

Out of the Box



The spiral motif on this page is the emblem of the new nutrition science. If you attended the 18th International Congress of Nutrition in Durban last month, or if you have a copy of the special September issue of this journal¹, you will know why an organic shape, evoking movement on, around and up, represents our science, newly defined to work effectively in the 21st century. Its essence, stated in *The Giessen Declaration*², is that from now on, nutrition is confirmed as based on ethical principles and understanding of evolution, history and ecology, and is a biological and also a social and environmental science, with all this implies. When you write a paper whose scope or theme is part of the new nutrition science, please brand it with the spiral.

Reasons for misery

This column is written before the Durban congress. Preparation of my presentations gave me more reason to think from the point of view of the South and in particular of Africa. One fact in the UN Development Programme 2005 report, just published³, explains why people who work for Africa are angry and bitter. Rich countries now spend \$US 1 billion a year on aid for agriculture in poor countries; and just under \$US 1 billion a day subsidising agricultural overproduction at home.

This means that most people in poor countries are increasingly impoverished. Oxfam reports that four million people in Malawi, four million in Zimbabwe, one million in Zambia, 400 000 in Mozambique, 500 000 in Lesotho and 200 000 in Swaziland now face starvation⁴. You will no doubt read and see more about this in the next few months. Such are not natural catastrophes. Lack of rain may be an immediate cause of famine, but is not its essential cause. Whatever rhetoric comes out of the United Nations and the World Bank, the reality is that the rich are getting richer and the poor are getting poorer, if not always in money then in other basic entitlements^{5,6}.

Reasons for obesity

The television coverage of the inundation of New Orleans in September was a reminder that there are many millions of impoverished people living in the USA for whom disasters like great floods – or the earthquakes awaited in California – tip marginal existence into destitution. The proportion of relatively and absolutely poor people living in rich as well as in poor countries is increasing. Over 20% of all children in the USA live in poverty, the worst rate in

all countries whose average income is high⁷. On the concept of averages, you may have heard the one about the person whose head is in the gas-oven and whose feet are in the ice-box, who on average is warm.

The television coverage from Louisiana also showed that many poor people in the USA are obese. This apparent paradox is not hard to explain. In countries that remain mostly rural, poor communities living outside cities typically subsist on the local staple grain, root or tuber, with whatever vegetables are available, plus small amounts of animal food. Most work is physically demanding; so poor rural people usually stay thin.

By contrast, poor people who live in cities eat the processed food available in shops and eateries, whose manufacturers collectively spend \$US billions a year associating their products with the good life^{8,9}. The cheapest calories are from 'white food' made from refined and processed starches, fats and sugars, with salt and chemicals. Much fast food and drink is pre-prepared from the cheapest commodities on the world market. The result of dependence on cheapened and degraded calorie-dense products on populations made almost inert by cities built for automobiles, unsafe neighbourhoods and sedentary distractions, is obesity, increasingly a disease of the poor. Indeed, anybody who subsists on junk food is liable to suffer from obesity and also from symptoms of deficiencies.

Whoever you are, irrespective of income, it is easy to get into the groove of consuming aggressively advertised and marketed calorie-dense fast foods formulated by yumminess alchemists. During a recent visit to the Capitol Hill district of Washington I first thought I had bumped into a convention of paraplegics; then realised that in the USA now, an increasing number of people use wheelchairs because they are so grossly obese that they cannot readily walk.

Commercial decisions can tell more than epidemiological data. A recent report states that the US Federal Aviation Authority has increased the weight of its Standard Passenger by 8% for males and 18% for females, to calculate the centre of gravity of airliners, speed at takeoff, and fuel requirements. In-flight magazines and telephones are being removed to save weight and accommodate bellies; as are life-vests¹⁰. Wags have suggested that super-size passengers will be used as rafts in the event of a landing in the ocean, and that US check-in areas should include people-measurers with the warning 'If you cannot fit in here we will put you in the hold'.

Obesity is increasingly evident outside rich countries. Take Brazil. Every year *Veja*, the equivalent of *Time* magazine, publishes a retrospective. The 2004 issue had a

supplement on 'how to save the planet'¹¹. Alongside surveys of the state of the world and hanky-panky in Brazilian public life, one of its features had the title 'A country that eats badly and is getting fatter'¹². Its information, taken from national surveys of Brazilian food and health, as documented in the literature by my friends and colleagues Barry Popkin of the University of North Carolina at Chapel Hill and Carlos Monteiro of the University of São Paulo^{13–15}, is startling.

Between 1975 and 2000 the proportion of underweight people in Brazil decreased from 25 to 4%; whereas the percentage of overweight people increased from 16 to 40.5%, and of obese people from 4.7 to 11%. In the same period consumption of soft drinks in Brazil has increased almost 400%, and of processed meats almost 200%. Baked goods also: there are shops in my home city of Juiz de Fora in the south-eastern state of Juiz de Fora dedicated to the sale of biscuits.

Reasons for deficiency

However, deficiency and starvation will never disappear in Brazil; not even if the semi-arid interior of its north-eastern region becomes uninhabited desert. A proportion of the quarter of impoverished *nordestino* children defined as 'stunted' and 'wasted'¹⁴ are no doubt small, thin and healthy; but many continue to suffer from chronic infestation and infection, and often have relatively brief as well as miserable lives.

The new nutrition science is an invitation to think of the social and environmental as well as the biological causes of disease. As the redoubtable Urban Jonsson^{16,17} says: 'Nutritional status is often more influenced by policies and strategies that are not commonly identified as nutrition-orientated than by those that are'. And referring to political and economic policies, he says rightly: 'It is not until the basic causes of deaths of young children are attacked that a permanent improvement of the condition of children and women can be achieved'.

Basic causes go back in time. As stated by the 1974 World Food Summit¹⁸: 'The situation of the people afflicted by hunger and malnutrition arises from their historical circumstances, including social inequalities, including in many cases alien and colonial domination, foreign occupation, racial discrimination... and neocolonialism in all its forms'. Thus Nancy Sheper-Hughes begins her study of structural violence within the Brazilian state of Pernambuco¹⁹ by pointing out that 'the social, political, agrarian and health problems of the Northeast extend back to the earliest days of colonialization'. In particular she points to 'the consolidation of landholdings into large plantations dominated by a single export crop (sugar, cotton or coffee) at the expense of diversified or subsistence farming and to the cultivation in exploited rural workers of a humbling set of economic and psychosocial dependencies on their essentially feudal

landlords'. Hence nutritional deficiencies and infectious diseases.

The effects of colonialism, slavery, and the exploitation of Brazil by foreign capital and by its own landowners, industrialists and politicians, persist. Between 1970 and 1999 the richest 10% of people in Brazil had an income 15–20 times higher than the poorest 40%¹⁴, and the incomes of the most impoverished 10% of people in Brazil are lower than the most impoverished 10% of the people of Vietnam³.

Reasons for inequity

The bad days are not just legacies. They are still with us. There is no need to wonder why nutritional deficiency and even starvation persist in Africa, Asia and Latin America, and now and increasingly in the former USSR, the Middle East and indeed in impoverished rural and also urban areas of economically rich countries. In his trilogy anatomising current political, economic and social policies, Manuel Castells identifies the 'global phenomenon (albeit with some important exceptions, particularly China) [of] the growth of poverty, and particularly of extreme poverty'. Throughout poor countries and within rich countries, more people are now destitute, and 'at the turn of the millennium well over a third of humankind was living at subsistence or below subsistence level'²⁰. He identifies them as a new Fourth World.

The rich are getting richer and the poor are getting poorer, with all this implies for food, nutrition, well-being, health and disease, not because of 'globalisation', a phenomenon with many aspects that cannot be judged in any one way. The issue is one aspect of globalisation. This is the exploitation of human, living and physical resources now accelerated by the use of electronic technology by the most powerful governments and industries. It is hardly controversial to say that we now live within a new form of global imperialism and capitalism with unprecedented penetrative power, which does not favour the weak and the poor, and which is draining the planet's living and physical resources to and past points of recovery. Three examples follow.

The monopoly of goods

There is nothing new in the tendency to monopoly in goods. What is new is its current scale. Transnational food and chemical manufacturing industries and the food retailing and catering industries follow the general rule that control of industry tends towards concentration²¹. The closer business gets to monopoly, the more 'market' means whatever is good for the biggest businesses. This might be in the public interest, and with the forces that drive food systems could conceivably improve public health; but if so, only by chance.

Industrial monopoly can be exercised by separate enterprises combining in their joint interest, as in

a business cartel that fixes prices or markets; or else acting in parallel because of having interests in common. In either case smaller companies are systematically taken over or driven out of business. An impressive example, amply documented by Corinna Hawkes in a report of the World Health Organization, is the global burgered meat and cola sweetened drinks industry²². This is dominated by four companies, McDonalds™, Yum! Brands™ (formerly KFC and Pizza Hut), Coca-Cola™ and Pepsi-Cola™, with combined annual sales of well over \$US 100 billion and a total annual advertising spend of over \$US 4.5 billion, both roughly half inside and half outside the USA. Three of their brands are the most recognised in the world²².

All originate in the USA; all are expanding their 'throat and stomach share' in Asia, Africa, the Middle East and Latin America; and all use similar advertising, marketing and sales promotion methods that target young people, contradict traditional food culture and imprint the message of immediate gratification from processed products. A generally friendly history of Coca-Cola⁹ begins: 'There is little doubt that Coke will continue its implacable quest for world domination'. When you learn that presidents of the USA are usually either Coke or Pepsi men, used routinely for product placement, it would be unwise to assume that 'domination' refers merely to soft drinks.

Degradation of land

There is also nothing new in the degradation of land. The traveller who flies over Greece or North Africa, or visits the Scottish Highlands or the Yorkshire Moors, sees bare landscapes that once were wooded and verdant, but which were exploited into sterility. In times gone by, rulers made granaries to feed Rome that turned much of the North African littoral into desert, fleets that cut down much of Europe's forests, and trade rules that provoked famines in Asia, Africa and Latin America²³⁻²⁵.

In times gone by, humans could devastate land and then move on. But now there are few wide open spaces left. And the use of natural resources for food production is not sustainable. Agriculture uses 70% of the fresh water used by humans, and irrigation is now draining more water than is being replaced by rainfall²⁶.

The carrying capacity of the planet is no longer able to sustain human exploitation at current levels. The total land area needed to provide the resources now used by agriculture, urbanisation and industry is around 20% above what can be absorbed and replenished²⁷. This is not just the view of longhairs. In 2001 a World Bank report warned: 'Across the developing world, environmental problems are imposing severe human, economic, and social costs and threatening the foundation on which growth and, ultimately, survival depend²⁸'.

The main single reason for the degradation of land is industrial animal production. For China, it is estimated that

meat production will triple in the next 25 years to the current US level of 125 kg per person per year, amounting in 2031 to a total of 180 million tonnes a year²⁹. This is equivalent to almost four-fifths of world production as estimated at 218 million tonnes in 1999, which even before these new Chinese estimates was projected to increase to 376 million tonnes by 2030³⁰. The impact of industrial animal production on incidence of chronic diseases is predictable. Its impact on the land is equally troublesome: thus, in 1997, industrially reared animals produced 1.4 billion tonnes of waste in the USA, the equivalent of about 5 tonnes for each person living in the USA, most of which is buried untreated, together with all other wastes³¹.

The draining of resources

A strong-minded response to global economic and political policies that are socially and environmentally damaging, and that are increasing the rates of disease, is to say they are strong medicine, the world is in a period of transition, progress has its price, and for most people in the world, life is getting worse as a precondition for getting better. This has been and is a justification for 'great leaps forward' and 'structural readjustments' and many other radical political and economic policies.

One problem with the 'shake-out' theory as applied to nutrition and public health, and much else besides, is that at current rates of use, global physical resources are becoming drained. Water is just one example. The ideology of ever-increasing production and consumption of all goods, including food, depends on the assumption that energy and other resources such as water are everlasting. Agriculture that uses only the power of animals and humans consumes less energy than is produced in the form of food. By contrast, the amount of energy now needed to produce, process and distribute food in industrialised countries is around six times greater than the energy value of the food itself³². This obviously cannot go on for ever.

Oil, the source of over four-fifths of the energy generated globally, the lubricant for industrial agriculture³³, is also running out. One projection is that oil production will peak in 2008, and by 2035 will be a quarter of its current level³⁴. By then new wells may be opened, new sources of oil exploited, and renewable energy sources used more effectively; and China may for a while fuel its economic development with its own coal. But most scenarios, including those that anticipate more use of renewable sources of energy, project water and fuel as becoming more scarce and so more expensive.

The recognition of evils

With reference to the condition of the working classes in Manchester in the 1840s, Elizabeth Gaskell observed: 'Evils once recognised are half-way towards their remedy³⁵'. In

her novel *Mary Barton*, Mrs Gaskell did not confuse symptoms with diseases. She described a society that had gone wrong.

With acceptance and practice of nutrition as a social and environmental as well as a biological discipline, scientists will be better able to have a salutary influence. Thus, useful positive lessons will be learned from social and environmental policies and practices within middle- and low-income countries where rates of deficiencies and infections of infancy and childhood, and rates of obesity and other chronic diseases, do not follow general trends.

Indeed, the general effect of the draining of natural resources could be salutary. Increased costs of imports, exports and transport should encourage local food production and consumption. The relative costs of foods produced 'organically' and by low-input methods should decrease. If the world economy becomes generally depressed, people will grow more of their own food. Traditional food culture may revive. And breastfeeding may once again become the universal practice.

Meanwhile, if you are a citizen of a rich country and you want to understand what is happening now in poor countries, read about the circumstances of the lower classes in Britain and Germany during the first industrial revolution.

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References

- Leitzmann C, Cannon G, eds. The New Nutrition Science project. A joint initiative of the International Union of Nutritional Sciences and the World Health Policy Forum [special issue]. *Public Health Nutrition* 2005; **8**(6A): 663–806.
- The Giessen Declaration. *Public Health Nutrition* 2005; **8**(6A): 783–6. Also available at <http://www.iuns.org>.
- United Nations Development Programme (UNDP). *Human Development Report 2005. International Cooperation at a Crossroads. Aid, Trade and Security in an Unequal World*. New York: UNDP, 2005. Also available at <http://www.hdr.undp.org>.
- Press Association. Charity warns 10 million face food crisis, 8 September 2005.
- Farmer P. *Pathologies of Power. Health, Human Rights, and the New War on the Poor*. Berkeley, CA: University of California Press, 2005.
- Sen A. *Development as Freedom*. New York: Anchor, 1999.
- Lerman R. The impact of changing US family structure on child poverty and income inequality. *Economica* 1996; **63S**: 119–39.
- Schlosser E. *Fast Food Nation. What the All-American Meal is Doing to the World*. London: Penguin, 2002.
- Prendergrast M. *For God, Country and Coca-Cola. The Definitive History of the Great American Soft Drink and the Company that Makes It*. New York: Basic Books, 2000.
- Younge G. Airlines lose life-vests to fit fat flyers. *The Guardian*, 13 August 2005.
- Retrospectiva. Atos e personalidades que fizeram o ano. *Veja* 2004; **37**(51): 22 December. São Paulo: Editora Abril.
- França R. Um país que come pior e está mais gordo. *Veja* 2004; **37**(51): 22 December.
- Cannon G. The formula for obesity, and other stories [Out of the Box]. *Public Health Nutrition* 2005; **8**(2): 113–6.
- Monteiro C, Conde W, Popkin B. Is obesity replacing or adding to undernutrition? Evidence from different social classes in Brazil. *Public Health Nutrition* 2002; **5**(1A): 105–12.
- Monteiro C, Conde W, Popkin B. The burden of disease from undernutrition and overnutrition in countries undergoing rapid nutrition transition: a view from Brazil. *American Journal of Public Health* 2004; **94**(3): 433–4.
- Jonsson U. Integrating political and economic factors within nutrition-related policy research: an economic perspective. In: Pinstrup-Anderson P, ed. *The Political Economy of Food and Nutrition Policies*. Baltimore, MD: Johns Hopkins University Press, 1993.
- United Nations Children's Fund (UNICEF). *Strategy for Improved Nutrition of Children and Women in Developing Countries*. Policy Review 1. New York: UNICEF, 1990.
- Food and Agriculture Organization of the United Nations (FAO). *Declaration on the Eradication of Hunger and Malnutrition*. World Food Conference. Rome: FAO, 1974.
- Scheper-Hughes N. O nordeste. Sweetness and death [Chapter 1]. *Death Without Weeping. The Violence of Everyday Life in Brazil*. Berkeley, CA: University of California Press, 1993.
- Castells M. The rise of the Fourth World: informational capitalism, poverty, and social exclusion [Chapter 2]. *The Information Age: Economy, Society and Culture*, Vol. 3: *End of Millennium*, 2nd ed. Oxford: Blackwell, 2000.
- Lang T, Heasman M. The food wars thesis [Chapter 1]. *Food Wars. The Global Battle for Mouths, Minds and Markets*. London: Earthscan, 2002.
- Hawkes C. Marketing activities of global soft drink and fast food companies in emerging markets: a review. In: World Health Organization (WHO), ed. *Globalization, Diets and Non-Communicable Diseases*. Geneva: WHO, 2002.
- Goldsmith E. The fall of the Roman Empire [Chapter 1]. *The Great U-Turn. De-industrialising Society*. Bideford, Devon: Green Books, 1988.
- Seymour J. *The Ultimate Heresy*. Bideford, Devon: Green Books, 1989.
- Davis M. *Late Victorian Holocausts. El Niño Famines and the Making of the Third World*. London: Verso, 2001.
- International Food Policy Research Institute (IFPRI)/World Resources Institute (WRI). *Pilot Analysis of Global Ecosystems. Agroecosystems*. Washington, DC: IFPRI/WRI, 2000.
- Meadows D, Randers J, Meadows D. [Preface]. *Limits to Growth. The 30-Year Update*. Vermont: Chelsea Green, 2004.
- World Bank. *Making Sustainable Commitments: An Environmental Strategy for the World Bank*. Discussion Document. Washington, DC: World Bank, 2001.
- McMichael A, Bambrick H. Meat consumption trends and health: casting a wider risk assessment net [Invited Editorial]. *Public Health Nutrition* 2005; **8**(4): 341–3.
- Brown L. Learning from China. Why the Western economic model will not work for the world. Available at: <http://www.earth-policy.org/Updates/2005/Update46.htm>
- Walker P, Rhubart-Berg P, McKenzie S, Kelling K, Lawrence R. Public health implications of meat production and consumption. *Public Health Nutrition* 2005; **8**(4): 348–56.
- McMichael A. *Human Frontiers, Environments and Disease. Past Patterns, Uncertain Futures*. Cambridge: University Press, 2001.
- Yergin D. *The Prize. The Epic Quest for Oil, Money and Power*. New York: Simon and Schuster, 1991.
- McKillop A, Newman S. *The Final Energy Crisis*. London: Pluto, 2005.
- Schama S. The Queen and the hive [Chapter 3]. *A History of Britain. 1776–2000. The Fate of Empire*. London: BBC Books, 2002.