversely though, I concede that for reasons that go beyond the scope of this paper this particular economic stratagem is unlikely to sustain long-term yields, economic or otherwise).[85]

Finally, though I am trenchant in my critique of monocroping and the role played by global legal processes in advancing this method, I am not suggesting that trade representatives, international lawmakers, or agribusinesses intentionally set out to starve the poor, condemn farmers to serfdom, and annihilate global agrobiodiversity. Monocroping must be studied within a larger paradigm of economic and cultural globalization. In the end, it is just a tool in "a broader phenomenon whereby subsistence agriculture is being challenged and its practitioners integrated into the market economy."[86] It is to the method of integration that we now turn our attention to.

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79. *See generally* Fazzino, *supra* note 35, at 447 (citing to programs like Sustainable Agriculture Network and Extension (SANE) which introduces agro-ecological techniques to small farmers and enables them to maximize yields with minimal inputs while at the same time assists in ecosystem maintenance).

80. *See, e.g.*, PRINGLE, *supra* note 32, at 50.

81. *Id.*

82. *Id.* at 55.

83. The preceding notwithstanding, it has been established by numerous authors including Frances Moore Lappé, Joseph Collins, and Amartya Sen that monocroping and industrial production have, over time, led to an increase rather than a decrease in world hunger. These authors, *inter alia*, have compiled considerable evidence demonstrating feeding the world is a problem of distribution rather than production. *See, e.g.*, AMARTYA SEN, RESOURCES, VALUES, AND DEVELOPMENT 452-80 (1984).

84. *See* ALTIERI, *supra* note 9, at 27.

85. *See, generally id.* at 27, 31 (stating that modernization has only fully integrated some into the market economy, creating a gap between the peasant farmers and the large-scale producers economically, socially and culturally).

86. FOWLER & MOONEY, *supra* note 22, at 75.

B. *The Role of IP Regimes*

In the context of agriculture then, the multilateral IP regimes that dominate international trade relations – beginning with the many conventions of the Union for the Protection of New Varieties of Plants ("UPOV")[87] and followed by the Agreement on Agriculture, Trade Related Aspects of Intellectual Property Rights ("TRIPS"), and TRIPS-plus bilateral agreements[88] – have built the legal and economic infrastructure necessary for the proliferation of monocultures, successfully crowding out other non-conforming agricultural systems. How was this achieved? First, by insisting on the universal character of Northern foundational intellectual property theories – the necessity of protection and exclusion for the promotion of innovation,[89] that all human creative expression is "value driven,"[90] and the centrality of economics in the advancement of global prosperity (the economic efficiency rationale)[91] – developing countries are using the World Intellectual Property Organization ("WIPO") to put forth favorable initiatives to advance

87. Convention for the Protection of New Varieties of Plants, Dec. 2, 1961, 33 U.S.T. 2703, 815 U.N.T.S. 109 [hereinafter UPOV]. The 1991 revision of the UPOV broadened the scope of plant breeder protection in several ways. First, it restricted the right of other breeders to use UPOV protected varieties for research purposes. Second, and more ominously, it categorically revoked farmer's privilege. *See generally* Sell, *What Role for Humanitarian IP*, *supra* note 4, at 203-204 (comparing the 1991 UPOV to the 1978 UPOV and highlighting the differences). What is more, as indicated in n. 105, assent to the 1991 version of the UPOV is a key condition to the emerging bilateral and regional free trade agreements. At present, approximately thirty-five Southern countries have adopted national plant variety protection programs with eighteen of these countries joining the UPOV. For more on the proliferation of UPOV 1991 and its place in TRIPS-plus agreements, see especially GENETIC RESOURCES ACTION INT'L, PVP IN THE SOUTH: CAVING IN TO UPOV (2004), http://www.grain.org/rights_files/PVP-South-status-Sep-2004.pdf.

88. "TRIPS-plus refers to policies, and policy-making processes, that embody commitments which go beyond the minimum standards set out in the TRIPS Agreement." GENETIC RESOURCE ACTION INT'L, TRIPS-PLUS: WHERE ARE WE NOW? 1 (2003), http://www.grain.org/rights_files/trips-plus-where-2003-en.pdf. These commitments include, *inter alia*, the patenting of plants, animals, biotechnological inventions, and 1991 UPOV standards for plant variety protection. *Id.* For a more detailed analysis of the use of bilateral and regional free trade agreements in the "ratcheting" of global intellectual property standards, *see* PETER DRAHOS, EXPANDING INTELLECTUAL PROPERTY'S EMPIRE: THE ROLE OF FTAS 1-19 (2003), http://www.grain.org/rights_files/drahos-fta-2003-en.pdf.

89. *See, e.g.*, Keith Aoki, *(Intellectual) Property and Sovereignty: Notes Toward a Cultural Geography of Authorship*, 48 STAN. L. REV. 1293, 1330-32 (1996); David G. Scalise & Daniel Nugent, *International Intellectual Property Protections for Living Matter: Biotechnology, Multinational Conventions and the Exception for Agriculture*, 27 CASE W. RES. J. INT'L L. 83, 86-87 (1995).

90. Ruth L. Gana, *Has Creativity Died in the Third World? Some Implications of the Internationalization of Intellectual Property*, 24 DENV. J. INT'L L. & POL'Y 109, 112 (1995) [hereinafter Gana, *Has Creativity Died in the Third World*].

91. *See* Sell, *What Role for Humanitarian IP*, *supra* note 4, at 191, 194.

their own position as "importers of foreign technology."[92] Professor Stephen Marglin hit the mark when he stated that the "universally agreed upon guidelines to which developing societies must conform are actually impositions of Western standards;" impositions made possible by the economic vulnerability that typifies Southern societies within the international economic framework.[93]

Many scholars – such as Marci Hamilton[94] and Ruth L. Gana[95] – have condemned the various global IP regimes for their capacity (and role) as instruments of cultural suppression. Gana, for example, argues that by requiring that all nations "establish particular forms of protection for intellectual goods as a condition to membership in the new multilateral trading system" TRIPS "impinges upon the freedom of a collective to observe, develop and preserve the underlying values of its society as expressed through law."[96] Though accurate, Gana's argument (which echoes that of other critics such as Hamilton) is incomplete. Not only do global IP norms *passively* inhibit the development of culturally appropriate laws, but they *actively* reorganize the social order of cultures by altering perceptions of knowledge and property; effectively transforming internal systems and practices.[97] The distinction is important. Though the peoples of the South might perceive their societies differently from those in the North, in that they have different concepts of ownership and property, they are forced to adopt a foreign Western language to defend the fundamentals of their culture.[98] By dictating the language of the debate, the dominant canon co-opts alternate views thus, most egregiously, eroding cultural diversity. For example, opponents of the excessively broad patent and plant varieties' regimes can no longer speak in terms of safeguarding food sovereignty or promoting the sustainable use of bio-

92. Drahos, *supra* note 88, at 3.

93. Stephen A. Marglin, *Development as Poison: Rethinking the Western Model of Modernity*, HARV. INT'L REV. 70 (2003); *see* Ruth L. Gana, *The Myth of Development, The Progress of Rights: Human Rights to Intellectual Property and Development*, 18 LAW & POL'Y 316, 334-35 (1996).

94. Marci A. Hamilton, *The TRIPS Agreement: Imperialistic, Outdated, and Overprotective*, 29 VAND. J. TRANSNAT'L L. 613, 614 (1996).

95. Now Ruth Okediji.

96. Gana, *Has Creativity Died in the Third World, supra* note 90, at 112; Celine Charveriat & Mary Kirkbride, Cambodia's Accession to the WTO: How the Law of the Jungle is Applied to One of the World's Poorest Countries (2003), http://oxfam.org/en/files/doc030902_ cambodia_accession?searchterm=cambodia's (pointing out that Cambodia's Accession to the WTO was a costly one to the agricultural sector, which comprises of 80% of the population).

97. Gana, *Has Creativity Died in the Third World, supra* note 90, at 141-42.

98. *See generally* BENNHOLDT-THOMSEN, *supra* note 9, at 17-23 (describing the history of the concept of subsidence farming and the attack on it). "The modern debate over intellectual property protection in developing countries has failed to take account of cultural differences which affect the understanding of what constitutes property or what may rightfully be the subject of private ownership." Gana, *Has Creativity Died in the Third World, supra* note 90, at 115-16.

logical resources.[99] Since their entrance on the globalization and biodiversity stages, transnational IP agreements have become star players, defining and directing the rights and responsibilities on which the controversies now hinge.[100] Because of this, challenges to IP rules must now be framed in IP terms; i.e. the only permitted vocabulary is one of innovation, reward, compulsory licensing, patent revocation, and rights for bearers of traditional knowledge. I turn to Rosemary Coombe: "[o]nce all questions of authorship, originality, use, and access to ideas and expressions become framed in terms of property rights, discussion simply seems to end and maximum protection seems ordained; *how can one argue in favor of theft*?" [Emphasis added.][101]

At this point, readers may be growing impatient for the agricultural connection. How does the standardization of Northern IP norms produce transformations in traditional agrarian societies?

IV. THE TRANSFORMATIVE POWER OF IP: BENEFITS TO INDUSTRIAL AGRICULTURE

As examined earlier, the viability of industrial agriculture, with its substantial use of hybrid seeds, fertilizers, herbicides, and other chemicals, depends heavily on both patent and plant variety protection.[102] This makes the establishment of a corresponding legal framework essential for the viability of the industry. Considered below are two instances where UPOV (a key IP accord) initiated the transformation of traditional agrarian practices within subsistence farming communities.

A. *In the Name of Sameness*

Under TRIPS, the protection of plant genetic resources (including seeds) must be provided in the form of patents, an effective *sui generis* system, or a combination thereof.[103] For decades now, the most recognized *sui generis* system

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99. *See* Sell, *What Role for Humanitarian IP*, *supra* note 4, at 199-200 (arguing that minimum global intellectual property standards has concentrated power with a few global corporations, which could leave farmers in some of the poorest countries at "the bottom of the technology and growth ladder").

100. *See id.* at 191-92 (stating that the effects of TRIPS are wide reaching on states that violate the agreement, which includes, but is not limited to, trade sanctions imposed by the WTO).

101. Rosemary Coombe, *Commodity Culture, Private Censorship, Branded Environments, and Global Trade Politics: Intellectual Property as a Topic of Law and Society Research*, *in* THE BLACKWELL COMPANION GUIDE TO LAW AND SOCIETY 369, 372 (Austin Sarat ed., 2004).

102. *See, e.g.*, Bosselmann, *supra* note 27, at 128-29.

103. *See* GENETIC RESOURCES ACTION INT'L, *supra* note 87, at 2.

has been the UPOV convention, which has served as a darling for breeders in Northern industrialized nations because of the legal criteria it imposes.[104] To obtain protection under the convention, a plant variety must satisfy the following stringent requirements.[105] First, it must be novel, meaning that, at the time of filing the variety can have neither been sold nor otherwise disposed of for purposes of exploitation.[106] Second, the variety must be "distinguishable . . . from any other variety whose existence is a matter of common knowledge."[107] Third, the variety must be sufficiently uniform in its relevant characteristics.[108] And fourth, it must be stable; that is, the relevant characteristics must remain unchanged "after repeated reproduction or propagation."[109]

Without a doubt, the UPOV standards outlined above – novelty, distinction, uniformity, and stability – were explicitly designed to meet the needs of high-input and market-oriented agriculture because *the objective is to breed crop varieties in such a manner so as to achieve persistent genetic uniformity in each individual plant.*[110] Small-scale farmers (i.e. farmers who do not engage in monocroping) find the established criteria extremely prohibitive because of the conflicting nature of their practices; subsistence farmers value such traits as taste, nutritional content, ease of growth, and, *decisively*, the capacity to adapt.[111] Indeed, because generations of subsistence farmers have gathered wild plants and cultivated traditional ones, local varieties have developed into rich repositories of crop genetic diversity, exhibiting greater genetic heterogeneity and less genetic stability than their commercial counterparts.[112] This heterogeneity – scornfully identified as *instability* – leads to adaptability, which is an essential and preferable trait among subsistence farming communities because it permits local varieties to withstand ever-changing agro-ecological conditions such as drought, inundation, and pest diseases, thus ensuring a community's food security and survival.[113] Clearly, subsistence farmers will almost invariably select a variety that has an established record of adaptability over one that does not, meaning that a variety's novelty, distinctness, or stability falls quite low on a subsistence

104. *Id.*
105. *See* UPOV, *supra* note 87, at art. 6.
106. *See id.* at art. 6(1)(b).
107. *See id.* at art. 6(1)(a).
108. *See id.* at art. 6(1)(c).
109. *See id.* at art. 6(1)(d).
110. *See* Naomi Roht-Arriaza, *Of Seeds and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities*, 17 MICH. J. INT'L L. 919, 941 (1996).
111. *Id.* at 934.
112. *Id.*
113. *Id.* at 939, 941 (noting that the TRIPS requirement that inventions must be "capable of industrial application" excludes subsidence farmers).

farmer's priority list. Finally, the demand for crop uniformity is mostly desirable from the perspective of agribusinesses and global markets, it being an essential feature when mass-producing and mass-marketing a product.[114] For obvious reasons, to subsistence farmers, appearance or aesthetics is a rather trivial concern.

To summarize, UPOV sanctifies – and thus attaches importance to – the necessary criteria for monoculture production systems.[115] In so doing, it transforms many agricultural societies by increasing the tendency towards the adoption of monocroping; indirectly eliminating diversity in farming systems.[116] I argue that the UPOV standards are hostile to the livelihoods of small-scale farmers in that, in addition to displacing traditional cultivars, they also negate crucial sharing practices such as inter-farmer seed procurance and seed exchange.[117] I explore how this is done in the coming section.

B. *Corporate Primacy*

Though once agreeable to certain traditional subsistence practices such as experimentation and farmer's privilege[118] – the right of farmers to save part of their harvest to use the following year without having to repurchase the seeds – the UPOV convention was amended in 1991 so as to severely restrict these options.[119] In fact, the new treaty goes so far as to outline the very narrow conditions under which inter-farmer seed procurance and seed exchange can occur.[120] This is having drastic consequences on the ability of subsistence farmers to preserve their traditional practices. For example, to comply with obligations under the new IP regimes, certain nations have adopted legislation that permits farmers

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114. MADELEY, *supra* note 10, at 28.

115. *See generally* UPOV, *supra* note 87.

116. *See generally* Roht-Arriaza, *supra* note 110, at 942 (noting that the UPOV disadvantages small farmers twice: it first makes it difficult for them to use protected varieties of plants, then it also makes it difficult for them to protect their own innovations); SELL, PRIVATE POWER, *supra* note 6, at 143 (stating that the 1991 amendments to the UPOV are very generous to corporate breeders, and greatly restrict farmers' rights); Sell, *Industry Strategies*, *supra* note 5, at 106 (noting that the UPOV is very generous to corporate plant breeders).

117. *See generally* Michael T. Roberts, *J.E.M. Ag Supply, Inc. v. Pioneer Hi- Bred International, Inc.: Its Meaning and Significance for the Agricultural Community*, 28 S. ILL. U. L.J. 91, 115-16 (2003) (stating that the prohibition of a farmer's right to save seed compels farmers to spend more money on seed); SELL, PRIVATE POWER, *supra* note 6, at 143 (pointing out that the 1991 amendments to the UPOV eliminated the "farmers' privilege").

118. John H. Barton & Eric Christensen, *Diversity Compensation Systems: Ways to Compensate Developing Nations for Providing Genetic Materials*, *in* SEEDS AND SOVEREIGNTY: THE USE AND CONTROL OF PLANT GENETIC RESOURCES 338, 340 (Jack R. Kloppenburg ed., 1988).

119. SELL, PRIVATE POWER, *supra* note 6, at 143.

120. Barton & Christensen, *supra* note 119, at 340.

to use only registered varieties of seeds.[121] Since certain varieties are not registered, and individual small farmers cannot afford registration costs, many farmers are becoming dependent on the seed industry[122] and, in a dramatic number of cases, out of agriculture altogether.[123] In India for instance, the Ministry of Agriculture has been trying to pass the National Seed Bill.[124] The draft bill makes registration of seeds mandatory for all farmers, effectively empowering breeders – those who can afford registration – and disempowering farmers – those who cannot.[125] In a nation with over 105 million farming families and where the average farm holding is the equivalent of one hectare or less,[126] such a policy has the potential to intensify the subservience of small farmers by shifting control over seeds to the corporate sector.[127] Since the bill's proposal, a very vocal resistance sympathetic to the cause of farmers has formed within India's ruling party and succeeded in delaying its adoption.[128] As stated by the executive chairman of the opposition, Dr. Krishna Bir Chaudhary, in a letter to the National Advisory Council:

> The bill is a clear trap to curb the traditional and indigenous rights of our peasantry to grow, breed, multiply, preserve and exchange seeds . . . Sinister as it is, it will demolish the time tested agrarian culture and the socio-economic fabric of the rural India that has for centuries worked faultlessly and sustained our small and marginal farmers, having even less than two acres of land. 83% farmers use their own farm-saved seeds. In one stroke, the National Seed Bill on enactment will reduce . . . farming families into pathetic non-entities and make them captive at the mercy of seed multinationals, aided and abetted by the unabashed and insensitive state machinery.[129]

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121. *See, e.g.*, Dept. of Agric. & Cooperation, The India's Seeds Bill, http://www.agricoop.nic.in/seeds/seeds_bill.htm (last visited Jul. 22, 2006) [hereinafter The Seeds Bill] (stating that in Chapter III of The Seeds Bill the only seed permitted to be sold must be registered with the Registration Subcommittee).

122. *See, e.g., id.*

123. *See, e.g.*, PATRICK HERMAN, FOOD FOR THOUGHT: TOWARDS A FUTURE FOR FARMING 4 (Patrick Herman and Richard Kuper trans., Pluto Press 2003) (2002) (stating that the effects of the Common Agricultural Policy were mostly negative for small farmers).

124. The Seeds Bill, *supra* note 122.

125. *Id.* (Chapter III, Article 13, Paragraph 1, states: "No seed of any kind or variety shall, for the purpose of sowing or planting by any person, be sold unless such seed is registered under sub-section (2) by the Registration Sub-Committee in such manner as may be prescribed.").

126. Interview by Sue Slamen with Dr. Monkombu Sambaivam Swaminathan, founder of the M.S. Swaminathan Research Foundation, in Australia (2004), *available at* http://www.abc.net.au/global/radio/swaminathan.htm.

127. *See, e.g.*, FOWLER & MOONEY, *supra* note 22, at 75.

128. Ashok B. Sharma, *Draft of Seed Bill May Be Delayed*, THE FIN. EXPRESS, Apr. 11, 2005, http://www.financialexpress.com/fe_full_story.php?content_id=87586.

129. *Id.*

Seed registration policies are an inevitable outcome to the expansion of the modern IP model into the agricultural industry.[130] Now that "[t]echnology and domestic legal regimes have converged to create an understanding of germplasm as paradigmatic intellectual property," seeds have essentially been reclassified from product of nature to product of industry.[131] Though a product of nature is perceived as part of the commons, products of industry are not; accordingly, and before the ink dries, acts that used to be taken for granted by millions of farmers worldwide – the saving of seeds for reuse, trade, and research – are henceforth to be regarded as criminal offences.[132] For example, "it is now expressly illegal for farmers to sell or save seeds from proprietary crop varieties without receiving permission from breeders and paying royalties."[133] Irrespective of the fact that no law was ever required to make these practices *legal*, UPOV is being used to rob the farmer of "her / his social, cultural, economic identity as a producer. A farmer is now a 'consumer' of costly seeds and costly chemicals sold by powerful global corporations through powerful landlords and money lenders locally."[134] In keeping with the trend of the day, the desires of agribusiness – to prevent farmers from replanting saved seed thereby compelling repeat purchases from seed companies[135] – are given priority over the needs of subsistence farming communities.[136] This outcome is far from unexpected since the very raison d'être of modern IP protection is to boost economic interests; TRIPS protects intellectual effort that is, above all, exploitable.[137]

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130. Keth Aoki, *Weeds, Seeds & Deeds: Recent Skirmishes in the Seed Wars*, 11 CARDOZO J. INT'L & COMP. L. 247, 251 (2003).

131. *Id.* at 250 (it should be noted that germplasm is the protoplasm of the germ cells that contains chromosomes and gene that are used to determine an organism's characteristics).

132. VANDANA SHIVA, STOLEN HARVEST: THE HIJACKING OF THE GLOBAL FOOD SUPPLY 90 (2000).

133. Sell, *What Role for Humanitarian Intellectual Property*, *supra* note 4, at 202-03 (quoting SETH SHULMAN, OWNING THE FUTURE 90 (1999)).

134. Vandana Shiva, *Znet Commentary: The Suicide Economy of Corporate Globalisation*, ZNET, Feb. 19, 2004, http://www.zmag.org/sustainers/content/2004-02/19shiva.cfm.

135. Roberts, *supra* note 117, at 115.

136. Roht-Arriaza, *supra* note 110, 941; *see also* David R. Nicholson, *Agricultural Biotechnology and Genetically-Modified Foods: Will the Developing World Bite?*, 8 VA. J.L. & TECH. 7, 21 (2003).

137. F. Willem Grosheide, *General Introduction* to INTELLECTUAL PROPERTY LAW: ARTICLES ON THE LEGAL PROTECTION OF CULTURAL EXPRESSION AND INDIGENOUS KNOWLEDGE 1, 6 (F. Willem Grosheide & Jan J. Brinkhof eds., 2002).

V. OF AGRICULTURE AND CULTURAL DIVERSITY

The intersection between agronomy and intellectual property is particularly helpful in measuring the impact of global law on ordinary people because of the centrality of farming in the lives of *everyone*. Indeed, food is more than a simple means of sustenance; it embodies a people's identity, geography, and history.[138] Patricia Howard provides a powerful description of the intimate relationship that exists between agriculture and cultural identity:

> The entire history of [many farming communities]...shows that much of their plant biodiversity (or agrobiodiversity) exists because they have 'disturbed' their local natural environment and have shaped those environments to provide all the elements necessary to their well-being. These environments have in turn shaped their culture: that is, nature and culture have co-evolved. Once this co-evolution is made explicit, it becomes axiomatic that the preservation of global plant biodiversity requires the preservation of local cultural diversity. Culture dictates what is sacred, what is desirable, what is taboo, what is beautiful, what is wealth and what is poverty in a world that is biologically bountiful. A world that is culturally poor is likely to be biologically poor, and the reverse is likely to be just as true.[139]

Few would argue against the assertion that industrial agriculture is gradually changing the practices of subsistence farming communities.[140] The question that waylays in the horizon is whether this transformation is substantial enough to alter the inner culture these communities have come to enjoy. Without suggesting that culture is static, it should come as no surprise that my answer to this question is yes. For the reasons outlined above, there is little doubt that industrial farming calls for different skills than those subsistence farmers have come to know.[141] Obvious examples are the application of chemical pesticides and fertilizers and the overseeing of vast irrigation systems.[142] Then there is the acquisition of the expertise necessary to manage – crop storage – and sell – marketing and finance – the larger (and uniform) harvests.[143] "For many a Third World farmer, it was not just a new way of farming that had to be learned, but a whole new world view that had to be assimilated."[144] Indeed, as articulated by Cary Fowler and Pat Mooney, "[t]he seeds came with the genetic code of the

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138. Patricia L. Howard, *Women and the Plant World: An Exploration, in* WOMEN & PLANTS: GENDER RELATIONS IN BIODIVERSITY MANAGEMENT AND CONSERVATION 1, 2-3 (2003).

139. *Id.* at 3.

140. *See* Shiva, *supra* note 134.

141. *See* FOWLER & MOONEY, *supra* note 22, at 75.

142. *Id.*

143. *Id.*

144. *Id.*

society that produced them."[145] Clearly, whether this new world view is deemed harmful or not must be weighed against the status one occupies within a given society; in a hierarchical world, there are no absolutes, only perspectives.

For instance, economic opportunists were probably grateful for the dependence on externalities industrial agriculture generated while working-class persons were not, with the latter group (though not the former) appreciating the new farming skills they acquired. The foregoing notwithstanding, it is safe to presume that since the number of opportunists in a given society is usually small and the number of working-class great, a larger percentage of people are likely to be discontent with the dependence these new methods engendered. Moreover, since food is fundamental in the defining of cultural identity,[146] this new world view does not restrict itself to Southern farming practices reaching the very hearts of communities. For instance, cherished customs in Central America and Mexico such as communal property, *ejidos*[147] (collective agricultural landholdings), and the notion "that seeds should always been given as gifts and never sold" were condemned when the process of commercializing and centralizing Southern agriculture began.[148]

Coming at this from another angle then, I would say that as communities gradually become disconnected from the internally developed agricultural practices that best sustain them, cultures worldwide begin to lose many of the skills that were (and often remain) essential to both their identity and their survival: "with increasing dependence on resources from outside the traditional subsistence system, the importance of agriculture and the specialized cultivation skills required to maintain a dependable food source are lost as other priorities take place."[149] This intellectual loss can have substantial adverse effects on the sustainability of a culture as a whole.[150] Even within a single generation, "the loss of knowledge about agricultural biodiversity and the capacity to cultivate" that results from the widespread reliance on market-driven agrarian practices can be devastating.[151] Indeed, for a subsistence based community, the intergenerational

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145. *Id.* at 76.

146. *See, e.g.*, SIDNEY W. MINTZ, TASTING FOOD, TASTING FREEDOM: EXCURSIONS INTO EATING, CULTURE, AND THE PAST 13 (1996).

147. Jessa Lewis, *Agrarian Change and the Privatization of Ejido Land in Northern Mexico*, J. OF AGRARIAN CHANGE, Jul. 2002, at 401, 403.

148. FOWLER & MOONEY, *supra* note 22, at 75.

149. Shirley Hoffman, *Arawakan Women and the Erosion of Traditional Food Production in Amazonas Venezuela*, *in* WOMEN & PLANTS: GENDER RELATIONS IN BIODIVERSITY MANAGEMENT & CONSERVATION 258, 265 (Patricia L. Howard ed., 2003).

150. *Id.* (noting that these skills won't be recovered once the older generation is gone).

151. *Id.*

"transfer of critical skills and knowledge" must be maintained at all costs.[152] If it is interrupted during the younger generation's maturation process, "it is doubtful whether these skills [could] be fully recovered once the older generation is gone."[153] At the heart of the debate then are questions of economic, political, metaphysical, and ideological significance.[154] We return to Patricia Howard: the "'productivist agriculture' archetype is fast replacing cognisance of those ethno-systems that are co-produced by local cultures and nature."[155] It is industrial agriculture that has put these ethno-systems at risk.[156]

I conclude this section with a lengthy quote from Wendell Berry on the defining characteristics of an agrarian *mindset* and a subsistence economy. I do so because he offers one of the most passionate, succinct, and thorough descriptions of the difference between agrarian and industrial agriculture:

> An agrarian economy rises from the fields, woods, streams – from the complex of soils, slopes, weathers, connections, influences, and exchanges that we mean when we speak, for example, of the local community or the local watershed. The agrarian mind is therefore not regional or national, let alone global, but local. It must know on intimate terms the local plants and animals and local soils; it must know local possibilities and impossibilities, opportunities and hazards. It depends and insists on knowing very particular local histories and biographies. [...]
>
> An agrarian economy is always a subsistence economy before it is a market economy . . . It is the subsistence part of the agrarian economy that assures its stability and its survival. A subsistence economy necessarily is highly diversified, and it characteristically has involved hunting and gathering as well as farming and gardening. These activities bind people to their local landscape by close, complex interest and economic ties. The industrial economy alienates people from the native landscape precisely by breaking these direct practical ties and introducing distant dependences.[157]

For subsistence farming communities then, what is at stake is more than the control they exert over agricultural production or the access they enjoy to sustainable and nutritional food supplies – albeit these are undoubtedly of pre-

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152. *Id.*

153. *Id.*

154. *See, e.g*, Sell, *What Role for Humanitarian IP*, *supra* note 4, at 198-99 (noting the economic concentration in the life sciences industries and new concerns of "threats to traditional agriculture and food security [and] abuses of monopoly power" among others).

155. HOWARD, *supra* note 138, at 4.

156. *Id.* (noting that reduction in biodiversity is prevalent in the industrialized world).

157. Wendell Berry, *The Whole Horse: The Preservation of the Agrarian Mind, in* FATAL HARVEST: THE TRAGEDY OF INDUSTRIAL AGRICULTURE 7, 9 (Andrew Kimbrell ed., 2002).

eminent importance – at issue is the ability of these communities to define and manage their needs, cultures, and livelihoods; in short, their very identities.[158]

VI. CONCLUSION

Places are more than mere spatial enclaves inhabited by stable or static communities; they are "dynamic and open [spaces] whose meanings and [borders] are constituted within a cross-cutting network of [local and] often global social relations and understanding."[159] As I have shown, this definition rings particularly true for farmers of the world. Subsistence farmers' emerging subservience to a market economy and to an array of extraneous IP regulations has resulted in a reconfiguration of their communal lifestyles.[160] This is far from unexpected as, to quote a favorite chestnut of many high school physics teachers: *action equals reaction.* What is surprising, I find, is the importance given to the action – in this case the adoption of various agreements such as UPOV and TRIPS, and the widespread indifference towards the reaction – the impact of these agreements on the lives of everyday people. Save for a handful of sociolegal scholars (though I acknowledge once again that the number is increasing), few academics examine the effect of globally centralized legal arrangements on groups that inhabit the periphery; in N'gugi wa Thiong'o's words, *few move the center.*

My objective with this paper was to examine global law's role in shaping local culture and identity by conceptualizing – and contextualizing – it as a catalyst for social change. To achieve this, I sought, implicitly, to underscore the need for a *transcultural, translegal,* and, significantly, *transclassal* understanding of law and culture, in other words, one that considers the political, social, cultural, and economic realities that distinguish the spaces where global laws are adopted with those where they are experienced and, in many cases, resisted. By looking past the institutional rationales and by highlighting the influence wielded on the life of the common person, I hoped to transcend the law as it is constructed and engage the law as it constructs. Indeed, and contrary to popular

158. *See generally* Helena Norberg-Hodge, *Global Monoculture: The Worldwide Destruction of Diversity, in* FATAL HARVEST: THE TRAGEDY OF INDUSTRIAL AGRICULTURE 13 (Andrew Kimbrell ed., 2002) (discussing the effects of globalization on cultural diversity and the importance of agricultural diversity).

159. Jens Lachmund, *Knowing the Urban Wasteland: Ecological Expertise as Local Process, in* EARTHLY POLITICS: LOCAL AND GLOBAL IN ENVIRONMENTAL GOVERNANCE 241, 242 (Sheila Jasanoff & Marybeth Long Martello eds., 2004).

160. *See* Sell, *What Role for Humanitarian IP*, *supra* note 4, at 200-204; *see also* FOWLER & MOONEY, *supra* note 22, at 75.

opinion, the law does not always follow the social; instead it is often taking the lead in shaping it.

As I see it, the Achilles' heel of the contemporary world is not the homogenization of social conditions and social practices; rather, it is the standardization of social thought. This intellectual homogeny further entrenches political and economic divisions as marginalized groups of the world are forced to struggle with a social and legal discourse that fails to recognize their realities.[161] Indeed, the innermost flaw of international lawmaking is its insidious insensitivity towards the contextual realities of the non-privileged masses.[162] This has two immediate effects. First, it denigrates the cultural preferences of those who find themselves outside the *center*. Second, it erodes cultural diversity by imposing a rigidly precise view of the world.[163] In this case, our short-sightedness has given rise to a series of agricultural, ecological, and cultural vulnerabilities.[164] If this is an indication of things to come, perhaps the crescendo of globalization will be the advent of a *meta*culture (a truly ugly word) with all *sub*cultures being relegated to either periphery or history. Such a grim future can of course be averted. However, it is only by refocusing on, and rethinking about, the impact of triumphant global legal processes on the realities of local cultures, that can we begin to conceive of a strategy that will help us promote, rather than inhibit, cultural diversity.

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161. I have benefited from (and am indebted to) an unidentified individual at the Eighth Annual Meeting of the Association for the Study of Law, Culture and the Humanities for their part in helping me understand this point (Mar. 17-18, 2006, Syracuse University College of Law).

162. *See generally* CULTURE AND RIGHTS: ANTHROPOLOGICAL PERSPECTIVES 29 (Jane K. Cowan, Marie-Bénédicte Dembour, & Richard A. Wilson eds., 2001) (noting that, "[f]ailing to tackle the contradiction inherent in promoting a relativistic view of development and a universalist view of ethics is at best naïve and, at worst, dangerous"). Marglin, *supra* note 93 (describing the current international development structure, emphasizing that states are forced to conform to the same standards).

163. *See* CULTURE AND RIGHTS, *supra* note 162, at 29.

164. *See* FOWLER & MOONEY, *supra* note 22, at 75.