Health, wealth and the environment:

the impacts of the CUSTA, GATT and

NAFTA on Canadian food security

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This is a work in progress. The Toronto Food Policy Council is interested in discussing the issues and strategies presented here as part of its on-going efforts to improve the food and agriculture system in Canada, and to help create food security. Please forward any comments, and requests for additional copies, to the Toronto Food Policy Council, 277 Victoria St., Room 203, Toronto, ON M5B 1W1

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SUMMARY

" … situations can arise in which free trade is definitely worse than no trade."
Trade economist R. Findlay (1970:132)

"Free trade will not necessarily maximise the income [and] consumption … of a subset of persons … within a country."
Trade economist P. Samuelson (1969:182)

"The case for free trade is currently more in doubt than at any time since the 1817 publication of Ricardo's **Principles of Political Economy**"
Trade economist P. Krugman (1987:131)

Little attention has been given to the effect of trade arrangements (CUSTA, NAFTA, GATT) on Canadian food security issues, particularly for large urban areas such as Metro Toronto. Food security exists when all citizens have access to an appropriate, affordable and nourishing diet.

The pillars that underlie food security are equitable wealth generation, environmentally sustainable food production and community health promotion. Each of these pillars is rooted in specific principles and conditions. These principles and conditions are being undermined by the trade arrangements. In concrete terms, this means that we are likely to see increasing levels of hunger and food insecurity, increasing degradation of the natural resources on which food production is based, and decreased individual and community health.

It will require significant efforts on the part of advocates for change and their institutional allies to create a food system and trading regime that promote food security. It is our view that current trade agreements so compromise food security that they must be abrogated and eliminated. Then new systems must be put in place that respect the foundation principles of food security: equitable wealth generation, environmental sustainability and the health of communities.

PART I

Introduction

Little attention has been given to the effect of trade arrangements (CUSTA, NAFTA, GATT) on Canadian food security issues, particularly for large urban areas such as Metro Toronto. A number of related issues have been given serious attention: negative impacts on the economic status of food producers and processors; negative impacts on the environment; and loss of government ability to invest in public infrastructure, such as social services and health care. Information from these analyses have shed some light on the likely food security implications of these deals, but a comprehensive picture is lacking. The purpose of this discussion paper is to provide the conceptual foundation on which can be built a comprehensive review of free trade implications for food security.

The Toronto Food Policy Council exists to support the creation of a food and agriculture system that is just, secure, health promoting and environmentally sustainable. We are particularly interested in examining the underlying assumptions of the current food and agriculture system and identifying whether these assumptions are appropriate to the creation of food security and sustainability. We also are active in changing policy and work collaboratively, following a healthy public policy development model, with many sectors to propose alternative policy and mechanisms for implementation. This discussion paper reflects these experiences.

Food security defined: feeding the family, trading the leftovers (1).

Campbell et al. (1988) have identified 6 components of food security. Implicit to these components is a recognition that consumption of adequate amounts of nutritious food is essential to good health.

1. The availability of a variety of foods at a reasonable cost.

   This component speaks particular to the way food is produced, processed and distributed. These systems must produce a diverse range of products in a manner that ensures the economic and environmental sustainability of the participants and the resources they employ.

2. Ready access to quality grocery stores, food service operations, or alternate food sources.

   This component addresses issues of urban design, siting of food retail outlets, and mobility of customers and the associated transportation systems. It also refers to the existence of food sources that are not part of the dominant food distribution system. In an urban area such as Metro Toronto, these sources are organized primarily around

community food development projects.

3. Sufficient personal income to purchase adequate foods for each household member each day.

   This component speaks to the need, in a market economy, for wealth and income (whether from employment, investment or social service supports) to purchase a nutritionally adequate diet. In an informal (non-market) economy, non-monetary exchange can be substituted for income (e.g., skills, other products, community supports). During times of stress in a market economy, such informal activity may substitute for cash transactions.

4. The freedom to choose personally acceptable foods.

   This component acknowledges that individuals and communities will make different choices, based on many behaviourial, cultural, and community structural realities.

5. Legitimate confidence in the quality of the foods available.

   This component addresses both food safety issues and matters related to the nutritional value of the foods produced and processed.

6. Easy access to understandable accurate information about food and nutrition.

   This component relates to questions of labelling, advertising, promotion, grading and formal and informal education about food and nutrition.

PART II

Food vulnerability: a brief history of how food security has been undermined (2)

The undesirable condition, food insecurity or vulnerability, could mean any or all of the following:

1. Inadequate financial resources, as wages, pension or welfare, with which to purchase an appropriate supply of food.

2. Dependency on food delivery systems over which one has little or no control, whether because the distribution system is dominated by a few very large food suppliers or because of the distance the food has to travel.

3. Available food unsuitable for reasons of health or cultural inappropriateness.

4. Inability, for whatever reason, to grow one's own food.

Through Canadian history, each of these vulnerabilities have been expressed at the personal, the community, the city, provincial or national level. It is instructive to examine the effect of liberalizing trade agreements on these food vulnerability dimensions in an historical context.

Reliable access to an adequate supply of food has historically meant a high degree of self-sufficiency, or at least as high a degree as nature would permit. The existence of long supply lines and unreliable sources, or reliance on sources over which an individual has little control, have been regarded as a strategic weakness, and more than one empire has collapsed because its supply lines were too long and too insecure.

But in capitalist times, food security and self-reliance have been obstacles to capitalist acquisition in the food system. The broad historical movement to enclose land and community commons has been a particularly important dimension of capitalists' efforts to exert control over food. NAFTA can be described simply as Yet Another Enclosures Act - with reference to the Great Enclosure Act of 1845 in Britain that brought an end to the economy of the commons. (The enclosure movement had begun some 150 years earlier and 4000 Private Acts of Enclosure had privatized some 7 million acres of commons before the Great Enclosure Act was passed.) (Ecologist, 1992) The enclosures -- bounding the land and claiming ownership of it -- were part and parcel of imperialist expansion in the 19th and 20th centuries. The fixing of boundaries created <u>real</u> estate and commodified land so that it could be bought and sold -- and speculated in. The square-mile grid was imposed on vast areas of the great plains, frontages were measured out along rivers and seas, and the land was 'settled' (Cronon, 1991).

There are two intents to Enclosure: to deny peasants access to the land upon which they depend to feed themselves; and, to destroy subsistence agriculture so that the former peasants are forced to become labourers on their former land and dependent on the landowners for their welfare. This can be extended further: the former subsistence farmers must become customers, even for their own food, within the market economy that drives out their sustenance economy. Ontario as a whole and Toronto in particular are moving rapidly to the extreme dependency end of this process.

Or we might refer to the repeal of the Corn Laws in 1846, which opened the door to the importation of cheap wheat from the colonies, including Ontario and eventually the Canadian prairies. The purpose was, of course, to facilitate the accumulation of capital by the early industrialists. The availability of cheap food was translated into lower wages and higher profits, regardless of the effects on the domestic economy of agriculture.

The current expression of this expansionist drive is "global market," though since the mid 1950s the word 'development' has been used to give this process a moral overtone. More

recently, as the expansion of the enclosure movement has created environmental disasters, the word 'sustainable' has been added as a modifier. But what this really means is moderating the excesses so that the exploitation can go on forever.

The assertion, or imposition, of Property Rights -- from bounding the land and establishing ownership rights, to national claims to sovereignty, to 'intellectual property rights' -- has done its job well. Capital has been accumulated to such an extent that the agencies served by the structures of the state have grown to surpass their masters.

Capital and the Corporations have grown through the phases of being first national and then multi-national to being TransNational. So we speak of TNC, meaning both capital and its corporations. And we enter a new historical epoch wherein the state, formerly a public agent of control of trade, now becomes the *mere* agents of capital, and capital creates new institutions that better serve its interests: The World Bank and IMF; GATT; Codex Alimentarius; the Ford and Rockefeller Foundations and the international agricultural research establishment; and so on.
Now we need to look at the world as TNC looks at it, a geography first, without political jurisdictions, without settlement. But this is, at the same time, the world of natural commons: water and water routes, dry lands and forests. Topography precedes states and economies. Capital knows this, and hence its pursuit of the limitless market, the "free market" and with it, "free trade."

But markets, in this worldview, are not people with needs, but people with purchasing power: money. Capital is interested not in the 3.5 billion people in the less developed nations" but in the 10% that are estimated to be middle income (3). As for the rest? In the name of efficiency they will be left to starve; entrepreneurs and customers come first. The advocates of NAFTA tell us that Mexico will provide us with a market of 85 million people -- soon to be 100 million -- but just the 10% -- or maybe 20% -- with the money to make them customers will actually be in the marketplace. The rest will provide the labour pool; until they are too weak to work.

This is what NAFTA is about: facilitating mobility of capital and its accumulation; bringing the world into line with the new realities and demands of capital. Our food supply will be its hostage.

PART III

The principles and conditions underlying the development of food security and how trade arrangements contravene these principles: wealth, environmental sustainability and health

Wealth

Wealth is central to food security: individual wealth to acquire what's needed; community wealth to provide the necessary infrastructure; and food system wealth to produce, process and distribute food.

Wealth is constantly created by human activity. It has both economic and non-economic dimensions. The non-economic dimensions are those things valued by communities and families that produce social well-being (e.g., love, spirituality, friendship, sense of place and history). In capitalist economies, however, these dimensions receive minimal attention relative to the economic ones: goods and services of monetary value that are bought and sold in the market place, and non-monetary things that directly support economic activity but are not traded in the market (e.g., education expenditures, "biological" capital).

Those who benefit the most from the monetary dimensions of wealth we describe as rich or wealthy. Those who benefit the least are poor. Canada has a very skewed distribution of the benefit arising from monetary dimensions of wealth, and this skewed distribution contributes to food insecurity for many.

- The richest 1% of Canadian families own 25% of our national wealth. The bottom 40% own only 2% (Statistics Canada cited in Ontario Fair Tax Commission, 1992). In 1990, the top 20% of income earners received 43.3% of all income. The bottom 20% received 4.7% (Statistics Canada, 1991).

- For corporations, the distribution is even more skewed. In 1988, the top 1/100th of 1% of all non-financial businesses controlled 42.9% of non-financial assets, the top 1% controlled 85.4% (Statistics Canada, 1988a).

- 15% of Canadians do not have enough money to purchase their basic needs. CEOs of Canada's largest firms have compensation packages averaging $454,000 annually, an average second only to that of the USA (Anon., 1991).

- The Canadian financial elite, in comparison with those of other nations, is criticized for generating much monetary wealth that is neither "productive" nor widely distributed (Newman, 1979; Kierans and Stewart, 1988).

As a sub-system of the Canadian economy, the food and agriculture sector suffers from many of these same monetary wealth generation and distribution distortions.

- We have the most oligopolistic food economy in the Western world. A small number of powerful players (4 and fewer) control 40% and greater of many sectors of the food economy (cf. Mitchell, 1975; Warnock, 1978; Coffin, 1987; Hazletine, 1989; Winson, 1990).

- Our oligopolistic food economy contributes to higher food retail prices than would be

set if the resources of the food economy were more widely controlled (cf. Warnock, 1978; Coffin et al., 1989; Winson, 1992).

- For the most part, farmers have little control over their economic destiny in the face of corporate control and its associated supportive government policies. The costs of their inputs and the prices received for their outputs are determined beyond the farm (4).

The trade agreements are reinforcing and aggravating these conditions. The reasons they do so are rooted in conventional economic theory. The value of international trade to society and the economy, including food and agriculture, is predicated on two significant and related assumptions. These assumptions were developed about 200 years ago and remain largely in effect today amongst economists, policy analysts and decision makers (Lipsey et al., 1973).

The first is that a nation should specialize in and trade those products for which it has a comparative advantage (5). Comparative advantage is determined by examining the relative opportunity costs of producing the goods in different nations. Opportunity costs are determined by the relative costs of the resources required to produce the goods. In positivist economic terms, this comparative advantage produces greater volumes of the goods desired, is more economically efficient, and produces greater benefits for society at large.

The second assumption is that scale efficiency is necessary for efficient trade, and the production of greater volumes of goods. Trade opportunities also makes scale efficiency more possible because they increase the market available for sale of said goods.

A number of economists, employing an ecological economic paradigm, have provided critiques of these assumptions (Georgescu-Roegen, 1971; Schumacher, 1973; Henderson, 1981; Ekins, 1986; Daly and Cobb, 1989; Robertson, 1989). Some of the key ones related to cost determination and scale efficiency are that:

- The preconditions for a truly free market do not exist in the Canadian agricultural context. Markets are not competitive in any classical sense, and tend to encourage self-interest over community needs. "Mutual advantage between individuals in different countries does not guarantee mutual advantage for the two countries." (Daly and Cobb, 1989:221). They do not adequately account for the full range of human activities (i.e., public goods and environmental and social negative externalities). Efficient allocation, in classical market terms, does not necessarily have any connection to the sustainability of resource-based systems, such as agriculture.

- Many of the costs of environmental degradation and non-renewable resource consumption are externalized, as part of the search for lower costs. Conventional theory holds that, within a competitive environment, internalizing these costs places a firm at a

competitive disadvantage unless everyone does it. This view is increasingly seen as incorrect. This market failure suggests the need for a new approach in which production and marketing systems are designed so that they support the internalization of these costs, and acknowledge the important public benefits that result. Similarly, neoclassical economics suggests that when the relative wage rate rises, firms should substitute capital for labour until their relative internal costs just balance their relative marginal productivities. This occurs, however, without concern for the external unemployment costs to the community. The new approach is to actively promote employment possibilities and to keep capital and operating costs low. It makes a clear distinction between human and material inputs, avoiding the social cost of attempting to economise on labour.

- The case for scale efficiency is disputed amongst neoclassical economists (cf. Nader et al., 1976; Adams, 1988), and has even fewer supporters among those with an ecological analysis. The narrow concept used in the analysis of scale efficiency is inadequate because of the neglect of environmental and social costs. The new approach aims to decentralize production and marketing systems by facilitating closer connections between producers and consumers.

- Three preconditions for ensuring the existence of social benefits from comparative advantage no longer are applicable: no price externalities; the immobility of capital and labour; and subsistence wage levels (Daly and Cobb, 1989:209-229; Ekins, 1993). In the absence of these preconditions, no conceptual foundation remains for the claim that comparative advantage in trade produces widespread social and economic benefits to trading nations themselves (6). Thus, gains from trade are overstated or unequally divided amongst the population (Ekins, 1993). Although new trade theories are in place that recognize that the old assumptions no longer apply, the dominant economic institutions have not made extensive use of them (7) (Cohen, 1991).

Compounding the problems of increasingly skewed wealth generation, the public sector is losing control to the private sector (and its corporate elite) of the policy and financial tools that it can employ to generate and distribute wealth equitably, and much of this loss is also associated with the trade arrangements.

- The trade agreements are restricting the ability of all levels of government to provide supports to domestic enterprise that can be perceived by the international community as favouring domestic over international firms. This includes export and import controls and programs designed to redress regional economic development imba-lances (8).

- The globalization of capital investment opportunities and the weakening of national investment rules are seriously limiting the ability of public authorities to invest in activities that do not conform to global competitiveness criteria (e.g., public infrastructure, social programs) (Cf. Bienefeld, 1993).

- The public sector has given up control over creation of credit to the commercial banks. This in turn allows for high real interest rates to be sustained, for capital to be expensive, and for government deficits to soar. The consequences are reduced access to credit for many small entrepreneurs and government unwillingness to invest in local entrepreneurship (cf. Chorney et al. 1992).

In contrast, the trade deals will permit transnational corporations to move capital, goods, employment, and ultimately wealth with minimal restrictions, and minimal national state intervention to achieve state objectives. We conclude, therefore that equitable wealth generation can not be achieved with these trade agreements in place. Moreover, the ability of governments to redress the imbalances associated with present wealth generation processes will be reduced by the constraints applied by the trade arrangements.

Environmental sustainability

Sustainable agriculture practice is best explained by the sciences of ecology and agroecology. Both are new scientific disciplines, having evolved in the past 100 years (Worster, 1979; Altieri, 1987). Ecology is concerned with the relations between organisms (including humans) within ecosystems, and with the associated flows of energy and materials. Agroecology is concerned with the study of agroecosystems, which differ from ecosystems because of human interventions (Odum, 1984). Agroecosystems have four essential system properties: productivity; stability (constancy or persistence of output over time); sustainability (recovery from stress); and equitability (evenness of distribution among various groups) (Conway, 1985).

These properties are bounded by certain essential ecological principles (Commoner, 1970). In the predominant thinking about agriculture, these principles are regularly contravened (Table 1). These contraventions occur on the farm and within institutions responsible for solving agricultural problems.

Canadian agricultural trade policy and practice contravene most of the ecological principles presented in Table 1. Regarding principle #1, trade theory evolved in a period when no consideration needed to be given to finite resources. Today, agricultural production and trade are heavily dependent on the availability of inexpensive non-renewable fuels. Trade theorists have also affirmed the need for trade based on wants (luxuries), not just basic needs (Dreisbach, 1990). Principle #2 is contravened because of the near impossibility of sustaining cyclical relations as distances between moved goods increase. Environmental limits are constantly exceeded in present trade practice because of the extent to which Canada is dependent on agricultural (particularly grain) trade to preserve a balance of trade payments. This pressure results in a continuous overharvest. Similarly, trade pressures reinforce monocultural or simplified agroecosystem designs, thereby reducing functional diversity, and

limiting the ability of producers to design self-maintaining and self-regulating systems (9).

Table 1
Principles (laws) of nature in relation to food production and institutional response
(adapted from Hill, 1982, 1988; Walters and Holling, 1984; Dryzek, 1987; Wrabley, 1989)

Law of nature	Some contraventions of this law	
	Our food system	**Institution process**
1. Survival is based on: Needs (food, space, shelter, clothing, education and other quality of life factors).	! Much of our system is geared to supplying not real but manipulated needs (e.g., no real requirement in Canada for refined sugar, coffee, Florida citrus)	! Value systems that are rooted in wants versus ecological realities (e.g., high salary, powerful equipment fueled with non-renewable resources).
Availability of the resources on which these needs depend.	! Every stage of production and subsequent handling is dependent on non-renewable resource inputs (particularly fossil fuels).	! Use of analytical tools that employ a short time frame and discount issues of non-renewability.
The incidence of mortality factors.	! Additional health hazards have been created with the industrialization of agriculture, e.g., from machines and toxic chemicals.	! Rewards for finding solutions by using products implicated as mortality factors.
2. Relationships in the environment are cyclical.	! The system is characterized by linear nutrient flows with their associated dependence on non-renewable resources and resultant pollution.	! Linear, hierarchical decision-making systems without adequate evaluative feedback loops. ! Organizational paralysis due to "infoglut".
3. Limits exist within the environment which, if not respected, result in the degradation of the environment.	! Inability of environment to degrade novel chemicals without creating toxicity in many organisms. ! Harvesting beyond replacement.	! Use of high-powered technologies that transcend limits. ! Focus on marketable products that can be used irrespective of time and space.
4. Over time, ecosystems tend to increase in complexity, in the functional diversity of their species, and in their resilience. Although competition, strife, conflict and parasitism exist in nature, evolution usually depends more on cooperation and symbiotic relationships.	! An increasingly complex technology is used to manage more simplified ecosystems, e.g., - reduced gene pool - monocultures - removal of competitors - creation of uniform soil conditions - removal of non-productive areas such as hedgerows, wetlands, woodlots. ! Solutions to problems deal primarily with symptoms.	! Designing away variability by simplifying data collection and analysis (e.g., a commodity based development strategy). ! Single disciplinary teams working in isolation. ! Centralized control of decision making.
5. Most processes follow non-linear relationships and exhibit threshold responses, that often produce rapid transformation to complex re-organizations with new linkages.	! Failing to act on early signs of nitrate accummulation in acquifers. Skyrocketing unpaid costs of environmental clean-up.	! Incremental steps toward change. ! Failure to recognize early warning indicators and causes of problems. ! Crisis management.
6. Under natural conditions ecosystems exhibit numerous benign self-maintaining and self-regulating processes that if interfered with result in degeneration and population explosions or declines.	! Application of highly soluble N inhibits symbiotic N-fixers. ! Pesticides kill natural controls. ! Boom and bust economic cycles in certain commodities.	! Operating procedures that demotivate employees resulting in high turnover rate and lack of commitment. ! Overspending the capital base of the organization.

Environmental critiques of the deals confirm this analysis in that they have focused on the tangible negative consequences of these contraventions. Those of particularly significance for

the food system include: loss of genetic diversity, accelerated exploitation of non-renewable resources, accelerated destruction of natural habitat, and increased use of toxic chemicals (cf. Ritchie, 1992; Shrybman, 1992; Swenarchuk, 1992). Consequently, these trade agreements, and the principles that underlie them, are clearly at odds with ecological principles.

The Health of Communities

Healthy communities are created (Hancock and Duhl, 1986) when they exhibit the following characteristics:

1. A clean, safe, high quality physical environment.
2. An ecosystem which is stable now and sustainable in the long run.
3. A strong, mutually-supportive and non-exploitative community.
4. A high degree of public participation in, and control over the decisions affecting one's life, health and well-being.
5. The meeting of basic needs (food, water, shelter, income, safety, work) for all the community's people.
6. Access to a wide variety of experiences and resources with the possibility of multiple contacts, interaction and communication.
7. A diverse, vital, innovative and sustainable economy.
8. Encouragement of connectedness with the past, with the cultural and biological heritage and with other groups and individuals.
9. An optimum level of appropriate public health and sick care services accessible to all.
10. High health status (both high positive health status and low disease status).

The principles and conditions related to creating wealth and environmental sustainability are also intimately interwoven with the characteristics of community health. The issues of skewed economic control, of environmental degradation and contamination, and of uncontrolled community change all have potential negative consequences for community health.

How characteristics 1 and 2 are compromised was discussed in the previous section. Characteristics 3, 4, 5 and 7 are difficult to maintain under the conditions, discussed above, of skewed wealth distribution. Characteristics 9 and 10 may be in jeopardy because of the pressures inherent in the NAFTA to harmonize health and social services with the United States and Mexico. These pressures are related to the privatization of health care services and attempts to define certain health programs as unfair subsidies to business (cf. Canadian Centre for Policy Alternatives, 1992). Additionally, the loss of wealth associated with the trade deals are likely to mean that health and social services will become ever increasingly more difficult to finance.

Some specific implications of these general contraventions

1. Those who are poor and lack financial resources can not, with these trade agreements in

place, hope for public policy changes to redress the inequities.

2. There will be greater dependency on food delivery systems over which one has little or no control. This results from both the increased control exerted by a few large corporations, and the associated increased distances over which food will travel. Currently, the average US food molecule travels 2000 km (Cornucopia Project, 1981). Given Canada's greater size and dependence on imported foodstuffs, the figure is generally believed to be higher here.

3. On an individual level, given this economic control, individuals who struggle to participate in the market place because they lack adequate income cannot hope to influence decisions about what food is available, from where, at what price, and of what quality. Food prices in low income urban areas are often higher than in more affluent neighbourhoods (Travers, 1993). The number, diversity, and quality of food retail outlets is often limited as well (10).

4. We predict that the food available under a NAFTA regime would be increasingly unsuitable for reasons of health or cultural inappropriateness. As part of the process of adopting NAFTA, there is enormous international pressure to harmonize health and environmental standards. This approach is viewed with considerable scepticism by many environmental and health specialists, who see harmonization as part of a global effort to weaken pesticide and food safety regulations, thus permitting foods to move around with less scrutiny. It will also help to create more foods, foods that can be produced almost anywhere and then shipped across the globe. In this environment, how will the needs of minority food consumers be respected? With the lowering of standards, vulnerable populations will be increasingly exposed to foods that compromise their health.

5. We predict that Ontario would become increasingly unable, for both political and economic reasons, to grow its own food. Ontario is increasingly reliant on external sources of food. We now have a $1.9 billion food deficit (exports - imports) (11). Much of this is in product we could grow, process and store locally, if our public policy makers were prepared to invest in the Ontario food economy. If government wished to change its approach to agricultural development, it would be denied, under a NAFTA regime, many of the public policy tools needed to enhance local food production and processing. The NAFTA reinforces our reliance on long supply lines, with their attendant negative environmental, economic and social implications.

Conclusion

The principles underlying the current trade arrangements are at odds with the principles inherent to equitable wealth generation, and the creation of environmental sustainability and health. For these reasons, the CUSTA and NAFTA should be abrogated, and the GATT implementation provisions should not be passed by the Canadian parliament.

PART IV

Alternative policies to support the creation of a trading regime consistent with food security principles and conditions (12)

Alternatives relating directly to trade

New ideas in trade theory are emerging that, although not developed with wealth, ecological and community health principles as a guide, are more compatible with these principles than the dominant trade theory (13). Two of these alternative proposals are briefly reviewed in the rest of this section. In general, these strategies can only be implemented in concert with new thinking about economic renewal (cf. Drache and Gertler, 1991; Drache, 1992).

a) Recreating comparative advantage

Since the economic theory of trade benefits is based on comparative advantage theory, Daly and Cobb (1989:229-235) have argued that the conditions presupposed by comparative advantage must be recreated. In their view, this means that governments must put rules in place to balance trade between national entities. This multilateral trade balance is most easily achieved by "issuing import quota licences, and auctioning them to competing import firms" (p. 230). In this scenario, trade is still predominantly undertaken by private firms, but the framework is provided by government to ensure that the national community is a beneficiary, not just the private traders. The consequence of this balanced trade is severely restricted capital flows, because large trade imbalances (and their associated financial transfers) would not exist.

b) Strategic trade policy

Cohen (1991) has discussed different, but complimentary, theoretical approaches of increasing interest to economists the past 10 years: models of trade under conditions of imperfect competition. Although not yet homogenous and operational theory, these approaches are characterized by a recognition that in the real world it is not just trade in competitive sectors that provides social benefits. Non-competitive industries, operating under imperfect conditions with strategic supports from the public sector, can generate excess returns and increase national income. These new models, then, focus on the use of strategic trade policy to enhance national welfare. Although the empirical data are not yet conclusive, what the models yield is evidence of improved welfare distributive effects, and not necessarily enhanced net welfare (14). Such

strategic trade policy may be important to a nation such as Canada if it "wants to protect resources, prevent environmental damage, provide a more equitable distribution of wealth between regions and groups, and ensure that everyone who wants to work is employed" (p. 96).

Gertler (1991) provides an outline of how strategic trade policy might be employed, based on a production strategy of flexible specialization. In this approach, producers focus on economies of scope (an emphasis on responding quickly to changes in customer preferences and niche markets) rather than on economies of scale. Exporting is a consequence of developing a successful, quality product that has international appeal. In this system, spatial clustering and cooperative linkages between the different firms that supply those firms producing the final goods are essential. In Italy, where until recently this approach was successfully employed, the policy apparatus was able to support the development of small firms, local technical schools, family supports such as day care, and land use policies that discouraged speculation. Although this model may not be directly transferable to the Canadian context, and its applicability to all aspects of the food and agriculture sector uncertain (15), it has demonstrated that it is possible to compete internationally on factors other than just price.

Clearly, these alternative approaches to trade represent significant departures from current trade agreements. They do not deny, however, a role for international agreements. For example, GATT could be replaced with a UN-sponsored agency (not the current World Trade Organization being set up as a successor to GATT) sensitive to domestic control over investment and the need for different kinds of managed trade (Ginder and Robertson, 1992). Such changes will not come about easily and will require the development of a sophisticated analysis of economic and trade opportunities by both advocates of change and different levels of government.

Alternatives that redesign the food system and make trade a servant of food security policy

a) Policy for food self-reliance

The trade scenario that best reflects the above discussed principles is one based on self-reliance (or relative self-sufficiency). Although the Science Council of Canada raised the issue of food self-reliance as part of a sustainable agricultural system as an important policy question in the late 70s (Science Council of Canada, 1979), little policy work has been done. In this section, we briefly examine the ecological and economic foundations for self-reliance and review what limited evidence exists of the success of this approach.

"Self-reliance in socio-economic systems has its analogue in natural systems. As a general rule of natural process, energy (and subsequent action) are captured or expended as close to the point of origin as possible." (Meeker-Lowry, 1988:167). The relationship between socio-economic self-reliance and ecological principles is further elaborated on in Table 2. Redesign strategies, therefore, are based on the creation of self-reliance and the trading of surpluses once

domestic needs have been met.

Regarding the conceptual economic foundations of self-reliance, Daly and Cobb (1989) have argued that in classical comparative advantage theory, the greater the degree of self-sufficiency of trading units, the greater control each unit has over the terms of trade and the greater the likelihood of benefits accruing to all units. This holds provided that there is a degree of confidence and mutual concern among the members of a community or political system that permits some degree of specialization so that a wide range of goods and services can be provided (but not at the cost of community needs and community control as happens under our current system). They argue forcefully that this mutual concern can not realistic exist beyond national borders, and is, in fact, more likely to exist at a regional (or sub-national) level. "Hence, basic self-sufficiency in agricultural production should normally be a goal of national policy" (Daly and Cobb, 1989:269). Given this foundation, what could self-reliance look like in Canada?

Table 2

A comparison of the relationships between ecological principles, socio-economic self-reliance, and conventional trade
(adapted from Meeker-Lowry, 1988; Daly and Cobb, 1989; Kneen, 1989)

Principle (from Table 1)	**Socio-economic self-reliance**	**Conventional trade**
1. Survival	Better opportunity to control access to basic resources and needs	Relies more on wants for success than on needs
2. Cyclical relations	Resources consumed closer to source; better opportunity to maximize cycling	Linear relations dominate; few opportunities for recycling
3. Limits	Rooted in place and an understanding of local limits	Assumes all "places" and their limits are identical
4. Complexity, resilience, functional diversity	Requires a diverse range of goods and services to meet local needs	Creates high degree of homogeneity which is antithetical to these concepts
5. Thresholds	Indicators easier to identify because information flows internally	Easier to miss indicators because linearity reduces feedback opportunities
6. Self-maintenance	Less dependence on external sources for basic needs	System functions on boom and bust cycles: dependence on external sources

Presently, Canada has two major self-reliance problems on a national scale: overproduction of, and excessive economic and export dependence on, Prairie cereals, and excessive reliance on

imports of horticultural crops to meet domestic demand. Both the ecological degradation associated with Prairie cereal culture, and the dependence of Prairie farmers on world grain prices, are well documented (16). When the grain trade is removed from calculations, Canada is a net importer of agricultural products. Until just after World War II, Canada was self-sufficient in basic fruits (plums, peaches, apricots, strawberries, pears), but by 1980, 28-57% of these five fruits were imported (Warnock, 1984). By 1987, Canada was only 71% self-sufficient in fresh vegetables (17), and 45% in all fruits and berries (Statistics Canada, 1988). These national figures, however, hide regional differences. For example, Saskatchewan is estimated to be supplying only 10 -15% of its vegetable requirements (Canadian Organic Producers' Marketing Cooperative, 1984; Waterer, 1993). Ontario in 1990 had a $1.9 billion international deficit in agricultural trade, over one quarter of this in horticultural products (OMAF, 1991). Some of the deficit in horticultural products is due to the seasonality of the Canadian growing season, but a significant percentage of the crops that comprise this deficit could be produced and stored here if it were a priority of domestic agricultural policy (Warnock, 1984; Kneen, 1992).

There have been 5 significant studies addressing the potential for self-reliance in Canada (Warkentin, 1976; Warkentin and Gertler, 1977; Warnock, 1982; Harnapp, 1988; Van Bers, 1991). Warkentin (1976) concluded, following a largely qualitative inquiry, that Canada would need to make substantial changes to land use to ensure a sustainable agriculture scenario, but would always require significant imports of fruits and vegetables. This study did not address, in any detailed fashion, associated changes to the Canadian diet and food demand. The Warkentin and Gertler (1977) drew similar conclusions, particularly regarding the need for land reallocations. A particularly significant element, in their view, was the need for a decline in dairying in Eastern Canada (and hence, a decline in demand for dairy products). Warnock (1982), in his study of self-reliance in British Columbia, concluded that maintaining the level of self-sufficiency at 47% would require a 40-60% increase in production to the year 2000. This would still leave the province far short of its desired (at that time) ultimate objective of 65% self-sufficiency. In particular, the land base for horticultural production was not being sustained. Harnapp (1988) drew some conclusions about self-reliance in Ontario. Ontario would need over 9 million acres of land in food (as opposed to non-food crop production to be self-sufficient at present consumption levels (at that time under 9 million acres were in crop land, and some of that in non-food crops). He concluded that a major decline in red meat consumption would, however, dramatically decrease land needs. He also determined that meeting food needs in the winter would be assisted by the use of greenhouses, indoor gardening, canning, freezing and drying.

The most comprehensive Canadian work, to date, has been carried out by Van Bers (1991). She examined, in a dynamic fashion, changes in Canadian demographics to the year 2031, desirable health promoting changes in the Canadian diet, and sustainable food production systems. Her assessment revealed self-reliance potentials both nationally and regionally (Table 3). Overall, Canada could be exporting grains, pulses, oilseeds and potatoes. Due to changing dietary patterns, the domestic needs for animal products could be met, but some importation of

fodder crops would be required (18). Deficits would still exist for vegetables, fruits, and apples (19).

Table 3
Land supply/demand ratios for Canada and the 5 regions in 2031 for the production of food and animal feed
(Van Bers, 1991; Van Bers and Robinson, 1993)

	BC	Prairies	Ontario	Quebec	Atlantic	Canada
Grains	0.87	86.17	3.39	1.75	0.97	17.03
Oilseeds	0.42	21.39	1.30	0.02	0.02	4.29
Pulses	~	6.67	0.66	0.03	0.01	1.42
Vegetables	0.24	0.79	0.75	0.57	0.45	0.63
Potatoes	0.21	2.75	0.64	0.97	8.56	1.73
Fruits (not apples)	0.23	0.01	0.16	0.07	0.49	0.15
Apples	0.92	0.01	0.50	0.53	0.84	0.50
Forage/hay	0.69	0.87	4.15	5.24	3.33	1.17
Fodder	0.16	0.87	0.23	0.16	0.05	0.32

NB. A ratio of 1 means total self-sufficiency in land to produce the particular food for the population. Forage/hay and Fodder estimates provide some indication of our ability to be self-reliant in animal products.

Some European studies are also informative for the Canadian situation. In the 1970s, Norway set out to redesign its food and agriculture system around both self-reliance and the optimal Norwegian diet (20). They attempted to increase domestic food self-reliance from 39% of total calories to 52% by 1990 (Norwegian Ministry of Agriculture, 1975). They used such policy tools as: production and consumer subsidies; market promotion; consumer education; food labelling; and penalties for unhealthy food (Ringen, 1977). By 1988, they had reached 50% self-reliance, whole grain consumption had increased, as had quality of local production of both grains and potatoes. Greater improvements were limited by the absence of new organizational structures to properly implement these goals and by a lack of human and financial resources (Milio, 1988). Finland has been more successful than Norway. The country has been self-sufficient in all basic foodstuffs, except fruits and vegetables, for many years. Current research and policy efforts focus on the horticultural sector, with a particular emphasis on storage, and agricultural inputs (Kettunen, 1986).

These studies, though limited in number and sometimes in concept, suggest that a similar, if not higher degree of self-reliance is attainable in Canada. The financial opportunities and hardships, however, remain unknown (21). As discussed above, conventional economic analyses are unsuited to this kind of macroeconomic assessment. Microeconomic studies of

farms practising sustainable agriculture are largely favourable, suggesting that most farmers will do as well, if not better, financially as compared to finances under conventional systems (National Academy of Sciences, 1989; Lampkin, 1990; MacRae, 1991; Gimby et al., 1992; Sholubi and Stonehouse, 1994). The financial implications on a regional level, especially the integration of sustainable production systems with local buying and selling, have been poorly examined (Lasley et al., 1993). Lockeretz (1989) attempted to draw some regional conclusions from microeconomic farm studies. His data tentatively suggest that a region might suffer financial difficulties in the early stages of large scale transition of farms to sustainable agriculture, but that the long-term financial benefits would be greater than the status quo. Those few studies attempting to assess the macroeconomic implications of widespread adoption of sustainable agriculture have been methodologically controversial, even within the neoclassical paradigm (Youngberg and Buttel, 1984; Lockeretz, 1989; Madden and Dobbs, 1990). They do suggest significant decline in exports (Langley et al., 1983), but have also predicted higher net farm incomes and lower government subsidy payments (Oelhaf, 1978; Langley et al., 1983; Vogtmann, 1984; Havlicek and Edwards, 1989). Average food price increases have been estimated at from 1% (Oelhaf, 1978) to 99% (Langley et al., 1983). Clearly, there are interesting potentials that must be more fully explored.

b) Policy for equitable wealth generation

Our ability to generate wealth in an equitable fashion requires economies that, instead of finding value solely in monetary terms, find in addition value in and for nature, in and for people, and in and for human relationships (Ekins et al., 1992). It requires policies and programs that reward these new kinds of economies and discourage what is undesirable in our current one. It requires well-conceived, orderly, transition strategies that take us from the current dilemma to the desired future.

We are particularly interested in equitable wealth generation related to food. But since the food system is controlled by many of the same forces that shape other economic sectors, and because hunger is a symptom of the problems of an entire economy, general strategies to generate wealth more equitably are pertinent. Analysts have proposed such measures as:

- Changing the regulations governing how corporations are structured and behave. Corporations were originally instruments of public good, but regular legal revisions to the regulations have produced an entity that maximizes private gain over public needs. In particularly, regulations that direct in which endeavours corporations put their retained corporate earnings could be effective, as such earnings are the most significant source of productive investment financing (cf. Mintz and Cohen, 1976; Nader et al., 1976; Kierans and Stewart, 1988).

- Changing the investment criteria of pension funds. These are often the largest pools of surplus capital, but historically they have been managed according to conventional investment criteria, even when democratically controlled by the members (Bienefeld, M.

1993).

- Controls over currency speculation because it creates financial instability and does not produce any productive investment (Bienefeld, M. 1993).

- Limiting the salaries of senior public and private sector leaders to 10 times that of the lowest paid employees of the organization (cf. Drache, 1991).

- Changing the tax rules so that all income, regardless of how it is earned, is treated the same. Currently, income earned in less "productive" ways often receives more favourable treatment (cf. McQuaig, 1987; Ontario Fair Tax Commission, 1993).

- Full cost accounting (including social and environmental costs) to help ensure that wealth is generated in a sustainable way.

- Employment strategies that are linked to meeting local needs for goods and services.

- Redesign of the work week to: create more equitable access to work and income; create health by reducing stress associated with both over- and under-work; reduce consumption patterns consistent with the principles of sustainable development (cf. O'Hara, 1993).

In the food system, these kinds of initiatives are manifest in projects that:

- Support low-input and environmentally-friendly farming systems. Farmers reduce their reliance on external firms for inputs (MacRae et al. 1990a).

- Support direct producer-consumer marketing channels. The oligopolistic food network is by-passed. Examples include direct marketing, farmers' markets, community-shared agriculture and consumer buying clubs.

- Create local production and distribution systems to meet local needs. Efforts are underway in Toronto to redesign the Stockyards Industrial District so that its food processing activities are consistent with this approach. This initiative is also concerned with protecting food manufacturing jobs. A non-profit food distributor has also been created in Toronto to supply the needs of low-income communities that do not have access to high quality retail (22). The wealth that is generated locally remains in the local economy.

- Redesign food system function to focus on food as a health promotion strategy. Diet is a significant risk factor in up to 60% of diseases (US Surgeon General, 1988). The food system has never been explicitly designed to promote health (MacRae et al., 1990b). A major study is underway to determine how the health care and food systems

can be transformed to provide opportunities for optimal nourishment (see note 22).

PART V

Concluding remarks

Canadian food security is being compromised by the trade agreements. It will require significant efforts on the part of advocates for change and their institutional allies to create a food system and trading regime that promote food security. It is our view that current trade agreements so compromise food security that they must be abrogated and eliminated. Then new systems must be put in place that respect the foundation principles of food security: equitable wealth creation, environmental sustainability and community health.

Endnotes

1. For more on the concept of "feeding the family, trading the leftovers" see Kneen (1992).
2. This section is based on Kneen (1993).
3. For example, see the discussion on the evolution of the consumer market in China reported in Milling and Baking News (1994).
4. cf. Martinson and Campbell, 1980. Note that supply managed commodity boards provide some relief from this situation.
5. Not all aspects of trade and its benefits are subject to criticism here. That there are clear benefits to a nation having a total advantage in trade, when for instance a nation produces easily (and environmentally soundly) something that is extremely difficult for another, is not in dispute.
6. As for ecological benefits, the global mobility of capital is itself a major factor in global environmental degradation because investors can move capital to avoid environmental regulations that are perceived to limit returns on investment (cf. Tester, 1991; Shrybman, 1992). GATT accepts that this may happen, but denies that the number of relocations is significant (GATT, 1992).
7. This is in part due to the technical difficulties of using these models (Cohen, 1991).
8. This point has been extensively documented by a host of free trade critics. Cf. Cohen, 1991; CCPA, 1992.
9. Most North American farm organizations opposing trade liberalization focus on negative financial consequences of the CUSTA, NAFTA and GATT for certain sectors. Their arguments are germane to the point made here in that financial difficulties make the transition to sustainable agriculture much more complicated (MacRae et al., 1990a).
10. The Bathurst Quay neighbourhood of Toronto provides a telling example, as do neighbourhoods in the Northwest of Etobicoke and North York.
11. Estimates from the Ontario Ministry of Agriculture and Food.

12. Note that Annex 2 of the GATT Agreement on Agriculture does provide, as an exemption to requirements for domestic support reductions, for public stockholding for food security purposes. This provision, however, is targeted to developing nations. Some analysts have suggested that such a provision could form the framework for developed world food security exemptions. This seems unlikely in the current environment.
13. Note that these emerging trade theories differ from what environmental NGOs are calling for: that GATT trading rules be changed to create a regulatory environment requiring the internalization of environmental costs (Ferretti et al., 1991; Vander Stichele and Sundstrom, 1992). There are many additional proposals for transforming trade, including several discussed in Volume 9(1) of the Journal of Ecological Economics, 1994.
14. Cohen cites work by Baldwin and Krugman (1988) as an example.
15. In Italy it was successfully applied to agricultural machinery manufacturing and food processing (Gertler, 1991). Friedmann (1993) also provides examples of this philosophy from cheese manufacturing in Italy.
16. For interesting assessments of how this situation has arisen and its costs, see Wessel (1983) and Kneen (1990).
17. Canada's production as a percentage of disposition (manufacturing and food use).
18. One limitation of this study is its possible overestimate of requirements for animal products. The most progressive schools of nutrition have seriously curtailed levels of animal products in the diet (cf. Ornish et al., 1992; Barnard, 1993).
19. Note that the figures generated by the Van Bers study and those used by Statistics Canada are not directly comparable. Statistics Canada figures are based on disposition (see footnote 17), conventional production systems and current dietary patterns. Van Bers supply-side figures are based on organic agriculture yields (underestimates, because they assume organic agriculture yields will remain at current levels) and significant changes in land use. The demand-side figures are based on significant shifts in consumer demand towards an optimal diet.
20. Note that optimal diet does not mean population average diet. Each individual has unique dietary requirements (cf. Williams, 1974), so the concept of optimal diet implies developing a framework in which the total population is well nourished and individuals dietary needs are also obtainable. It also addresses the issue of food quality, an area not fully considered in traditional dietetics and nutrition (cf. Grimme et al., 1986).
21. The policy changes required have been spelled out in reasonable detail (cf. MacRae, 1991; Van Bers, 1991; Van Bers and Robinson, 1993), but the supporting economic assessments are lacking.
22. Contact the Toronto Food Policy Council for more details.

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