

Out of the Box

Telling it like it is

Two pleasant items of news modify what I have written in this column¹. First, the *British Medical Journal* has published an apology for its outrageous 'obituary' of David Horrobin. Second, the Alliance for People's Action on Nutrition critique of the new WHO global strategy for diet, physical activity and the prevention of chronic diseases is now posted on the WHO website².

Anna Ferro-Luzzi, my colleague on this journal and my comrade-in-arms at the 1992 FAO/WHO International Conference on Nutrition in Rome, has written to me commenting on the same column: 'Great stuff! But *very* unusual for a scientific journal' (Ferro-Luzzi A, personal communication). Well, Anna is not merely unusual, she is unique, and I asked her if 'and' could be substituted for 'but'.

In similar mood, another colleague tells me that this column is 'colourful'. Well thank you, this is my intention! I do not agree with the idea that, to be 'science', ideas must be presented at the lectern and in print in monotone. Nor do I agree that science is separable from its human and other contexts. Indeed, just as the church in majesty may use liturgy as armour against reality, those with temporal power may use scientific abracadabra to disguise jiggery-pokery as disinterested solutions to technical problems.

Scientists themselves are not immune from the arrogance of office. For example, British citizens will remember the united front of government and officially appointed scientists, assuring the great unwashed between the late 1980s and the mid-1990s that the practice of feeding ground-up sheep to cows was entirely harmless and that mad cows were 'dead-end hosts'³. In Portuguese and other languages, there is no distinction made between the word 'politics' and the word 'policy'. In the broader sense, nutrition science is political.

Scientific debate between the 17th and early 20th centuries, including in the most august settings such as the Royal Society, could be rhetorical, dramatic and even sensational. The Royal Society itself was founded in 1662 as an engine of the scientific revolution, in the days of Isaac Newton, Christopher Wren, Robert Hooke and Edmond Halley, and its early members included lay people committed to the use of science in the public interest. Its early work included practical matters: two years after its foundation, Fellows were asked to experiment with the cultivation of the potato as cheap food for a needy population⁴.

It is a pity that such useful work was not regularly updated and reviewed: an underlying cause of the Irish

famine of the mid-19th century was mono-cropping of one strain of potatoes, just as rural livelihoods throughout South East Asia are now threatened by mono-cropping of a few strains of rice or wheat^{5,6}.

But now? Thomas Kuhn writes of scientists in general: 'there are no other professional communities in which individual creative work is so exclusively addressed to and evaluated by other members of the profession... the most esoteric of poets or the most abstract of theologians is far more concerned than the scientist with lay approbation of his creative work'⁷.

Must this also apply to public health nutrition? Surely public health nutritionists want to be understood, to communicate the meaning of their work, and so make a difference for the better in this world? The very title of this journal suggests to me a commitment both to sound scientific principles and evidence, and to advocacy in the public interest.

Well, sorry. This must sound defensive. But as my august editor Barrie Margetts knows, I would like to see the pages of this journal fizzing with debate. Indeed, I hope that readers will welcome more editorial stances, such as that taken earlier this year⁸. This would be in the original tradition of *The Lancet*, campaigning in its first days against the adulteration of food and more recently when it published the report of the National Advisory Committee on Nutrition Education⁹ while still in draft, the report having been suppressed by order of the then Prime Minister. Mrs Thatcher, by the way, was the one British Prime Minister with a claim to know about food and nutrition; in her early years as a food chemist she devised fillings for swiss rolls at the J Lyons Hammersmith factory¹⁰.

The cost of mangoes

Now for a sad story which also modifies a previous column. Earlier in the year I celebrated the fulfilled vision of Roberto Burle Marx, who made Brasília a garden city and, in particular, ordered the planting of trees whose fruits, like avocado, lemon and mango, I saw as a recreation of the commons. Eating a mango fallen fresh from the tree, I thought it was free¹¹.

I was enthusiastic, but, sorry to say, the whole story is bitter. Yes, for the people who work or live in Brasília's central *Plano Piloto*, fruits grow on many of the trees that are a feature of the city. Yes, working-class people who spend their days in the *Plano Piloto* before catching a bus home to the 'satellite cities' sometimes do take the fruit or forage for it. But most middle-class people think of fruits on the trees as rubbish, full of holes and worms. For them,

as with consumers in the North, food comes from shops – safe, clean, packaged, in bags loaded into their cars. Kids play football with mangoes fallen from trees.

And while the price of the fruit on the trees of Brasília is free, their cost is high. Railways are the first reason. Later in the year, I asked a retired civil engineer, who had worked on the railways, why so many lines in Brazil have been ripped up, abandoned or used only for goods. There are some passenger routes left, as in the Walter Salles movie ‘Centro do Brasil’, but nothing like a national network. Why? The reasons are not obvious: in Brazil, skilled labour is plentiful and cheap, and much of the country is relatively level. A flourishing railway system run on economic and on social lines, as in India¹², would have been a precious national resource.

He explained to me that in order to establish Brasília as the new capital of Brazil in the then almost empty interior, with the necessary motorways to Rio de Janeiro, São Paulo and elsewhere, President Juscelino Kubitschek did a Faustian deal with foreign investors. The deal was to destroy the national railway system. Brazil became a country of roads and automobiles. Now, people without cars or taking long journeys almost always have to use coaches, which are more expensive than trains need be, and which at night are vulnerable to highway robbery.

This is one of the costs of my mango. The greater cost is foreign debt. The creation of Brasília turned Brazil more than ever before into a beggar nation. Vast international loans were taken out. Debt and inflation created economic, social and political instability, the overthrow of two elected Presidents, and 20 years of military rule. Eight years after Brasília was inaugurated, all automobiles constructed in Brazil were made in foreign-owned factories, of which 90% were owned by Ford, General Motors and Volkswagen^{13,14}.

Unless a new equitable deal is struck, Brazil will pay for Brasília for ever, with its debt burden a social and political powder keg. In Brasília mangoes can be free, but their true cost is high. In January I thought I had found an example of a potential sustainable food policy based on sound principles. I was naive and I was wrong.

Cretan oil and vegetables

It is supposed that nutrition scientists, like all other scientists, are searching for the truth. I do not agree, and I think this attitude is not scientific but religious in the Old Testament sense (‘Thou shalt have no other God but me’). Outside mathematics there is no such thing as the truth (or The Truth) in a singular sense. Truth is relative.

In the development, confirmation or application of a theory, facts are selected and therefore scientific theories are selective. By this I do not mean tendentious or fraudulent. But all theories, and all research that is based on and may support theories, come from a point of view.

This is inescapable. No type of experiment can eliminate the possibility of alternative theories, if only because in all scientific work there is always unexplored territory. The investigators may sincerely deny this, perhaps because they themselves are not aware of the context in which they are working.

Here is a nutrition science example that impresses me. The campaigning nutritionist Caroline Walker, who squirreled information, somewhere found copies of the original raw data collected in Crete for the great ‘Seven Countries Study’¹⁵. It was these data, conscientiously sifted and assessed by Ancel Keys and his collaborators, that began to convince the scientific community and then policy-makers throughout the world that a prime nutritional cause of heart disease is not so much food supplies high in total fat, as in saturated fat. This was because total consumption of fat in Crete was then measured at a very high 40% or so of total calories, but almost all came from monounsaturated olive oil.

But when in the early 1990s I looked through all the raw data showing the general dietary intake of Cretans in the early 1960s, what jumped off the pages for me was not buckets of olive oil, but baskets of vegetables and fruits. The Seven Countries Study did not make the judgement we well might make now, which would modify the theory always now associated with Keys, because, in those days, heavy-hitting nutrition scientists were not particularly interested in vegetables and fruits, nor indeed in food as distinct from dietary constituents. Until the 1980s vegetables and fruits were usually recommended in dietary guidelines reports as containing water, bulk and various micronutrients, but without any emphasis¹⁶.

Context, evidence, judgement

We tend to find what we are looking for. We tend not to find what we are not looking for. These facts of life apply to science, and are not resolved by the types of clinical trial developed from the original proposals of Archie Cochrane¹⁷.

Nutritional epidemiology is a recent science, but the Case of the Cretan Vegetables is not just an example of primitive work. No matter how comprehensive any study is, it cannot in the nature of things be complete. We all work with a sense of what is relevant. The best judgements are always made on the best admitted evidence available at the time.

Here are three more examples related to nutrition science, all about guts. First, dietary fibre. In 1975, dietary fibre did not feature in any food composition tables, and was not entered in *Index Medicus*¹⁸. Now, less than 30 years later, I pick up a three-pack of Nesquik fruit-flavoured milk drink in Juiz de Fora, a provincial Brazilian city, and find its fibre content and the percentage of daily reference value in a portion, all as specified by law, on its nutrition label (‘*Fibra alimentar* 0g; % *Valores Diários* 0%’).

Previously known as 'roughage', dietary fibre was thought to be irrelevant to nutrition or even to be a gut irritant. Now it is agreed that food supplies and diets high in fibre are vital for good health and protection against disease, thanks to Hugh Trowell, Denis Burkitt, Sir Francis Avery Jones, Ken Heaton, John Cummings, Hans Englyst and other pioneers.

Second, gut disorders and diseases, such as constipation, haemorrhoids, irritable bowel syndrome, diverticular disease, Crohn's disease and ulcerative colitis. These do not feature in the new WHO report on food, nutrition and the prevention of chronic diseases, nor (so far) in the associated global strategy^{19,20}, despite the variable evidence that they are or may be caused at least in part by food supplies and diets depleted in dietary fibre and other nutrients^{21,22}. The only basis I can think of for this stupid omission, made by the WHO officials who commissioned the report, is an assumption of irrelevance.

Third, gut microbial ecology. In general, the function of intestinal flora in digestion has been well known for a long time, but the relationships between gut microbial ecology, food and nutrition, drugs (notably antibiotics) and human health is still poorly understood. This is partly because rummaging in poo is not a glamour field (Cummings J, personal communication). Another reason is the complexity of these relationships and the phenomenal adaptability of gut flora. Also, the concept of commensality and symbiosis between bacteria and humans, such that gut flora amount to a vital organ of the body, is grasped by those who think ecologically, not just biochemically²³. One point here is that as soon as gut microbes are studied and data from such research admitted as evidence in considering the relationship between food, nutrition and the risk of disease, general conclusions will shift. Another point is that as soon as nutrition scientists think ecologically, the discipline of nutrition science itself shifts.

And, as a distinguished researcher said to me in Washington at a recent conference of the American Institute of Cancer Research: 'I do wish that Hugh Trowell and Denis Burkitt had thought not about dietary fibre, but about grains, fruit and vegetables' (Kritchevsky D, personal communication).

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