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Citation: Caraher, M. (2008). Sustainability- considering the pillars of sustainability as a theoretical paradigm. In: Pendergast, D. (Ed.), Home economics: referencing the past; creating the future. Proceedings of the XXI International Federation for Home Economics World Congress, July 26-31, 2008, Lucerne, Switzerland. (pp. 55-66). IFHE Switzerland. ISBN 3981239318

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**IFHE Centenary World Congress, “*Reflecting the Past – Creating the Future*”,
Lucerne, Switzerland July 26-31 2008.**

**Sustainability – considering the pillars of sustainability as a theoretical paradigm.
Monday 28th July: Plenary Session 2 9.30-10.30am**

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Abstract

The need for a common theoretical framework and underpinning with regards to the use of the term 'sustainability' in connection with food is important. Its current use covers a number of different meanings, ranging through economics and food supply systems to agri-food systems. This paper explores the issue of sustainability using a model developed for WHO. Using this as a tool, the impacts of food security and the global food system can be analysed and audited. Key to this are a critique of the global food system and its emphasis on free trade and consumers, the argument is put forward that global trade needs to be regulated to ensure human and environmental health.

Conclusions are drawn for home economic teachers in terms of the role they play in food advocacy. This moves beyond teaching about the food system 'as-it-is', to education concerning the background to the food system and how we, as both consumers and citizens, can act and exercise power. The model can be used to both inform teaching practice about sustainability and to frame a response at a school/community level to wider influences in the food system. Education on its own is judged not to be sufficient.

Introduction Background

The issues of food and sustainability have received much public attention in the last couple of years, this has been driven by the world oil crises (peak oil); changes in climate and natural disasters and related economic global dilemmas (see Lang and Heasman, 2004). It is important to remember that the food system is driven by oil, oil to produce fertilizers, oil to transport food around the globe. This led to an interest in local and regional food, with some cities and areas looking to supplying regional and seasonal food (eg transition cities see www.transitiontowns.org/ and some countries through the formation of national food policies). Of less concern and less of a driver for action have the achievement of the millennium goals concerned with addressing inequality.

Despite some examples of positive movement in terms of sustainability there has been little overall change. In fact many would say that the concerns with food have only become an issue as the developed world sees its own standards of living threatened. As many developing countries face food challenges the price of food on the world market is increasing and agencies such as the World Food Programme (WFP) are having to cut back on supplies to those in need. Even countries in the developed world are seeing increases of the numbers living in food poverty, with food/fuel prices rising and consumers cutting back on healthy options.

One of the key problems is the application of classic economic models of growth to food growing and production based on the assumption that unparalleled growth with economies of scale is the only way to feed the world. In the developing world readjustment programmes have resulted in moves away from growing traditional subsistence crops to growing food for sale and the development of larger units of food production so small farms become less viable within this approach, especially as support systems explicitly support this move. All this is based on a classic economic model of surplus, cash exchange and wealth trickling down the system. Such an approach does not address issues of public health or national food security. At the time of writing this there is sufficient food to feed the world's population. The problems are not the amount of food per se but those of:

- The uses to which crops are put eg for animal feed instead of feeding humans.
- Lack of entitlement to food, even in times of crises, such as famine, there is food but not everyone can access that food (Sen, 1981; Caraher and Carr-Hill, 2007).
- The growing economies of China and India are diverting food for human consumption into food for animal feed.
- A food system which is based on price and profit as opposed to fairness and equity.

Also the underpinning model of operation of many policy developments and actions is a focus on the individual as a 'consumer' making sustainable choices. The policy developments more often

eschew regulation in favour of agreements with the food industry to do the right thing. Alternative approaches are based on a model where the individual is a citizen and has rights (and duties) and regulation of the food industry.

The 'real' costs of food have not traditionally been factored in with the hidden costs absorbed elsewhere as in transport costs, the loss of valuable bio-diversity and damage to the environment. These costs are picked up elsewhere and probably more dis-proportionally by those in the developing world. Just as new (sustainable) thinking was being applied to the area of food a new series of crises have hit, rising fuel prices, a series of global crop failures, a reduction in planting of some basics and the general distressed state of global economic markets. Recent climatic events have resulted in less food crops being grown and the oil crisis has led to land being used for the growing of bio-fuels. All this leading to a situation where there is less food available and thus higher prices; the law of supply and demand. These changes have also been accompanied by changes in welfare systems and taxation in countries. We are seeing a new class of food poor, emerging (Caraher and Carr-Hill, 2007). These are the working poor who are food compromised and nutritionally insecure. These are groups who may have enough and often surplus to eat (calorie wise) but may have lack key nutrients in their diet. This leads to the growth in so-called diseases of lifestyle such as diabetes and CHD. While working in Australia recently the increase in the work of foodbanks and their work was starkly evident with schools setting up breakfast clubs as more and more pupils come to school hungry. In Germany changes in welfare provision have led to more and more of the population seeking food relief through foodbanks a situation repeated in Canada (Riches, 1997).

Globalisation of food systems is premised on the principle of free trade and liberalisation of trade barriers, the underlying belief is of benefits to all (See Sachs, 2005). The neo-liberal economic approach also assumes that approaches such as subsidies and taxation on food imports are barriers to trade are not encouraged. Yet Malawi has recently introduced support for farmers to grow foods for home consumption and cut down on imports by imposing taxes and this has resulted in increases in health status and more food being available for the local population. These processes were introduced in the face of great opposition from major aid agencies and financial institutions.

It is important to remember that there are potential winners in the increase in food prices, for example wheat growers who have in recent years sold their crop at barely subsistence levels are now commanding prices of up to three times last year's prices on the world market. But in reality the big winners are not the farmers but the produces and manufacturers of food products. But

bread prices have risen, rice is in short supply, and key groups are feeling the pressure, look at the number of food riots and social unrest that has arisen because of increases in food prices.

This paper starts with an examination of globalisation and power in the food system, then moves onto food miles and sourcing (foodsheds) as an examples of hidden costs and briefly looks at packing as an additional cost. 'Who wins and loses' in all of this is then explored using coffee as an example, before moving on to to discuss these issues and the implications for home economics.

Globalisation and concentrations of power in the food system

There are clearly benefits from a globalised world, for example Castells (1996) in his work on Network Society sets out the benefits of global communications which are partially responsible for making the world smaller and introducing the benefits of technology to developing and transition countries, for example it is clear that the mobile phone has social and economic benefits in Africa unlike the countries of the developed world where its are functions are social. In this respect I want to make one crucial point, the association of free market liberalisation and economies based on this principle with liberal societies is at one level misleading as it is not with a straight forward relationship (Hertz, 2001). Many development reports identify the Scandinavian countries among the best places to live and many of these have barriers to food trade based on public health principles (eg Norway and its use of VAT, Sweden and its banning of advertising to children). Other countries such as the UK and Australia advocate protection systems based on voluntary agreements with the food industry. The problem becomes one where public health concerns are subservient to those of business and trade. Key impacts of globalisation of the food system include:

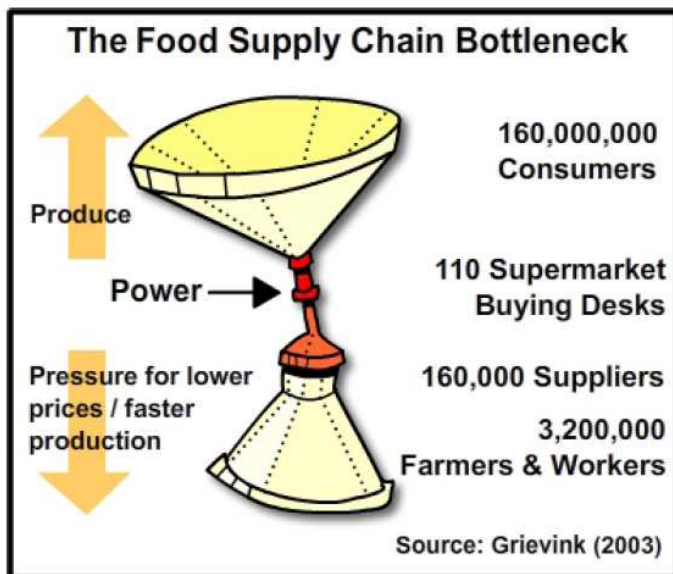
- Development of huge multi-national companies who control what is grown, where it is grown and prices.
- Loss of biodiversity.
- Homogenisation of culture.
- Less emphasis on public health.

Figure 1 highlights the concentration of power for the majority of foods grown in Europe. The power and control are locate at the bottle neck with the 110 buying desks who determine the type and price of goods that eventually appear on the supermarket shelves. This has implications for growers and the consumer with what is called the funnel effect, with this process of concentrating power being repeated globally with respect to most commodities. It results in a concentration of buying power, with fewer buying desks and fewer outlets and less power in the hands of the grower. The buying desks of the large trans-national corporations, whether retail or fast food, do

not want to be dealing with a large number of small producers. This leads to concentrations in the growing and production of food. There have been changes over time in who controlled the food system in the early 1900s farming was dominant with the manufacturing sector assuming dominance in the middle of the century, this changed in the 1960/70s to manufacturers and wholesales with the retailers emerging as dominant in the last 20 years of the 20th century and in the this century. This dominance by the retailers has been challenged by the food service sector (fast food, take-away and restaurants) but is currently slowing down, with the global economic crises, as more and more households are economising and eating at home.

The concentration of power is further represented by a north/south divide with the major international companies being based or originating in the rich north.

Figure 1. The supply chain funnel in Europe from farmers/producers to consumer



An example of the power of the food industry comes from Idaho in the United States, the premier potato growing state and shows what can happen with retail or restaurant power over the food system:

- In Idaho the average potato farm is 400 acres. Before selling anything the grower is half a million dollars down.
- Profit is premised on potatoes selling for \$5/hunderweight.
- Growing to specification for

the fast food and major retailers leads to factory farming. Growers are reliant on one or two buyers for their produce (due to contract specification), thus leaving them vulnerable to price re-negotiations.

- In 1996 prices fell to \$1.50, influenced by cheap imports from Canada (Schlosser, 2001).

In Idaho in the past 25 years, the number of potato growers has halved while in the same period land devoted to potato growing has grown. The results are pretty obvious—the demise of small growers and local communities with the growth of corporate farms. In North America, russet, one variety of potato accounts for 75 percent all potatoes grown with the vast majority going to supply the food service sector to produce frozen French fries (Steel, 2008, Reader, 2008). Potato

growers one year in every four end up selling their produce at a cost below what it takes them to produce it.

There is a very big and real question over the long and short-term sustainability of the current global food system, with aspects of the new local/regional food security and supply being examined. The current system is based on 'false' accounting, where the global food supply system is not held to account for the impacts that the system has on the environment or human or social health (Lang & Heasman, 2004). The World Health Organisation has challenged the global food industry over its role in promoting certain types of fats and processed foods and the impact on human health (Fleck, 2003; WHO, 2003). The sugar lobby in the United States responded with threats to 'scupper WHO' by lobbying for an end to Government funding (Boseley, 2003). More recent examples come from the area of advertising where the food and advertising industries are engaged in heavy lobbying to limit the restrictions on advertising to children. This has resulted in many governments entering into voluntary agreements with the industry, essentially allowing them to regulate themselves (Caraher, Landon and Dalmeny, 2006)

These market forces act in tandem with the social changes that are occurring to give large corporations power to dictate the agenda to growers the demands of the global food economy and the pressure to grow crops for cash have implications for local communities. The economic reality is that small farms cannot survive in this global economy and must either amalgamate or sell out to bigger outlets or corporations, This has an impact on local communities in terms of their sustainability. In addition, as the Prevention Institute (2004) in the US points out, the links between agriculture and health can be seen in the areas of:

- Over production of a range of unhealthy food products
- Use of and exposure to toxins
- Dangers to farmer and worker health and safety
- Antibiotic resistance
- Food-borne illness
- Respiratory illness and poor air quality.

The establishment of intensive agriculture in areas of the world where it is harder to measure or control the effects of such intensification can have an impact on local economies and cultures such as future degradation to the environment, as well as costs to the health care system as diet-related non-communicable diseases take a toll. So while we as consumers may not directly pay for this our fellow human beings do.

Food miles, foodsheds and packaging- an example of more hidden costs

One of the fallouts of the global food chain is the movement of food between and within countries. The distance food travels in the United Kingdom between producer and consumer rose by 30 percent in 15 years at the end of the twentieth century (Paxton, 1994; Steel, 2008). This has been called the 'food miles' effect. The increase in food miles results in pollution, use of pesticides and packaging and a rise in hidden costs when effects are passed on to other areas. It is now recognised that food miles is too simple a metaphor and more recent developments have moved to carbon costs and life cycle analysis but for the moment let us work with the idea of food miles accepting its limitations. This 'externalisation' of costs in travel results in damage to the environment and human health. The costs are paid through other budgets such as indirect health costs by a contribution to cardiovascular disease and food poisoning treatment or environment costs such as pesticide and nitrate pollution. In the European Union it is said that consumers pay three times for their food: firstly, across the counter as they buy it; secondly, as part of their contribution to subsidies of agriculture through the Common Agricultural Policy; and thirdly, in the form of cleaning up environmental pollution caused by intensive agriculture (Pretty *et al.*, 2000).

Many initiatives have started focussing on the provision of local food. Toronto has one of the longest and best documented initiatives where it looks to sourcing food from within its natural foodshed¹ (Lister, 2007). Despite Toronto's many successes it struggles in the wake of a global system that transports food many miles and processes it. Key factors, concerning Toronto, according to Lister include:

- There are more foodbanks offering assistance to the poor than McDonald's outlets.
- The disappearance of rural communities from the city fringe as the city expands.
- Fewer farms and farmers.
- More than 60 percent of the City's fresh produce is imported from the United States (compared to almost all of the city's food coming from within 350 kilometers in 1960).
- In the city there are 'gaps in the urban fabric' with some communities and areas not having a supermarket within walking distance and there is a dominance of fast food outlets.

Toronto is not unusual in these respects but it has a history of activism and of documenting these concerns. In some recent work in London and Preston (a northern English city) we found

- More take-aways than shops in some areas.
- Complete meals from take-aways were sometimes cheaper than the cost of the raw ingredients from local shops.
- Healthy food options were not always available locally.

¹ Akin to a watershed a foodshed is the area around an urban area that 'captures' the food products through its transport networks.

- Food prices varied from area to area often in small distances.
- Members of ethnic groups could not always buy a culturally appropriate food locally.
- Cars were necessary to access healthy options in supermarkets, which were not located in local areas. (Bower et al, 2008: Lloyd et al, 2008)

Many of the above problems are a consequence of the 'free market' being left to its devices. There is a case for regulation and directing the food industry to provide services and food to those in need. Instead food policy seems to focus on self-help and education, certainly necessary but on their own insufficient to address the problems of inequality. This raises the question of what a food system might look like to which we now turn to offer some answers.

Another aspect of the existing system is that the more miles food travels the greater the packaging and storage costs.



Figure 2 shows the ultimate in 'meaningless' packaging where the banana with its own natural packaging is further packaged, clearly unnecessary and unsustainable.

Such approaches to packaging are part of the marketing of food and have little to do with the quality or nutritional status of food.

Figure 2. Packaing of a banana by UK retailer



Figure 3. The Three Pillars supporting healthy food and nutrition policies

The three pillars of nutrition, food safety and environment (sustainable food supply) were developed by WHO as guides for national governments for the achievement of national health and nutrition plans in line with the provisions of the International Conference on Nutrition (WHO/FAO, 1992). Figure 4 tries to capture some of this complexity and recognises there are

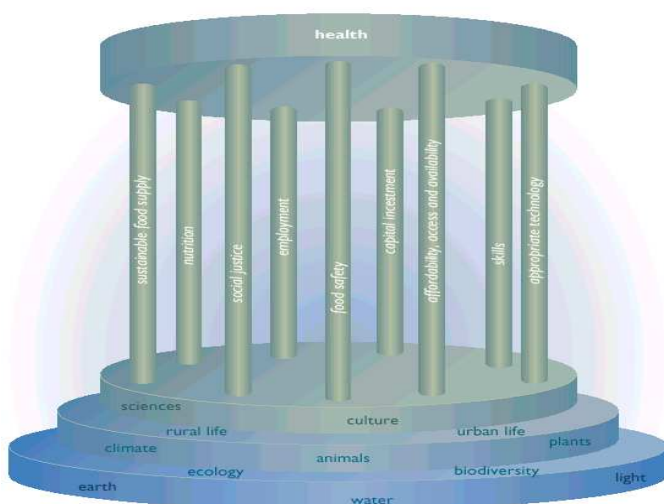


Figure 4. A complex system of pillars necessary to support a healthy food system

Analysis of the food system

With respect to the food system figure 3 shows what a healthy food system might look like, conceptually, with the concerns of nutrition, food safety and environment (sustainable food supply) being the pillars on which the system is built (WHO, 2002). In reality the systems are much more complex and can include issues such as concentration of power in a small number of companies, cultural dominance of food with appropriation of cuisines from the south as marketing devices and the McDonaldization of cuisine (Ritzer, 2000).

many issues hidden in each of the pillars. All this is taken a step further in table 1, where the three pillars of the system are developed in relation to key elements of the food system ranging from production (agriculture) to consumption.

The actions in table 1 are summarised from a workshop held with participants in a WHO workshop

Table 1 Linkages between the three pillars of the WHO-E Food and Nutrition Action Plan

Sector	Nutrition	Food safety	Environment
Agriculture	Local production Livestock, etc Security Seasonal variation	<i>Use of pesticides</i> Fertilisation Transport Breeding practices Animal health	Reduction of pollution Appropriate technology and mechanisation Urban planning Sustainable local development
Food processing	Healthy processing Production of food Labelling Low fat, sugar Fortification Dietary style	Hygiene; Storage Transport GAP (good agricultural practice) HACCP Quality assurance Food standards	Waste disposal Water contamination
Retail and distribution	Quantitative & qualitative redistribution Nutrient preservation Availability; Freshness Accessibility Affordability	Hygiene Packaging Transport Storage Distribution	Waster disposal Transport Freons from cooling facilities Smooth border crossing
Catering	Healthy preparation Food variety Meal planning Proper technology Dietary habits	Hygiene Storage Transport Strengthening control & penalties	Waste disposal Anti smoking policy Organic waste Tourism regulation for waste disposal
Consumers	Health education Choice; Knowledge Attitude; Culture Awareness; Fiscal policy	Hygiene Legal protection of consumers	Waste management Education Awareness of pollution Indoor air pollution
Media	Information; Education Exchange of expertise Health promotion	Information Education	Information; Recycling Education about proper waste management
Other	Promotion of healthy eating at all levels; Obesity - risk factor influencing health insurance Social & cultural aspects Migrant needs; Tourism Exception situations...	Eating raw food of animal origin Condition of food preparation Inadequate food storage	

Winners and losers

The key point is that cheap food is an illusion. The costs are absorbed by someone, somewhere in the food chain whether the coffee grower in Africa who receives 9p per kilo for a product that eventually sells for £17.11 per kilo in the UK high street (see Table 2), or the loss of local diversity, or the increase in food miles and pollution that the consumer eventually picks up in other areas. Policy makers tend to approach the three pillars in silos rather than as aspects of a

total food economy which meet and intersect at different points. Below coffee is presented as an example of this process of winners and losers.

Table 2. Who makes money from coffee? Winners and losers

- | |
|---|
| <ul style="list-style-type: none">▪ Grower in Africa gets 9p per kilo for green coffee beans▪ Exporter buys it for 17p▪ Transport to port for grading etc for 29p▪ Importer in UK pays 34 p per kilo▪ Roaster in Oxfordshire pays 41p (new price is £1.06, with moisture loss)▪ Supermarket, having paid for processing, packaging, distribution and marketing now charge £17.11 per kilo—that is, between farm gate and shopping trolley, price goes up by 7,000% |
|---|

(Source: Based on data in Pendergrast, 2001).

Source: Adapted from Pendergrast (2001) and Oxfam (ND).

Globally five major global roasters (Procter and Gamble, Nestlé, Sara Lee and Philip Morris with 40 percent of world trade) the key driver is price for the major roasters. So they go where the coffee is cheapest, in recent years this has been the far-east (Vietnam) where World Bank policies have resulted in a glut of coffee with lower prices for growers globally. So the basic grade coffee bean, for instant coffee (which accounts for about 80 percent of the total coffee market), can travel across the globe for processing. In 1990 the world coffee trade was worth US\$30billion, of which producing countries received US\$12billion by 2004 global revenues were in the order of US\$55billion but only US\$7billion went or stayed in exporting nations. The cost for consumers stays the same or increases slightly the main beneficiaries are the roasters and retailers.

This situation is repeated within countries where growers and producers lose out in relation to the retailers. Cuts in the cost of food result in these cuts being passed down the line to producers and growers. Fair trade has made inroads into people's consciousness and many buy goods on this basis but it accounts for a small proportion of overall sales. The current global economic difficulties have resulted in consumers in the developed world cutting back on fair trade and organic produce as prices increase, as such goods are more expensive. In times of affluence consumers may be prepared to pay more but in times of recession they become price sensitive. So we know in the UK that the sale of organic produce has reduced. In the UK in the last year the cost of the household food basket has increased by 20 percent with:

- Basmati rice has increased by 60 percent.
- Beef by 5 percent.

- A dozen free range eggs by 47 percent.

This has made most people more price conscious and undermined some of the gains made on sustainability and fair trade concerns with the consumer becoming more price conscious as opposed to ethically driven. The decrease in sales of organic produce and the shift by consumers to cheaper retailers (the 'hard discounters') are some immediate indicators of this. This has resulted in a new price war with the four major retailers in the UK beginning a price war on key items. The consequences of this price war may be good in terms of outcomes for the consumer but bad for producers as they are the ones who absorb the lowering costs. While such increases (20 percent overall for a food basket) are worrying and will undoubtedly impinge more on low income and price sensitive groups, the reality is that food spending as percentage of total spending is low and can be absorbed (11 percent is the average UK spend on food). Such increases across the globe have potentially catastrophic consequences, in developing countries there is an over reliance on basics (such as rice or wheat) as the mainstay of the diet and increases in food prices result in food insecurity and up to 80 percent of daily income having to be spent on food.

Discussion

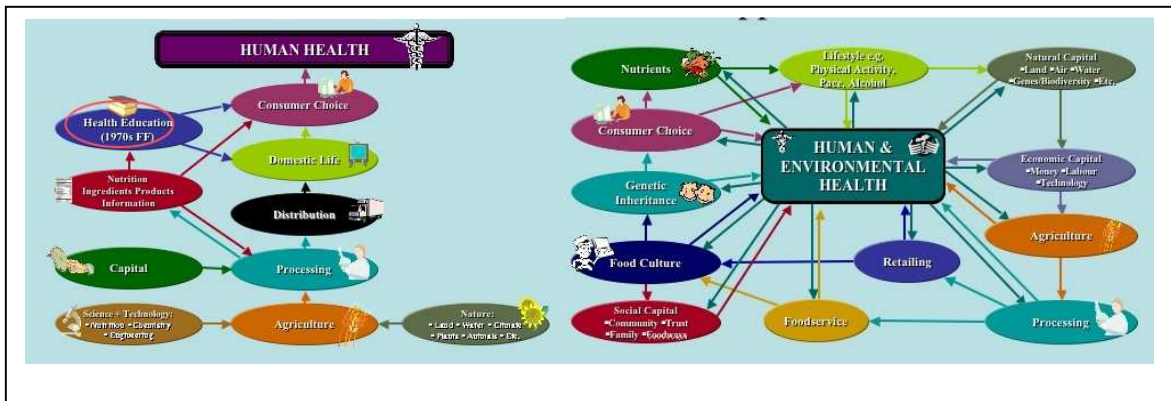
The economic arguments over who benefits from trade are rife, the advocates of globalisation claim that free-trade benefits all while those who view the issue with a public health lens are more sceptical. There is a battle going on with the tensions being those of profit and health.

The flows of capital, ideas and health benefits or favours the developed over the developing world. For public health nutrition the consequences of globalisation of the food system means:

- Older and fatter populations.
- While there is some narrowing of disease patterns between the developed and developing worlds, although the greater burden lies with the developing world alongside this are degradation of natural environments and pollution and ecological costs to the developing world.
- Increases in relative poverty in countries and between countries -food security.
- More uniform cultural behaviour with respect to food.
- Power moves from national or government agencies to trans-national corporations (TNCs).
- Capital in the form of money flows out of the country and within countries from rural to urban areas.
- Local food systems and small holdings developed over centuries are replaced with larger units, fewer working the land and implications for fall back (food security) in times of scarcity.

- There is a food war going on represented by two dimensions which can be seen in figure 5 below.

Figure 5. The models of the productionist paradigm of food production (left hand side)



and the ecological paradigm (right hand side) (Lang and Heasman, 2004).

The productionist paradigm sees human health best served by an efficient and productive food chain built on a model of more and greater efficiency. The ecological paradigm works from a different set of values where the drivers are human and environmental health and the system works to deliver on these values.

What this means for home economics is that there is a need to move beyond teaching about the food system 'as-it-is', to education concerning the background to the food system and how we, as both consumers and citizens, can act and exercise power. The models above can be used to both inform teaching practice about sustainability and to frame a response at a school/community level to wider influences in the food system. Education on its own is judged not to be sufficient for food advocacy or food citizenship.

References

Boseley, S. (2003, April 21st). Sugar industry threatens to scupper WHO. *The Guardian*, Monday, pp. 1 & 2.

Bowyer. S., Caraher, M., Eilbert., K. and Carr-Hill, R. (2006). Shopping for Food: Lessons from a London Borough. *British Food Journal* –forthcoming

Caraher. M. and Carr-Hill. R. (2007). Taxation and public health: 'Sin taxes' or structured approaches. In Galea. S, *Macrosocial Determinants of Population Health*. Springer Science and Business Media Publishers; New York

Caraher, M., Landon. J., and Dalmeny, K, (2006). TV advertising and children: Lessons from policy development. *Public Health Nutrition*, 9, (5), 596–605

Castells, M. (1996). *The Rise of the Network Society*. Blackwell; London

Dowler, E. Caraher, M. and Lincon, P. (2007) Inequalities in Food and nutrition; Challenging; Lifestyles. In Dowler, E. and Spencer, N. *Challenging Health Inequalities: From Acheson to 'Choosing Health'*. The Policy Press; Bristol. 127-155

Fleck, F. (2003). WHO challenges food industry in report in diet and health. *British Medical Journal*, 326, 515.

Hertz, N. (2001). *The Silent Takeover: Global Capitalism and the Death of Democracy*. William Heinemann; London.

Lang, T. and Heasman, M. (2004). *Food wars: The global battle for mouths, minds and markets*. Earthscan; London.

Lister, N.M. (2007) Placing Food: Toronto's Edible Landscape. In Knechtel. J. (ed) *Food*. MIT Press: Boston. Pp 148-185

Lloyd. S., Horsley. K., Lawton. J., Mussa. F and Caraher. M. (2008) *A tale of two cities: A study of access and attitudes to food in the Deepdale and Ingol areas of Preston*. Centre for Food Policy; City University, London.

Oxfam. (ND). *The coffee market- a background study*. Oxfam; London.

Paxton., A. (1994). *The Food Miles Report*. Sustainable Agriculture, Food and Environment (SAFE) Alliance; London.

Pendergrast., M. (2001). *Uncommon ground*. Texere; London.

Pretty. J., Brett. C., Hine. R.E., Mason. C.F., Morison. J.I.L., Raven. H., Raymnet. M.D. & van der Bijl. G. (2000). An assessment of the total external costs of UK agriculture. *Agricultural Systems*, 65, 113–136.

The Prevention Institute. (2004). *Cultivating common ground: Linking health and sustainable agriculture*. California; The Prevention Institute; Oakland.

Reader, J. (2008). *Propitious Esculent: The Potato in World History*. Heinemann; London.

Riches, G., (Ed). (1997). *First world hunger: Food security and welfare politics*. Macmillan; Press Basingstoke.

Sachs, G. (2005). *The End of Poverty: How we can make it happen in our lifetime*. Penguin Books; London.

Sen, A. (1981). *Poverty and Famines*. Oxford University Press; Oxford.

Ritzer, G. (2000). *The McDonaldization of society: The Millennium Edition*. Pine Forge Press, Sage; Thousand Oaks, California.

Schlosser, E. (2001). *Fast food nation: The dark side of the all- American meal*. Houghton Mifflin Company; Boston.

Steel C (2008) *Hungry City: How food shapes our lives*. Chatto and Windus; London

World Health Organization. (2002). *Food and health in Europe: A new basis for action*. *European series No 96*. WHO; Copenhagen, Denmark.

World Health Organisation /Food and Agricultural Organization. (2003). *Diet, nutrition and the prevention of chronic diseases*. *Report of the joint WHO/FAO expert consultation*. WHO

Technical Report Series, No. 916 (TRS 916). World Health Organization & Food and Agriculture Organisation; Geneva.

World Health Organization /Food and Agricultural Organization. (1992). *World declaration and plan of action for nutrition. FAO/WHO International Conference on Nutrition, Rome.* Food and Agriculture Organisation; Rome.