The impact of globalisation, free trade and technology on food and nutrition in the new millennium.

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Introduction

One apparent index of globalisation is the brisk and growing trade in foodstuffs supplying affluent populations with exotic, high-value and all-seasonal foods via corporate global sourcing arrangements. However, only about 20% of the world’s 6 billion people participate in the cash or consumer credit economy, and about 90% of the world’s food consumption occurs where it is produced. While urbanites depend on the market for almost all their food consumption, rural populations consume 60% of the food they produce (McCalla, 1999). There is a big discrepancy between the image and affluent experience of globalisation, and global reality. It is this discrepancy that politicises globalisation.

The existence of hunger on a global scale is now a referent for, and perhaps legitimises, food and biotechnology firms in promoting private solutions to development. Monsanto corporation’s home page on the web has proclaimed: “Guess Who’s Coming to Dinner? 10 billion by 2030.” It warns that low-tech agriculture “will not produce sufficient crop yield increases and improvements to feed the world’s burgeoning population,” declaring that “biotechnology innovations will triple crop yields without requiring any additional farmland, saving valuable rainforests and animal habitats” and that “biotechnology can feed the world…let the harvest begin” (Kimbrell, 1998: 294). Such language presumes an inevitability to global market integration and the logical approach to addressing hunger.

This paper questions such terms in which food insecurity is defined. In the aftermath of the development era, in which nations were responsible for managing economic growth, including managing food security via green revolution technologies, development is now defined as a necessary global project in which international institutions and firms are increasingly responsible for managing economic growth, including managing food security as a global problem with global solutions via biotechnologies (McMichael 2000).

While globalisation is presented as an inevitable realisation of western market rationality, it is busy revealing its limits across the world. The finiteness of resources (renewable and/or non-renewable) and the seemingly infinite articulations of cultural alternatives to the market culture may appear as ‘external’ limits to globalisation, but they in fact speak to powerful internal tensions. These alternatives actually constitute globalisation as a contradictory project because resistance movements represent and express the material and discursive conditions that a market regime would appropriate. While resistances are quite disparate, they collectively call into question the development paradigm’s view of nature as an unproblematic human laboratory, separating food from ecology and culture as a commodified input for
urban diets and industrial processing, and residualising rural society as a source of labour and natural resources for industrial society.

This paper examines the food question, then, as a window on the politics of globalisation, but deeply rooted in the relationship between modernity and dietary reconstruction.

Social diets and the world-historical dimensions of food

Food embodies world-history like no other substance. There are many threads in this story, but perhaps the most symbolic is that of the cattle culture and its dramatic transformation of ecologies and diets on a world scale. The introduction of the European cattle culture to the ‘New World’ was a forerunner of an agribusiness complex that now links specialised soy producers, maize farmers, and lotfed cattle across the world. The global cattle complex binds the world into an animal protein dependency that imposes feed grain and livestock monocultures on local ecologies and competes with the direct consumption of cereals.

The trajectory of the beef industry follows the contours of modernisation. By the mid-twentieth century, mass consumption subdivided the beef industry into lot-fed high-value beef cuts, and grass-fed cattle supplying the cheaper lean meat for the global fast-food industry. In the early, post-World World II development era, commercial beef was consumed largely in the First World, via a specialised livestock industry increasingly sourced by soy and hybrid corn inputs as feed, while in the Third World, livestock combined with crops in mixed farming systems. The First World fast food industry depended on grass-fed cattle, and its proliferation from the 1960s produced the so-called ‘world steer,’ as a global archetype of modernising food relations, distributed across First and Third World regions, most notably in Central America, where cattle populations rose from 4.2 to 9.6 million from 1950 (Delgado, et al 1999:46).

The world steer is a global artefact: animal health and growth depend on a global supply of medicines, antibiotics, chemical fertilizers, and herbicides by transnational firms. But the specialisation of world steer production is the antithesis of traditional mixed farming systems in the Third World. Sponsored by the World Bank and regional development banks, via governments encouraged to develop new agriexports, the world steer industry hastened de-peasantisation., Development policies favouring foreign cattle breeds over the native criollo have undermined traditional cattle raising and local self-provisioning. Peasants forfeit their original meat and milk supplies and side products such as tallow for cooking oil and leather for clothing and footwear (Sanderson 1986). In short, the world steer caters to affluent global consumers at the same time that it undermines local agro-ecologies.

As some Third World societies developed sizeable middle classes with westernised diets, specialised domestic livestock industries have mushroomed alongside of traditional farming systems. Between the early 1970s and the mid 1990s, meat consumption in the south grew by 70 million metric tons, compared with a growth rate of 26 million metric tons in the north. “In 1983 developing countries consumed 36 percent of all meat and 34 percent of all milk consumed worldwide. By 1993 those percentages had risen to 48 percent and 41 percent, respectively” (Delgado, et al 1999: 1, 10). Nevertheless, IFPRI estimates that traditional, low-intensity livestock production methods remain throughout the world on about 26% of the land area, supplying about 50% of the meat, and states that the “integration of livestock and crop operations is still the main avenue for sustainable intensification of agriculture in many
regions of the world” (Delgado, et al 1999:18, 44-45).

IFPRI reports that the world is in the early phase of a demand-led ‘livestock revolution’
distinguished from the supply-led green revolution. In other words, the livestock revolution expresses
globalisation, insofar as it caters to a world market anchored in a relatively affluent consumer segment of
the world’s population. A ‘demand-led livestock revolution’ is an implicit reference to the shift towards
the market as organising principle, which influences much that is described in the report. Thus the authors
observe with respect to public health: “Unfortunately, government services are being curtailed in this
areas in many poor countries as the size of the overall public sector is being reduced” (Delgado, et al 1999:
51); they note that “escalating demand for animal products leads to animal concentrations that are out of
balance with the waste absorption and feed supply capacity of available land” (46), that as “livestock
consumption increases there is considerable interest in how the poor can retain their market share of
livestock production” (3), and that feedcrops “have the potential to cause greater environmental damage
than other crops” (47).

Aside from these disclaimers the overall tenor of the report is upbeat, observing that livestock
products “are an appealing and convenient nutrient source” (3) and that livestock production “is an
especially important source of income for the rural poor in developing countries” (3). However, when
answering the claim that affluent consumers of livestock will bid away the foodstuffs of the poor through
the market, the report argues that cereals prices will remain stable and that “The Livestock Revolution’s
effect on the food security of poor people, through cereal prices, is likely to be far less important than its
effect on the income of the poor” (39). But the question of the income of the poor is moot, because the
livestock revolution is not simply a quantitative expansion of livestock production and livestock products
raising incomes of livestock owners, rather it will transform the conditions of farming across the world. If
the income of the poor increases, it will be by leaving mixed farming to specialise in livestock, and
becoming contract farmers for food corporations in precarious dependency on distant markets and prices.

The IFPRI report never problematises the ‘livestock revolution’ as a policy choice, rather it argues
that “the structural shift in developing-country diets toward animal protein is a given that must be dealt
with” (3) – even though elsewhere IFPRI reports that one trend in the livestock revolution is “an ongoing
change in the status of livestock production from a small-scale local activity to a global activity” (Pinsrup-
the fallacy of fetishising rising crop yields and discounting the costs. As the International Movement for
Ecological Agriculture observed: “if one takes into account the hidden costs on input subsidies and
nonrenewable resources, and the costs of ecological damage (leading to lower yields after some time) and
furthermore, measure yield against high fertilizer and water costs, then the green revolution techniques are
highly inefficient….Even more seriously, the green revolution measurement of output is flawed because it
only accounts for a single crop (eg. rice) and even then only a single component of that crop (eg. grain)
whilst neglecting the uses of straw for fodder and fertilizer. Thus, it neglects to take into account that there
were many other biological resources….within the same land in the traditional system that were reduced or
wiped out with the green revolution” (quoted in Fox, 2000).

These shifts are presaged in the parallel transformation of food security conditions. While noting
the importance of roots and tubers as a principal source of food for poor farmers around the world, and noting the recent increased production of potatoes and yams in particular, IFPRI reports that a “rapid expansion in the demand for roots and tubers for livestock feed has been under way for some time, particularly in Asia, and is likely to continue as demand for meat products grows rapidly in coming years.” Meanwhile, IFPRI predicts that demand for maize in the south “will overtake demand for rice and wheat” and about “64 percent of the maize demand will go toward feeding livestock compared with 8 percent of wheat and 3 percent of rice in 2020” (Pinstrup-Andersen, et al 1999: 12-14). During the 1990s, while food cereals production remained the same in Brazil and China, feed cereals production almost doubled in each case (FAO Statistical Tables, 2000). Rising animal protein consumption is perhaps the key indicator of the ‘nutrition transition,’ involving a declining consumption of cereals and legumes and a rising consumption of meat and dairy fats, salt and sugars (Lang, Heasman and Pitt, 1999).

The nutrition transition has a political history framed by class, cultural and imperial relations. Animal protein consumption signals rising affluence and emulation of western diets – both of which are not so much inevitable as the historical product of western developmentalism. Ironically, the south is condemned to repeat the trajectory of the modernising northern diet, just as health-conscious affluent northern consumers are reappropriating southern diets. In a report on the occasion of the World Bank’s $93.5 million loan to China for 130 feedlots and 5 beef processing centers for its nascent beef industry, in 1999, Neal Barnard, president of the Physicians Committee for Responsible Medicine, observed:

> “While smart Americans recognize the need to ‘Easternize’ their own diets with rice, soy products and more vegetarian options, World bank bureaucrats decided to promote a Westernization of China’s diet. Instead of supporting the use of grain as a cholesterol-free dietary staple for people, the grain will be fed to cattle to produce meat. Of course the World Bank’s efforts to promote cattle farming in China are concerned less with good health than with economic investment. No doubt some cattle ranchers will profit, as they edge out vegetable and rice acreage. But why is the World Bank, so roundly criticized over years its self-defeating economic development schemes, falling into the same old trap?” (quoted in mritchie@mail.iatp.org, 28 Dec 1999).

Dietary commodification has been integral to the expanded reproduction of the market culture and the ideology of ‘development.’ But this role is double-edged, since its singular logic undermines non-capitalist food cultures, adulterates distinctive capitalist food cultures via ‘McDonaldization’ and genetically-modified organisms, and incubates serious epidemics of diet-related cancers, obesity and the like. It is now common to refer to a ‘global epidemic of malnutrition,’ in which the 1.2 billion underfed are matched by the 1.2 billion overfed. And these paradoxical outcomes dramatise the perverse politics of food.

**Agribusiness in the WTO regime**

The redefinition of food security as a global problem waiting to be solved is rooted in the politics of liberalisation. The 1984 Uruguay Round initiated the liberalisation of agriculture, when the Cairns Group of agri-exporters and a powerful agribusiness lobby pressed for agricultural reforms in the GATT (the US proposal was drafted by the former senior vice president of Cargill, which now shares 50% of US grain exports with Continental). Reforms included reductions in trade protection, farm subsidies and
government intervention. Free trade was the ostensible demand, but the US was also interested in an informal mercantilism based in consolidating its role as 'breadbasket of the world.' The ideological justification was provided by the US in its challenge to GATT agricultural protectionism: “The U.S. has always maintained that self-sufficiency and food security are not one and the same. Food security – the ability to acquire the food you need when you need it – is best provided through a smooth-functioning world market” (quoted in Ritchie, 1993, fn 25).

Liberalisation GATT-style resulted in the 1994 WTO Agriculture Agreement to open agricultural markets by adopting minimum import requirements and tariff and producer subsidy reductions. The ultimate goal was to open markets for northern products, reflecting the strengthened position of the OECD countries in the international division of labour in agriculture. In 1990, 90% of the global seed market was controlled by the OECD countries. From 1970-1996, the OECD share in the volume of world cereal exports rose from 73% to 82%; the US remained the world’s major exporter of commercial crops such as maize, soyabean and wheat; and the share of Africa, Latin America and Asia in world cereal imports increased to nearly 60% (Pistorius and van Wijk, 1999: 110-111). A neo-liberal regime would serve to consolidate this international division of labour. NAFTA is a case in point: quotas on duty free U.S. corn, wheat and rice imports into Mexico are being lowered in stages. In Mexico, 2.5 million households engage in rainfed maize production, with a productivity differential of two-to-three tons per hectare compared with 7.5 tons per hectare in the American mid-West. With an estimate of a 200 percent rise in corn imports under NAFTA’s full implementation by 2008, it is expected that over two-thirds of Mexican corn production will not survive the competition (Watkins, 1996:251).

Pressures to deregulate northern farm sectors and to open southern agricultural regions to the world market involve a universal challenge to national economic institutions by transnational firms, even though the EU and the US have found ways to subvert agricultural liberalisation through export subsidies and deficiency payments to farmers. Global access by TNCs allows them to exploit the asymmetry between north and south (eg, the average subsidy to US farmers and grain traders is about 100 times the income of a corn farmer in Mindanao), moving to undercut northern entitlement structures and their institutional supports by optimising global sourcing strategies (Watkins, 1996). At the same time, 80% of farm subsidies in the OECD countries concentrate on the largest 20% of (corporate) farmers, rendering small farmers increasingly vulnerable to the vicissitudes of a deregulated (and increasingly privately managed) global market for agricultural products. In 1994, 50% of US farm products came from 2% of the farms, and only 9% from 73% of the farms (Lehman and Krebs, 1996). In 1999, 200,00 European farmers and 600,000 beef producers left the land; UK farm income has fallen by about 75% since 1998, driving 20,000 farmers out of business; and US farm income declined by almost 50% between 1996-1999 (Gorelick, 2000:28-30). Under these conditions, agriculture becomes less and less a foundational institution of societies and states, and more and more a tenuous component of corporate global sourcing strategies.

Agriculture constitutes 65% of the global economy, and corporate centralisation is unsurprising: “the top ten agrochemical companies control 81 percent of the $29 billion global agrochemical market. Ten life science companies control 37 percent of the $15 billion per year global seed market. The world’s ten major pharmaceutical companies control 47 percent of the $197 billion pharmaceutical market. Ten global
firms now control 43 percent of the $15 billion veterinary pharmaceutical trade” and ten transnational food and beverage companies’ combined sales exceeded $211 billion in 1995 (Rifkin, 1998: 68). Corporate control of the food system is achieved through vertical integration: from seeds, fertilisers, and equipment, to processing, transporting and marketing. The five largest ‘gene giants’ (AstraZeneca, DuPont, Monsanto, Novartis and Aventis) account for 60% of the global pesticide market, 23% of the global seed market and almost 100% of the transgenic seed market (ActionAid, 2000; Gorelick, 2000:30).

Bioengineering is currently transforming the crop development industry, accelerating the concentration and centralisation of agri-chemical corporations. Part of this integration process has been described as ‘food chain clustering,’ whereby the gene giants form strategic alliances with agribusiness firms, allowing the firms with transgenic interests access to production. One such cluster is the Cargill/Monsanto joint venture: Cargill joins its extensive seed capacity with Monsanto’s biotechnology and new genetic products, and Cargill recently acquired Continental Grain, meaning that Cargill “would control more than 40 percent of all U.S. corn exports, a third of all soybeans exports and at least 20 percent of wheat exports” (Hefferman, 1999:6). Such ‘crop development conglomerates’ consist of networks of enterprises geared to developing specific genetic crops (cf, Pistorius and van Wijk, 1999:118).

The crop development industry has been exploring new markets in the post-green revolution south, where seed demand has increased by more than 30% in Asia, and almost tripled in Africa, between 1980-1994. Expanding consumption of pasta, bread, and meat in cities drives an expanding production of wheat and soybean varieties, while the livestock revolution involves a rising demand for corn and soybean varieties (Pistorius and van Wijk, 1999:111). While in 1999 most of the 34 million hectares of GM crops were grown in the North, by 2002 it is estimated that 550 million ha out of a world total of 900 million ha will be grown in the South (ActionAid, 2000:4).

In Asia, three companies (Cargill, Pioneer and CP-DeKalb) currently control almost 70% of the seed market, supplying hybrid seed for 25% of the total corn area (although DeKalb and Cargill Seeds have recently been acquired by Monsanto), and Novartis is entering the corn seed business and establishing alliances with local Filipino companies like Cornworld (BIOTHAI, GRAIN, MASIPAG AND PAN Indonesia, 1999). One of the emergent areas of crop development, Bt corn (a genetically modified corn with a gene for an insect killing toxin isolated from the soil microbe Bacillus thuringiensis) is likely to be the first transgenic corn to enter the Southeast Asian market. Monsanto is conducting Bt corn tests in Thailand, Indonesia (along with Pioneer), and plans to in the Philippines. The introduction of Bt corn may seriously prejudice a staple crop widely used in Asia for 400 centuries, and continuing in those areas untouched by the hybrid corn introduced by the green revolution.

In Southeast Asia about 40% of the corn area is planted in farmers’ varieties where the seed replacement rate is as low as 4%, such as in Indonesia. Small farmers typically intercrop corn with other crops such as groundnut, mungbean, cowpea, soybean, other pulses, cassava, sweet potatoes or vegetables – constituting 69% of Indonesia’s corn area and about 50% of the upland corn areas of the Philippines. Nevertheless, the promotion of hybrids by governments and firms since the green revolution encroaches on farmer varieties: 60% of Thailand’s corn area in 1997 was occupied by hybrids, expected to rise to 70-75% by 2000, and in Vietnam hybrid corn is expected to double soon to reach 80-90% of the corn area.
Meanwhile, Monsanto plans to apply Bt corn in Southeast Asia in 2001, and its current R&D portfolio focuses on the feed and processing industries, rather than promoting corn as a staple. Because the seed suppliers and grain processors are the same corporate complex commercial farmers will have no control over prices, and will bear the risks (BIOTHAI, GRAIN, MASIPAG AND PAN Indonesia, 1999). The combined effect of market liberalisation, flooding the region with cheap grains, and the integration of crop development conglomerates, threatens the biodiverse system of intercropping of farmer varieties.

Recent research discloses a total of 132 genetic patents on crops that evolved in the south but which are now grown worldwide: 68 for maize genes, 17 for potato, 25 for soybean and 22 for wheat, indicating that staple foods are increasingly targeted for corporate patenting (ActionAid, 2000: 9). Resistance to the biotechnology industry is gathering momentum across the world. In 1993, the 10 million strong Karnataka Farmers Association (KRRS) in Bangalore demonstrated against Cargill Seeds for its plans to patent local germplasm and gain monopoly rights to its use. Through the 1990s, tens of thousands of Indian farmers demonstrated in Delhi against ‘gene theft’ and proposals to establish an intellectual property rights regime (IPR), to be regulated by the WTO (Kingsnorth, 1999:9-10).

This controversy over genetic heritage and property rights is deeply symbolic of globalisation, understood as a set of political relations with historical roots in colonialism. The movement against biopiracy challenges the notion of gene patenting as a universal standard of scientific practice and private rights, and its discounting of traditional knowledges and sustainable agricultural and cultural practices. The IPR regime draws its legitimacy or efficacy from a synthesis of European and US patent laws and their claims to protect and promote innovation. The TRIPS protocol requires states to establish protection of biological resources either through patenting or an effective *sui generis* system, which expresses the 1992 Convention on Biological Diversity (CBD) confirming national sovereignty over genetic resources. The *sui generis* system for plants constitutes an alternative to patent protection, by recognising and securing collective rights for agricultural and medicinal plant biodiversity. Shiva has noted: “Indigenous knowledge systems are by and large ecological, while the dominant model of scientific knowledge, characterized by reductionism and fragmentation, is not equipped to take the complexity of interrelationships in nature fully into account” (1997:8).

The significance of the TRIPS protocol is that intellectual property rights on gene patenting tend to privilege governments and corporations as legal entities, and disempower communities and farmers whose rights over traditional knowledge go unrecognized. A case in point is the 1998 patenting of Indian basmati rice by the Texas-based company RiceTec Inc., which sells ‘Kasmati’ rice and ‘Texmati’ rice as authentic basmati. A logical next step, currently on hold, is to demand financial compensation from the hundreds of thousands of Indian small farmers who cultivate basmati rice, and monopolize the control and reproduction of seed, using biotechnology. Meanwhile, in Thailand hundreds of farmers staged their own protests against RiceTec, which was targeting jasmine rice, on which five million farm families depend (Greenfield, 1999). The irony is that TRIPS grew out of an attempt to stem intellectual property pirating of western products (watches, CDs, etc) in the South, and TRIPs appears now to sanction a reverse biological form of piracy on a disproportionate scale threatening livelihood, rather than commodity, rights.

Interestingly, the *sui generis* option has been successfully interpreted to resist and subvert...
biopiracy. In 1996, the small Indian village of Pattuvam, in the southern state of Kerala, declared its absolute ownership over all genetic resources within its jurisdiction. This move to preempt corporate genetic prospecting is protected by the 73d amendment to the Indian Constitution, which mandates decentralisation of powers to village-level institutions. The initiative stemmed from a group of young villagers, disaffected with the Indian party system and committed to sustainable development. They came up with the idea of having the village youth document local plant species and crop cultivars growing within the village’s boundaries (Alvares, 1997). By registering its biodiversity, in local names, the village has moved to claim collective ownership of genetic resources, deny the possibility of corporate patents applying to these resources, and reinterpret the *sui generis* option of TRIPS by removing ‘property’ from this intellectual rights relationship.

**Conclusion**

This paper questions the self-evident association between globalisation and technology and nutritional foods in the new millennium, interpreting globalisation as a political project geared to the installation of a market regime. When the US Agricultural Secretary declared at the start of the Uruguay Round negotiations (1986):

“(The) idea that developing countries should feed themselves is an anachronism from a bygone era. They could better ensure their food security by relying on US agricultural products, which are available, in most cases at much lower cost” (quoted in Bello, 2000), he underlined the vision of a WTO regime addressing world hunger by managing US food surpluses. This vision has been institutionalised sufficiently to empower and embolden the corporate clusters that are seemingly playing chess with the world’s biological resources. But, as this paper also argues, the corporate bid for control in the name of global food security is generating increasingly consequential resistance to the imposition of a market monoculture on a world of cultural and biological diversity. Globalisation may be represented as inevitable and self-evident, but the reality is profoundly ambiguous.

**References**


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