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THE MEANING AND RELEVANCE OF FOOD SECURITY IN THE CONTEXT OF CURRENT GLOBALIZATION TRENDS

DAVID FAZZINO*

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I. INTRODUCTION

Food security, a multi-dimensional issue, has gone through several iterations in international policy.¹ Conceptual shifts on which element of food security is most crucial have occurred in recent decades, in order to fully address food security one must consider production, storage and distribution of food.² To this trinity I would also add (although not discuss) consumption of food based on (a) cultural considerations, such as food taboos or food allergies, and (b) household considerations, such as timing and distribution of food within the household and ability to purchase food. This paper will briefly explore the meaning and relevance of the dimensions of food security in the context of current trends of

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1. JOHAN POTTIER, *ANTHROPOLOGY OF FOOD: THE SOCIAL DYNAMICS OF FOOD SECURITY*, 11-18 (1st ed. 1999)

2. *See id.*

globalization, which occurs not only at the economic level but also at the cultural, social and individual levels as well.

II. HISTORICAL BACKGROUND

Before departing on this project it is crucial to develop some historical background on food security in order to demonstrate the current relevance of food security. Globalization of food and food systems occurred since at least as early as the 'Columbian Exchange'³ of European expansion and even earlier on a hemispheric level with extensive trade routes that had been established throughout Europe, Asia and Africa before 1400 C.E.⁴ In the 1400s, the Europeans adopted an expansionist foreign policy⁵ to (1) acquire gold, (2) shift population to other temperate climates; (3) produce commodities for export to their home countries and (4) achieve freedom from hunger.⁶ This expansionism had dramatic impacts on native North and South American populations — particularly their cuisines and diets,⁷ production systems,⁸ and population structure as a result of native mortality from the introduction of European diseases.⁹ European expansionism and colonialism of Africa also had dramatic impacts on agricultural production systems in Africa by the European establishment of plantations.¹⁰ This forced Africans into the production of cash crops

3. The "Columbian Exchange" is the exchange of biological resources between the European, African and American continents that began on a massive scale with Columbus's voyage. It was prompted by the desire to seek out new resources by which European leaders could increase the wealth of their countries. Amongst the resource expropriations from the "New World" were living plant and animal materials, which made their way to the "Old World" (Europe). Europeans also introduced several species of plants and animals with which they were familiar into the New World. The effects of these transatlantic food production systems impacted not only food security, but also disrupted the ecological familiarity of the landscape. See ALFRED W. CROSBY JR. *THE COLUMBIAN EXCHANGE: BIOLOGICAL AND CULTURAL CONSEQUENCES OF 1492 - 30TH ANNIVERSARY EDITION*, 1, 64, 165-66 (1st ed 2003).

4. ERIC WOLF, *EUROPE AND THE PEOPLE WITHOUT HISTORY*, 28 (1st ed. 1982) (mapping "Old World" trade routes in 1400, which connected Africa, Asia and Europe).

5. See *id.* at 129.

6. France, agriculturally the richest nation in Europe, had sixteen general food shortages in the 18th century. ALFRED CROSBY, *ECOLOGICAL IMPERIALISM: THE BIOLOGICAL EXPANSION OF EUROPE, 900-1900*, 20. (1986)

7. SOPHIE COE, *AMERICA'S FIRST CUISINES*, 56 (1994).

8. SIDNEY MINTZ, *SWEETNESS AND POWER: THE PLACE OF SUGAR IN MODERN HISTORY*, 47-51(1985) (explaining that sugar production in the colonial era was the first industrialized production process).

9. JARED DIAMOND *GUNS, GERMS AND STEEL: THE FATES OF HUMAN SOCIETIES*, 213 (1999).

10. See Frances Moore Lappé & Joseph Collins, *Why People Can't Feed Themselves*, In *GLOBAL BACKLASH: CITIZEN INITIATIVES FOR A JUST WORLD ECONOMY* 82 (Robin Board ed., 2002).

for export to the mother country, and policies favoring white settler farmers.¹¹

Thus, the politics of food and food security can be seen to be a crucial, if underscored, part of the history of European expansionism. Mintz noted this when he commented on the invisibility of the 'awful' power of food politics, where people in distant lands, such as a member of a corporation's board of directors acting on behalf of shareholders or members of a legislature acting on behalf of citizens, make decisions that lead to food insecurity and death.¹² Mintz's commentary is a call for anthropologists to make food politics as it relates to hunger, and thus food security, relevant.¹³

This analysis of food security's relevance will occupy the first part of this paper, specifically focusing on how food security is undermined by corporate interests operating at national and international levels. The second portion of this paper will address the contributions that globalization has made in the realization of food security both from the perspective of resiliency and adaptability of 'indigenous' food systems as an integral component of food security and the international institutional support from both multilaterals and civil society organizations that local food production initiatives have received. This paper will use the meaning and relevance of food security as a lens to pierce the corporate veil and look at the difference between the win-win situations envisioned by corporate interests in public-private partnerships and what I call the 'survive-survive relationships' envisioned by civil society organizations in an assortment of partnerships between the private, public and 'third sector.'¹⁴

11. *See id.*

12. *See* SIDNEY MINTZ, *TASTING FOOD, TASTING FREEDOM: EXCURSIONS INTO EATING, CULTURE AND THE PAST*, 11 (1996). Mintz called on anthropologists to establish, "the linkages between such decision-making and its victims, exposing those linkages so that the decision-making itself becomes ethically visible".

13. *See id.*

14. JEREMY RIFKIN, *THE END OF WORK: THE DECLINE OF THE GLOBAL LABOR FORCE AND THE DAWN OF THE POST-MARKET ERA*, 250 (1996). My argument, while specific to the ramifications of addressing food security, closely parallels Rifkin's call for 'third sector' or community development organizations. In Rifkin's words,

Making a successful transition to the post-market will depend largely on the ability of an aroused electorate, working through coalitions and movements, to effectively transfer as much of the productive gains as possible from the market sector to the third sector in order to strengthen and deepen community bonds and local infrastructures. Only by building strong, self-sufficient local communities will people in every country be able to withstand the forces of technological displacement and market globalization that are threatening the livelihoods and survival of much of the human family.

See id.

III. GLOBALIZATION'S NEGATIVE IMPACTS ON FOOD SECURITY

This portion of the paper will explore the linkages between distant decision-making regarding food production and its impacts on food security. It is my intent that this paper will expose these linkages so that decision-making to maximize profits becomes ethically visible.¹⁵ The power dimension of food has been discussed extensively throughout the literature of various disciplines, elements of power in food security that have been addressed include: the historical effects of the enclosure acts in England;¹⁶ vertical integration and the power of trans-national corporations to control national and international policy;¹⁷ the lobbying by agribusiness to protect food stamps;¹⁸ US policies and corporate control have historically undermined the ability of smaller farmers to carve a living out of the rich soil of the Great Plains;¹⁹ consumer ignorance and constructed knowledge about food origins;²⁰ international free-trade supports trans-national corporations and impacts income of US farmers, farm workers and workers;²¹ the health effects of the physical and institutional support of the fast food industry in the US;²² the use of multiple channels by which agribusiness accesses Congress;²³ and most directly by Dahlberg who views transformation of modern structures of power as his point of departure for food systems analysis.²⁴

15. See MINTZ, *supra* note 12.

16. JULES PRETTY, *AGRI-CULTURE: RECONNECTING PEOPLE, LAND AND NATURE*, 29-30 (2002). During the 18th and 19th centuries there were thousands of enclosure acts in England where lands previously managed as commons were enclosed and privatized by those in positions of political power who viewed the commons as inefficient.

17. BREWSTER KNEEN, *INVISIBLE GIANT: CARGILL AND ITS TRANSNATIONAL STRATEGIES*, 16 (2d ed. 2002) (explaining the size and power of Cargill, a U.S. company founded in 1865). Kneen further states that Cargill is an "international marketer, processor and distributor of agricultural, food, financial and industrial products with some 79,000 employees in more than 1,000 locations in [seventy two] countries and with business activities in 100 more." *Id.*

18. NOAM CHOMSKY, *UNDERSTANDING POWER: THE INDISPENSABLE CHOMSKY*, 369-70 (2002).

19. RAYMOND NORTH, *NIGHT CAME TO THE FARMS OF THE GREAT PLAINS*, 41-42 (1991).

20. DAVID BELL & GILL VALENTINE, *CONSUMING GEOGRAPHIES: WE ARE WHERE WE EAT*, 5-6 (1997).

21. CHRISTINE AHN, *SHAFTED: FREE TRADE AND AMERICA'S WORKING POOR*, 3-6 (2003).

22. ERIC SCHLOSSER, *FAST FOOD NATION: THE DARK SIDE OF THE ALL-AMERICAN MEAL*, 195 (2002) (stating that "Everyday in the United States, roughly 200,000 people are sickened by a foodborne disease, 900 are hospitalized and fourteen die").

23. MARION NESTLE, *FOOD POLITICS: HOW THE FOOD INDUSTRY INFLUENCES NUTRITION AND HEALTH*, 120(2003).

24. KENNETH A. DAHLBERG, *Democratizing society and food systems: Or how do we transform modern structures of power?*, 18 *AGRICULTURE AND HUMAN VALUES*: 131, 131 (2001). (explaining that a re-embedding of current disparate conceptualizations is needed in order to develop sustainable institutions of governance and food production). Dahlberg calls for a re-embedding of: culture and society in nature; science, economics and technology in society and nature; as well as governance and politics in society. *Id.*

This paper will assist in advancing Mintz's project²⁵ by sketching three examples of decision-making at the national and international levels that have relied on the deified neo-liberal paradigm of wealth maximization through 'comparative advantage'²⁶ and which have either led to food insecurity or threaten to undermine food security in the immediate future. First, this paper will examine the effects of the United States' decision to subsidize its farmers to overproduce grain. Second, this paper will examine the impacts of the introduction of high yield varieties into the third world in the 'Green' and 'Gene Revolutions'. Third, this paper will examine the effects of the imposition of western notions of intellectual property rights on farmers in Africa. Through an analysis of these three issues this paper will demonstrate that the neo-liberal vision of a world of plenty, spearheaded by public-private partnerships,²⁷ which promises to make the world safe for global trade and capital investment, is at best, a tangled web of inconsistencies and at worst a morally indefensible imperialistic approach to creating and maintaining the chronically food insecure populations throughout the 'Global Souths'²⁸ through international law mechanisms²⁹ and development projects³⁰.

25. See MINTZ, *supra* note 12.

26. PAUL R. KRUGMAN & MAURICE OBSTFELD, *INTERNATIONAL ECONOMICS: THEORY AND POLICY* 10-12, 16 (6th ed 2003) (explaining the benefits that accrue to the overall global wealth when each country produces those goods or provides those services which it has a comparative advantage). The authors explain that countries engage in international trade for two reasons: (1) they are different from one another and (2) for greater efficiency through economies of scale in production. The authors explain "comparative advantage" for countries engaged in international trade through an analogy to the career of Babe Ruth who was removed as a pitcher so he could exercise his comparative advantage, his skills as a batter. It really all does make perfect sense how Babe Ruth's career can be viewed as a mirror of international trade relations.)

27. KENNY BRUNO AND JOSHUA KARLINER, *EARTHSSUMMIT.BIZ: THE CORPORATE TAKEOVER OF SUSTAINABLE DEVELOPMENT*, 40-45 (2002).

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 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'. See PEM DAVIDSON BUCK, *WORKED TO THE BONE: RACE, CLASS, POWER, & PRIVILEGE IN KENTUCKY*, 7 (2001).

29. See Walden Bello, *Building an Iron Cage: The Bretton Woods Institutions, the WTO, and the South*, In *VIEWS FROM THE SOUTH: THE EFFECTS OF GLOBALIZATION AND THE WTO ON THIRD WORLD COUNTRIES* 89 (Sarah Anderson ed., 2000) (arguing that multilateral structures, such as the World Trade Organization, "entrench the power of the northern superpowers under the guise of creating global rules for all").

30. See *id.* at 11-13.

A. Grain Overproduction

The United States government has, through its price support and subsidizing of grain production, created an international problem of an artificially low market price for grains, which has destabilized grain market.³¹ The ramifications for food security of US grain dumping, selling grains below the cost of production, are most strongly felt in countries where grain farmers are unable to continue farming when forced to compete with below-cost grains.³² For example, Mexican farmers are unable to compete with corn that is imported from the US at thirty percent below the cost of production.³³ Trade liberalization promises profits for a select few trans-national agribusiness corporations, as eighty percent of all US corn exports are from Cargill, Archer Daniels Midland, and Zen Noh.³⁴ Proponents of free trade would perhaps herald the destruction of Mexico's corn sector as the world realizing greater overall production by the US utilizing its competitive advantage and hence allowing Mexico to determine its competitive advantage. Proponents of this neo-liberal rationalization are blissfully ignorant of the ramifications not only on livelihoods, but also potential loss of genetic diversity, not only with an exodus of corn producers but also with the introduction of genetically modified corn.³⁵

Aside from the very real impacts that the overproduction of grain in the United States has on the food security of other countries, the overproduction in itself serves as propaganda for the validation and continued reliance on industrial systems of food production, which rely on the application of ever more technology to overcome the limits of nature.³⁶ The technology of industrial agricultural has its greatest proving ground in the Great Plains of the United States, where in 1996 a barrage of chemicals was able to yield record harvests in the face of a predicted shortfall in harvest.³⁷

31. Mark Ritchie, Sophia Murphy & Mary Beth Lake, *United States Dumping on World Agricultural Markets* (2003), available at www.tradeobservatory.org. (last visited Nov. 1, 2003).

32. *See id.*

33. Kristin Dawkins, *WTO Cancun Series Paper No. 5: The TRIPS Agreement: Who owns and controls knowledge and resources?* (2003) available at www.iatp.org (last visited Nov. 1, 2003).

34. *See id.*

35. *See id.*

36. Frederick H. Buttel, *Some Observations On Agro-Food Change and the Future of Agricultural Sustainability Movements*, In *GLOBALISING FOOD: AGRARIAN QUESTIONS AND GLOBAL RESTRUCTURING* 350. (D. Goodman & M. Watts eds., 1997) (explaining that "output expansion, which leads to a long-term tendency to declining commodity prices in real terms, will strike citizens, scientists and policy makers as being evidence that sustainability concerns are unwarranted or exaggerated").

37. *See id.*

B. Green and Gene Revolutions

The Malthusian argument that has been advanced in the past regarding the need for high yield varieties fed by high inputs of agricultural chemicals to stave off mass starvation is being resurrected by proponents of the gene revolution who see agricultural biotechnology, developed through specialized cosmopolitan techniques, as the means to assure food security through both increasing the quantity and quality (vitamin content) of food.³⁸ One advocate of agricultural biotechnology is U.S. Trade Representative Robert Zoellick, who has used the terms 'immoral' and 'luddite'³⁹ to describe the European rationalization of its ban on food products that contain genetically modified organisms.⁴⁰ This uncritical acceptance of 'high' technology as the only rational and moral means to produce food is based on the underlying theory that technology is value-neutral and induces progress autonomously.⁴¹ Conversely, continued utilization of previously developed technologies is a result not only of stupidity and laziness,⁴² but also immoral because 'luddite tendencies' condemn the poor to death as a result of the irrational fears of the privileged.⁴³ Although the Green Revolution has led to significant increases in some crops (cash crops) with

38. DENNIS T. AVERY, *Why we need food biotechnology*, 54 FOOD TECHNOLOGY 132, 132. (2000) (arguing that agricultural biotechnology is necessary in order to stave off hunger and that misgivings about the deployment of the technology are a product of 'elitists' unfounded fears); see also Martina McGloughlin, Ten reasons why biotechnology will be important to the developing world (1999) at <http://www.agbioforum.org/vol2no34/mcgloughlin.htm> (on file with the author).

39. 'Luddite' has been reduced in common parlance to mean someone who is irrationally against the use of technology. This negative connotation and modern rendition, which Zoellick likely intended, obscures that the definition, which comes to us from English history and means "a member of those groups of workers who deliberately smashed machinery in the industrial centers of East Midlands, Lancashire, and Yorkshire, believing it to be the cause of unemployment [after Ned Ludd, a late 18th-c. riot leader]." See THE NEW LEXICON WEBSTER'S DICTIONARY OF THE ENGLISH LANGUAGE 590 (2d ed 1989).

40. RAJ BHALA & DAVIDA. GANTZ, *WTO Case Review 2002*, 20 ARIZ. J. INT'L & COMP. L. 143, 152 (2003).

41. ARTURO ESCOBAR, *Welcome to Cyberia: Notes on the Anthropology of Cyberculture*, 35 CURRENT ANTHROPOLOGY 211, 211 (1994) (stating that technology is value-neutral and thus cannot be judged for its utilization). The author notes that, "The underlying theory is that science and technology induce progress autonomously – a belief represented by the metaphor of "the arrow of progress." *Id.* The arrow of progress which pervades studies in a variety of disciplines embodies an evolutionary determinism that goes roughly from science to technology to industry to market and finally, to social progress." Law and economics are disciplines that have embraced the notion of the "arrow of progress" through its actors and various iterations, the notion of "comparative advantage" is one concept that immediately comes to my mind. See *id.*

42. David Brokensha, *What African Farmers Know*, in CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 310. (Darrell Addison Posey ed., 1999).

43. See AVERY, *supra* note 38.

benefits to some farmers,⁴⁴ the Green Revolution also led to the decrease in production of other crops,⁴⁵ with the net result of increasing rural inequality in Africa,⁴⁶ the U.S.⁴⁷ and Latin America.⁴⁸ Stone has illustrated the weaknesses of the Malthusian justification for increased production, by showing that while India has experienced a crisis of overproduction and subsequently increasing buffer stocks of wheat and rice,⁴⁹ it has also seen its population devastated by food security with an estimated quarter of a billion people malnourished and 1.5 million children suffering a malnutrition-related death each year.⁵⁰

The current structure of the agricultural biotechnology industry indicates that research and development efforts will continue to center on the development of varieties that are integral to the continuance of industrial agriculture cash cropping systems, which serve the needs of transnational corporations rather than serving the needs of the poor.⁵¹ Large private firms dominate the commercialization of genetically modified varieties and would likely spearhead efforts of agricultural biotechnology introduction in less industrialized countries.⁵² Indeed, agricultural biotechnology companies are currently positioning themselves for market entrance

44. See POTTIER, *supra* note 1, at 97.

45. Devlin Kuyek, *Genetically Modified Crops in Africa: Implications for Small Farmers* (2002) available at <http://www.grain.org/docs/africa-gmo-2002-en.pdf> (last visited on Nov. 1, 2003).

46. See BROKENSHA, *supra* note 42, at 311.

47. See BUCK, *supra* note 28, at 196 (noting that increased use of chemicals in agriculture reduced the need for labor on tobacco farms).

48. See Miguel Altieri & Peter Rosset, *Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world* (1999) at <http://www.agbioforum.org/vol2no34/altieri.htm>. (on file with the author); see also Miguel Altieri & Peter Rosset, *Strengthening the case for why biotechnology will not help the developing world: a response to McGloughlin* (1999) at <http://www.agbioforum.org/vol2no34/altierireply.htm>. (on file with the author).

49. GLENN DAVIS STONE, *Both Sides Now: Fallacies in the Genetic-Modification Wars, Implications for Developing Countries, and Anthropological Perspectives*, 43 CURRENT ANTHROPOLOGY 611, 614-15 (2002).

50. *Id.*

51. As currently structured the agricultural biotechnology industry concentrates on the development of herbicide-resistant or pesticide-containing crops, which are designed to fit within an industrial approach to agriculture production (high mechanization, high input, once crop). The majority of research, seventy-four percent, on genetically modified crops has been on herbicide-resistant crops. See Rural Advancement Fund International, *In Search of Higher Ground: The Intellectual Property Challenge to Public Agricultural Research and Human Rights and 28 Alternative Initiatives* (September 2000) at www.etcgroup.org (last visited on Nov. 1, 2003).

52. Greg Traxler, *Assessing the Prospects for the Transfer of Genetically Modified Crop Varieties to Developing Countries* (1999) at <http://www.agbioforum.org/vol2no34/Traxler.htm> (on file with the author).

in Africa by pushing African countries to adopt an 'appropriate' intellectual property framework.⁵³

C. Intellectual Property Rights

The establishment of an 'appropriate' or business friendly intellectual property rights regime is essential for agribusiness reentry into 'Global Souths,' as in the past they are the purveyors of the latest technology that promises to bring 'food, health and hope,'⁵⁴ this time in the form of custom packages protected by Intellectual Property Rights (IPRs) which include genetically modified seeds specifically designed for the company's own regiment of chemical inputs. IPRs are becoming increasingly standardized - patents for example, offer protection for: 20-year terms; the first applicant and for inventions in all industries and technologies.⁵⁵

Article 27(3)(b) of the Agreement on Trade-Related Aspects of Intellectual Property (TRIPS) states: "[World Trade Organization] Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof."⁵⁶ The 1991 Convention of the International Union for the Protection of New Varieties of Plants (UPOV) is a *sui generis* system, which favors plant breeders over farmers through its plant variety protection (PVP) system and is viewed by agribusiness as a step towards assuring that a country will adopt the patent regime of intellectual property rights.⁵⁷

In June 1999 ASSINSEL,⁵⁸ a global seed industry association, adopted the Statement on the Development of New Plant Varieties and Protection of Intellectual Property, which noted that developing country members of ASSINSEL consider it too early to develop utility patents for plant varieties in their country.⁵⁹ Thus, rather

53. Devlin Kuyek, *Intellectual Property Rights in African Agriculture Implications for Small Farmers*. (2002) available at <http://www.grain.org/docs/africa-ipr-2002-en.pdf> (last visited on Nov. 1, 2003).

54. "Food, health and hope" is Monsanto's corporate campaign that was designed to reassure consumers that somehow Monsanto would be able to achieve victory over population growth and its ill effects (hunger) through increasing food supply, despite the fact that "None of Monsanto's transgenic canola, sugar beets, cotton, corn or potatoes is designed to put food in the mouths of hungry children." See Bruno and Karliner, *supra* note 27, at 98.

55. GRAHAM DUTFIELD, *INTELLECTUAL PROPERTY RIGHTS, TRADE AND BIODIVERSITY*, 8 (2000).

56. Agreement on Trade-Related Aspects of Intellectual Property Rights, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Results of the Uruguay Round 33 I.L.M. 81, Art 28.1 (1994) [hereinafter TRIPs Agreement].

57. See KUYEK, *supra* note 53.

58. ASSINSEL is the national seed association in France and Belgium and is part of the European Seed Association. International Seed Federation, Seed Associations at <http://www.worldseed.org/associations.html> (last visited on Nov. 1 2003)

59. See KUYEK, *supra* note 53.

than push for utility patents, agribusiness interests are calling on developing countries to adopt PVP, as a step towards the adoption of a patent system of intellectual property rights protection in developing countries.⁶⁰ Whereas patents provide for no exemption for unauthorized intellectual property utilization, PVP allows exemptions for breeders, who are allowed to use protected varieties for breeding purposes and for farmers, who are allowed to save seeds.⁶¹ The intellectual property system has been criticized for its inability to adequately address the technologies that have been developed collectively by local communities while at the same time allowing for protection of that same material once it has been slightly altered.⁶² Indeed the standardization of patents, which includes that they be capable of industrial applications as well as first to file provisions, favor those corporations or individuals that have greater experience and resources to utilize the legal system over local communities or indigenous peoples who would more than likely lack similar capacity.⁶³ A recent cases in Canada indicates that a corporation will likely be successful in seeking compensation and an injunction of continued seed saving for farmers in the developing world where the genes owned by a corporation via patent protection are present in the farmer's field.⁶⁴ In addition, courts in the U.S. have found the provisions of 'technology agreements' for genetically modified organisms enforceable.⁶⁵ Such utilization of IPR would have dire ramifications on food security for the "1.4 billion people who live in farm families that are still largely self-provisioning in terms of seed".⁶⁶

60. *See id.*

61. *See id.*

62. VANDANA SHIVA, *BIOPIRACY: THE PLUNDER OF NATURE AND KNOWLEDGE*, 15-17 (1997) (challenging the IPRs system). Shiva notes that IPRs, "exploit creativity while killing its very source . . . IPRs are an efficient mechanism for harvesting social creativity. They are an inefficient mechanism for nurturing and nourishing the tree of knowledge." *Id.*

63. *See id.*

64. *Percy Schmeiser and Schmeiser Enterprises Ltd v Monsanto Canada, Inc. and Monsanto Company*, F.C. A-367-01 (Fed. Ct. 2002) (holding that a Canadian canola farmer was required to compensate Monsanto for the presence of Monsanto's genetically modified canola on his property, despite the farmer's argument that the presence of Monsanto's patented canola was the product of genetic drift and not something that was actively sought out by the farmer).

65. *Monsanto Company v Homan McFarling*, 302 F.3d 1291, 1291 (Fed. Cir. 2002) (holding that a farmer was held accountable under the terms of the technology agreement specified by Monsanto when purchasing genetically modified seeds).

66. Food and Agriculture Organization of the United Nations International Workshop on Seed Security for Food Security: Contributions for the Development of Seed Security Strategies in Disaster-Prone Regions (Nov. 30, 1997) at <http://www.fao.org/ag/agp/agps/georgof/Preface.htm#Preface> (last visited on Oct. 28, 2003).

IV. GLOBALIZATION'S POSITIVE IMPACTS ON FOOD SECURITY

As demonstrated above, the neo-liberal visions of development can undermine local production systems, which have historically been viewed as primitive or backward by colonial administrations⁶⁷ or undeveloped by corporate interests seeking markets for their agricultural production technologies.⁶⁸ Despite, historical and institutional biases against systems of food production which incorporate subsistence production, many small-scale production systems remain and are perfectly capable of insuring food security for peasant populations and as a source for assuring food security for all peoples.⁶⁹ This section will describe the valuable role that 'traditional' production systems have had and will continue to have for global and local food security. This section will then discuss international instruments that may be adopted to promote food security as well as those that have assisted in the formation of institutional mechanisms, both of which are made possible by globalization, that work to integrate knowledge systems for the promotion of food security.

A. 'Traditional Production Systems'

Traditional multiple cropping systems (i.e., poly-cultures) provide as much as twenty percent of the world's food supply.⁷⁰ These poly-culture food systems have been shown to provide more organic matter for incorporation into the soil, produce greater yield than mono-cultures and have greater soil nutrient cycling and soil nutrient retention.⁷¹ These poly-cultures are a result of trial and error approaches to food production employed by traditional or subsistence food producers.⁷²

Food security may not only be ensured at the local level, but also increased at the global level as a result of the continued existence of these multiple crop food production systems.⁷³ The genetic diversity contained in these farming systems function as *in situ* repositories of genetic diversity.⁷⁴ The genetic diversity may be utilized by plant breeders in a multitude of ways, but has

67. See LAPPÉ & COLLINS, *supra* note 10, at 82.

68. See KUYEK, *supra* note 52.

69. Miguel Altieri, *The Agroecological Dimensions of Biodiversity in Traditional Farming Systems*, in CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 291 (Darrell Addison Posey ed., 1999).

70. *Id.*

71. *Id.*

72. *Id.* at 293.

73. *Id.* at 295-96.

74. *Id.*

historically been used to integrate resistance characteristics into high yielding varieties, which are planted in mono-cultures across vast landscapes (such as the Great Plains in the United States) and hence highly susceptible to bio-physical constraints.⁷⁵

Many production systems that are labeled as 'indigenous' today, are in fact conglomerations of crops, techniques and technologies which have been specifically adopted to the bio-physical realities of a particular farm.⁷⁶ For example, contemporary agriculture in the northern Sierra of Oaxaca, Mexico is a mix of local science and appropriation of technologies and crops.⁷⁷ Some local farmers have in Talea, Mexico been able to maintain their subsistence cultivation of corn, beans and squash while at the same time integrating both coffee and sugarcane (both Old World crops) not only into their farming systems, but also into social⁷⁸ and spiritual interactions.⁷⁹

At the same time, the diversity that local farmers have and continue to cultivate in their maize fields as well as their intercropping techniques and to some extent their worldview have been incorporated into both environmental and sustainable agriculture farming movements in the United States.⁸⁰ Thus, these farmers form identity around local science and local innovations, but these farmers are also a part of globalization and selective adoption of technologies across temporal and spatial borders.⁸¹ The increased linkages between the global and the local as well as between local movements have also served to increase food security throughout the world by enhancing food production of small-scale farmers not only throughout Asia, Africa and Latin America, but also through the US, Europe and Australia.⁸²

75. The valuable contributions of agricultural biodiversity have also been recognized in the U.S. courts. In *National Association of Home Builders v Babbitt*, 130 F.3d 1041 (D.C. 1997) the court, in determining that endangered species deserved protection, quoted *amici curiae* that explained "fortifying the genetic diversity of US [sic] crops played a large part in the explosive growth in farm production since the 1930s, accounting for at least one[.]-half of the doubling of yields of rice, soybeans, wheat, and sugarcane, and a three fold increase in corn and potatoes. Genetic diversity provided by wild plants also protects domestic crops from disease and pest damage."

76. ROBERTO J. GONZALEZ, *ZAPOTEC SCIENCE: FARMING AND FOOD IN THE NORTHERN SIERRA OF OAXACA*, 73 (2001).

77. *Id.*

78. *Id.* at 113-17.

79. *Id.* at 108-09.

80. See generally, CAROL BUCHANAN, *BROTHER CROW, SISTER CORN: TRADITIONAL AMERICAN INDIAN GARDENING passim* (1997) (listing accounts of American Indian gardening techniques that have become popular amongst gardeners in the U.S.); see also GILBERT L. WILSON, *BUFFALO BIRD WOMAN'S GARDEN: THE CLASSIC ACCOUNT OF HIDASTA AMERICAN INDIAN GARDENING TECHNIQUES passim* (2d ed. 1987).

81. See *id.*; see also BUCHANAN, *supra* note 80.

82. See *id.*; see also WILSON, *supra* note 80

B. Institutional Linkages Promoting Food Security

One of the impacts of globalization on these systems is that university trained agro-ecologists and promoters of local agriculture have, with the support of the United Nations or other global institutions, engaged local communities in a process that has led to greater distribution of knowledge amongst small farmers.⁸³ The United Nations Development Program has assisted in the development of the Sustainable Agriculture Network and Extension (SANE) which has established agro-ecological 'lighthouses' in Latin America, Asia and Africa to demonstrate techniques that promote maximum yield with minimal inputs, and thus maximize profit margins for small farmers and assist in ecosystem maintenance.⁸⁴ Another example of international linkages is the United Nations University project on People, Land Management and Environmental Change (PLEC).⁸⁵ PLEC takes a multi-step approach to promoting agro-ecological innovations by first identifying local expert farmers in terms of their productivity and quality.⁸⁶ These local expert farmers become the teachers of other farmers in the region while the university trained agricultural scientists act as facilitators, introducing new ideas and seeds.⁸⁷ PLEC has used a number of techniques to solicit participants for demonstration activities, many, such as family reunions, gatherings of friends and neighbors and working groups, rely on the social networks of the expert farmer.⁸⁸ PLEC and SANE both evolved in the multi-lateral development context which has addressed goals that are related to the conservation of agro-biodiversity. These goals include those that have been formulated by the Conference of the Parties to the Convention on Biological Diversity (COP3): Conservation and Sustainable Use of Agricultural Biological Diversity.⁸⁹

83. See generally UNITED NATIONS DEVELOPMENT PROGRAMME, URBAN AGRICULTURE: FOOD, JOBS AND SUSTAINABLE CITIES (1996) (documenting examples of the flow of information of urban agriculture techniques across international borders).

84. United Nations Development Programme, Sustainable Agriculture Networking and Extension (2000) at <http://www.undp.org/seed/food/pages/activities/index.html> (last visited on Nov. 1, 2003).

85. Harold Brookfield, Christine Padoch, Helen Parsons and Michael Stocking, *Cultivating Biodiversity: Setting the Scene*, in CULTIVATING DIVERSITY: UNDERSTANDING, ANALYZING & USING AGRICULTURAL DIVERSITY 7-8 (Harold Brookfield, Christine Padoch, Helen Parsons & Michael Stocking eds., 2002).

86. *Id.* at 7

87. Miguel Pinedo-Vasquez, Edwin A. Gyasi and Kevin Coffey *PLEC Demonstration Activities: A Review of Procedures and Experiences*, in CULTIVATING DIVERSITY: UNDERSTANDING, ANALYZING & USING AGRICULTURAL DIVERSITY 116-18 (Harold Brookfield, Christine Padoch, Helen Parsons and Michael Stocking eds., 2002).

88. *Id.* at 118-22

89. People, Land Management and Environmental Change website (2003) at

In addition to the COP3 there are several international instruments and policy statements that can be utilized to make arguments for a shift in international and national policies in order to address food insecurity. In the absence of an internationally recognized right to food, human rights,⁹⁰ environmental⁹¹ and indigenous rights⁹² arguments have been made at the international governance level for the promotion of local livelihoods and thus food security.

C. *The Development of 'Sustainable Agriculture'*

Linkages to promote food security need not be facilitated by international governance institutions, but can be accomplished by individuals and civil society organizations.⁹³ One of the results of this has been mentioned above, agro-ecologists and farmers working together to enhance food security in Latin America, Asia and Africa.⁹⁴ But this is only half of the story, as it fails to consider the impacts that 'traditional' agricultural techniques have had on the U.S. Agro-ecology programs are being developed at the university level in the US, which incorporate this 'traditional' knowledge and utilize it to shape agro-ecosystems throughout the US.⁹⁵

Permaculture is a series of design principles that he formulated as a result of witnessing human-environment-organism interactions of indigenous and local peoples.⁹⁶ Permaculture has helped shape

<http://www.unu.edu/env/plec/about.html>) (last visited on Nov. 1, 2003) (explaining that PLEC is designed to meet Decision III/11 of CPO3). According to the website COP3:

- (1) Invites countries to share case-study experiences addressing the conservation and sustainable use of agricultural biological diversity.
- (2) Encourage the development of technologies and farming practices that not only increase productivity, but also arrest degradation as well as reclaim, rehabilitate, restore and enhance biological diversity and monitor adverse effects on sustainable agricultural biodiversity.
- (3) Empower their indigenous and local communities and build their capacity for *in situ* conservation and sustainable use and management of agricultural biological diversity, building on the indigenous knowledge systems.

Id.

90. Universal Declaration of Human Rights, G.A. Res. 217A (III), U.N. GAOR, 3d Sess., Supp. No. 16, U.N. Doc A/8 10 (1948).

91. Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 822, 832 (1992).

92. Draft Declaration on the Rights of Indigenous Peoples, U.N. ESCOR, Commission on Human Rights, 11th Sess., Annex 1, U.N. Doc. E/CN.4/Sub.2 (1993) (Draft Declaration on the Rights of Indigenous Peoples).

93. *See generally*, UNITED NATIONS DEVELOPMENT PROGRAMME, *supra* note 84.

94. *See id.*

95. *See* University of California Sustainable Agriculture Research and Education Program, Related Web Sites: College Degree Programs and Courses at <http://www.sarep.ucdavis.edu/events/degree.htm> (last visited on Nov. 1, 2003) (listing over twenty universities in the United States which have developed agro-ecology programs or courses).

96. BILL MOLLISON, *PERMACULTURE passim* (1990).

the sustainable agriculture movement throughout the U.S.⁹⁷ The network of permaculture activists and organizations has spread globally.⁹⁸ Eco-villages, designed on permacultural principles, are continuing to be developed.⁹⁹ Earthaven in Black Mountain, North Carolina is one such community, which through designing of an intentional community, hosting of workshops and publishing of the *Permaculture Activist*,¹⁰⁰ assists in the reinvention, dissemination and practice of techniques, which ultimately leads to the creation of new 'ecosystem people'.¹⁰¹

V. CONCLUSION

This paper has demonstrated that power is a key component in analysis of food security in light of recent trends of development. Food security is best assured through the establishment of an appropriate policy framework, which places the interests of people above that of corporations. Chronic food insecurity, including chronic malnourishment, will continue to occur as a result of the power that the neo-liberal approach to development, global wealth maximization through comparative advantage, has over the economic aspect of globalization. The first portion of this paper addressed how this power is manifested and reinforced through: national strategies and international promotion of grain overproduction, marginalization of local technologies and production systems coupled with deification of the technological manifestations of cosmopolitan scientists, and the imposition of property regimes which favor international trade and hence for the most part, transnational corporations.

The second portion of the paper argued that recent trends in globalization have allowed for the formation of institutional arrangements and ideologies as well as information networks, which can be utilized by civil society organizations and university trained scientists to promote food security by increasing local food production capacities. Through further work and policy shifts in

97. See *id.*; see also Earthaven Ecovillage Homepage (Jan. 27, 2004) at <http://www.earthaven.org/home/intro.htm> (last visited Feb. 1, 2004)

98. See Permaculture (2003) at <http://www.permacultureactivist.net/Ecovillages/ecovillages.htm> (last visited on Nov. 1 2003).

99. See *id.*

100. See Earthaven Ecovillage Homepage, *supra* note 97.

101. Janis B. Alcorn, *Indigenous Resource Management Systems (IRMS)*, in CULTURAL AND SPIRITUAL VALUES OF BIODIVERSITY 203 (Darrell Posey ed., 1999) (explaining that, "People who have derived resource management systems appropriate to their local ecological and social situations are sometimes called 'ecosystem people', as opposed to 'biosphere people' (such as the urbanized citizens of industrialized societies) who depend on resources imported from distant places.)

these domains, both acute and chronic incidence of food insecurity can be mitigated. This will reduce the incidence of mass migrations that occur during acute food insecurity and which lead to higher mortality rates as people are forced to move into concentrated and thus unsanitary living conditions to facilitate the distribution of food aid.¹⁰²

There are alternative approaches to the neo-liberal economic globalization.¹⁰³ This paper has shown that an alternative approach is to utilize the channels of economic globalization to promote knowledge exchange and global-local food security based on 'survive-survive' relationships. Through the appropriate policies¹⁰⁴ agro-ecological initiatives can continue to be promoted to build food security in cosmopolitan societies and the 'Global Souths' while at the same time providing "food security for all species."¹⁰⁵ Anthropogenic systems of food production, no matter how suitable and well-adapted to the local physical, cultural, social and biological conditions, will continue to face the physical and ideological challenges of: neo-liberal promotion of the greed of transnational corporations, who by the very nature of their corporate personhood seek to maximize wealth for themselves,¹⁰⁶ while marginalizing all other interests;¹⁰⁷ and employ armies of *doxosphers*¹⁰⁸ who exert efforts on behalf of corporate persons in the form of media control,¹⁰⁹ accusations of 'junk science'¹¹⁰ and the creation of a simulacra of 'food, health and hope'.¹¹¹

102. MARTIN RAVALLION, *Famines and Economies*, 35 JOURNAL OF ECONOMIC LITERATURE 1205, 1210 (1997).

103. See MOLLISON, *supra* note 96; see also THE INTERNATIONAL FORUM ON GLOBALIZATION ALTERNATIVES TO GLOBALIZATIONS (A BETTER WORLD IS POSSIBLE) *passim* (2002).

104. See NEIL D. HAMILTON, *Tending the Seeds: The Emergence of a New Agriculture in the United States*, 7 DRAKE JOURNAL OF AGRICULTURAL LAW (1996); see also NEIL D. HAMILTON, *Putting a Face on our Food: How State and Local Food Policies Can Promote the New Agriculture*, DRAKE JOURNAL OF AGRICULTURAL LAW (2002).

105. See DAHLBERG, *supra* note 24, at 142 (quoting Vandana Shiva).

106. A.F. ROBERTSON, GREED: GUT FEELINGS, GROWTH AND HISTORY 215 (2001).

107. See AHN, *supra* note 21.

108. PIERRE BOURDIEU, ACTS OF RESISTANCE: AGAINST THE TYRANNY OF THE MARKET 7 (Richard Nice, trans., 1998) (defining 'doxosphers' as technicians of opinion who think themselves wise.)

109. See CHOMSKY, *supra* note 18, *passim*.

110. SHELDON RAMPTON & JOHN STAUBER, TRUST US, WE'RE EXPERTS! HOW INDUSTRY MANIPULATES SCIENCE AND GAMBLES WITH YOUR FUTURE 152-60 (2001).

111. JEAN BAUDRILLARD, SIMULACRA AND SIMULATION, 1 (Shiela Faria Glaser, trans., 1994) (explaining simulacra as a copy of an idealized image that has in fact never existed).