

Out of the Christmas Box

I guess many of us who work in public health feel a *frisson* of dissonance at Christmas, as we feast in commemoration of the birth of an ascetic preacher usually depicted as having a body mass index of maybe 17–18, who might even have been two standard deviations below the weight of the average Galilean of his day and thus, in John Waterlow's definition, wasted.

Christmas as consumer potlatch is even more strange here in Brazil, where in shopping centres tots perch on the laps of Santas sweltering into their plastic red cloaks and white beards, as the public address systems crank out Portuguese renditions of 'In the bleak midwinter, frosty wind made moan' and other Yule ditties.

Feasting and fasting

The results of an imaginatively selected series of studies designed to show degrees of compliance with dietary guidelines during the Christmas holiday period would be fun. They would tell a tale not only of the habits and attitudes of the subjects of study, but also of the ways of life of the researchers. The studies should include populations whose festivals are not based on spending, eating and drinking, and so whose patterns of health and disease may be different. Cretans, for example.

Every nutrition student knows that in the early 1960s Ancel Keys and his teams of co-workers in the Seven Countries Study (odd, because as Claus Leitzmann reminds me, 12 countries were studied) found that Cretans then enjoyed the lowest rates of coronary heart disease and the longest adult life expectancy¹. Dr Keys and his wife Margaret dedicated much of the rest of their lives to enjoyment and advocacy of traditional Mediterranean food systems as they understood them – wine, garlic, olive oil and all – and to warning against saturated fats², and quite right too.

Curiously though, and all the more so given his previous epic Minnesota Study on energy restriction³, Dr Keys overlooked a relevant factor: the practice, still common especially in rural mainland Greek and Cretan communities, of fasting.

As far as I know, the conventional literature has little to say about fasting, which is to say occasional or regular abstinence from some or all foods and drinks. In their combined 1700 large-format pages, two current standard nutrition science textbooks contain just four brief references to fasting^{4,5}. Yet fasting, typically involving restriction of energy and of energy-dense and animal foods, is still undertaken all over the world by vast

numbers of people, usually but not always as an aspect of religious observance⁶.

The Greek Orthodox Church stipulates abstinence from meat, fish, milk, eggs, cheese – and olive oil – every Wednesday and Friday, and similar restrictions throughout the 48 days of Lent, the 15 days of the Assumption in August and the 40 days before Christmas, adding up to a total of more than half the days of the year. In the periods of fasting, foods of animal origin are prepared and preserved for later consumption, and so the practice also has communal, economic and ecological value. Seafood such as octopus, squid, lobster and crab is however allowed on all fasting days, as are snails.

I mention all this because an intriguing new study has examined the nutrition and health status of 60 Cretans who follow the teachings of their Church, together with 60 who do not fast⁷. During the fasting periods, which involve an average drop in energy consumed of around 10%, the nutrition status of the fasters improves greatly, as do the usual measurements of risk factors for coronary heart disease and other chronic diseases.

Why? One obvious explanation is that the Cretan fasting diets include more vegetables and fruits, more starchy foods and vastly more legumes. It is also true that other habits of the Cretan fasters are healthy: for example, they smoke less and drink less alcohol at all times. Both these explanations are valid, given the general agreement on the benefits of plant-based diets, moderate consumption of alcoholic drinks and not smoking⁸.

As well as this, I propose that fasting may be healthy not just when more nutrient-dense foods are consumed, but also because regular restriction of energy (and perhaps also of energy-dense foods) itself allows the body to rest and recuperate, just as the practice of meditation and reflection during a period of fasting refreshes the spirit. This introduces the provocative possibility that the states of mind induced during times of religious observance, of which fasting is traditionally an integral part, are reciprocally beneficial to physical health, and so are also nourishing in the broadest sense of the word⁹.

I think it is reasonable to assume that in making fasting part of the preparation for festivals, as a result of observation over many generations, the ancients understood its benefits for the body as well as for the mind and spirit. This multi-dimensional hypothesis can be made the subject of biological research using current orthodox (as distinct from Orthodox) methodology. The call to colleagues who are research scientists is 'Go to it!' As Karl Popper quotes in the epigraph of his great work on

the philosophy of science¹⁰: 'Theories are nets: only he who casts will catch'.

Food for thought this Christmas time, as you eye the wreckage of your groaning board, decide that yes, maybe you do have room for another slice of turkey with stuffing or mince pie with brandy butter, and resolve to go on a never-to-be-confessed crash diet.

Contents and contexts

What and where are the foundations of current nutrition science and food policy? In a conversation not so long ago with the sagacious Irv Rosenberg, editor of *Nutrition Reviews*, I suggested that journal editors should commission occasional major examinations of what have turned out to be the most powerful studies in their field, that have become foundations not only of academic research, textbooks and ordinary science, but also for public policies and practices then and now.

The purpose of such examinations would be to assess the studies not only for their contents, but also for their contexts: that is to say, for their accuracy as judged by current standards, and also for their value now and for the future. Science is a human activity; it always has contexts. Thus, rot has already been detected in some of the grand palaces of science, such as the theory of human evolution and the germ theory of disease, and their application to human affairs, though whether this is attributable to the original authors rather than their followers is another matter^{11,12}.

In nutrition science, one example is the 'Wuppertal Experiment' funded by the British Medical Research Council and carried out between 1947 and 1949 on German foundlings by a team led by Elsie Widdowson and Robert McCance of the Department of Medicine at Cambridge University^{13,14}. McCance and Widdowson, who in 1940 originated successive compendiums of the chemical composition of British foods¹⁵ which have gained quasi-biblical status, had a dominating influence on British nutrition science and food policy, as academics and as advisors to government and industry, from the 1950s through to the 1970s.

In Wuppertal and in Duisburg, children were segregated according to what type of bread they were fed and were given lots of it. They were also fed potatoes, lots of vegetables, vegetable soups made from unrecorded recipes, small amounts of meat and milk, and supplements of calcium and vitamins A, D and C.

McCance and Widdowson's general conclusion, that for practical purposes white bread has the same nutritional value as brown and wholemeal bread¹⁶, made sense in four contexts, then all important. First was the need for minimum nutrition standards in post-war Europe, and most of all in continental Europe. Second was the belief (still commonly held) that in early life fast human growth is the best measure of health¹⁷: in a telling

phrase they said of all groups of children 'their heights and weights went up faster than those of American children'¹⁶. Third was the need to make use of cheap available staples at a time of scarcity and insecurity. And fourth was the need to support British industry, including the big flour and bread manufacturers, whose machines were then (as now) geared to make white bread, and who wanted to use wheat bran and germ in animal feed and 'health' foods.

The results of the Wuppertal Experiment, as interpreted by its principal investigators, had a decisive impact on the decision of the British government in the mid-1950s to abandon support of brown bread and to allow industry to flood the market with the 'fortified' white bread that suited them best. This is not merely of historical interest, as anybody can see by looking at the cheap breads that are the lead lines in supermarkets in the UK, the USA and indeed Brazil, usually palatable only when eaten with fats and sugars.

What might an examination conclude now? Much would depend on its scope. My view is as follows. First, the Wuppertal Experiment is the original and crucial scientific rationale for the degraded white wheat bread that dominates markets in many parts of the world. Second, the scientific content of the study does not justify the general conclusion on different types of bread¹⁴. Third, its contextual rationale then has limited value now, given current and future needs to protect human health throughout the whole course of life; to promote food systems that are varied and diverse, suited to culture, climate and terrain; and to sustain human, living and natural resources.

Science and religion

The original Seven Countries Study might well stand up fairly well to a new examination of its contents. That said, I think its first take-home message now, designed to prevent not only coronary heart disease, would underline the value of richly varied plant-based food systems and thus diets, rather than amphorae of olive oil.

But bearing in mind the new Cretan study⁷, suppose its original raw data could be re-analysed, separating those people who in the 1960s fasted for over half the year from those who did not fast? It seems likely that the differences in nutrition and health status, then as now, would have been impressive. And how different from other countries would the rates of coronary heart disease and adult life expectancy of the non-fasting population have proved to be?

And what if the finding that seemed most impressive now was the contrast between fasters and non-fasters? What then should the first take-home message of the study have been at the time? Obey your priest? The new Cretan study certainly shows that the Greek Orthodox Church is doing a terrific job of nutrition education.

Why did Ancel Keys neglect the main religion of Crete, and the relevance of its dietary rules to human health? It is unlikely that he and his co-workers in Crete were unaware of the practice of fasting. Was it that in his country of origin, the USA, fasting is rarely observed except as a vestigial gesture at Lent? Or because fasting, undertaken for any reason, was and still is thought to be irrelevant, bizarre or even dangerous? Or because if study designs allow for those people who do not always eat three square meals every day, the results are too complicated to interpret? Or because nutritionists who want to be seen as credible scientists eschew religion in their professional lives? Or what?

Custom and practice

Meanwhile I propose Cannon's Law of the Credibility of Tradition, as follows. Practices traditionally believed to be valuable should be taken seriously; and any such practices that have been followed consistently in different cultures and contexts throughout history are probably valid universally, although not necessarily for the reasons given. They do not require proof by modern scientific methods to be accepted; they require disproof to be rejected. That is to say, the burden of proof is on those who wish to discredit long-standing traditional custom and practice.

I am not suggesting that we should now comb through repositories of wisdom in order to commend admonitions like 'the swine, because he parteth the hoof but cheweth not the cud, he is unclean to you'¹⁸, which may however have made sound sense at the time. Rather, it is time for nutrition to be defined according to new principles, as a broad-based, multi-disciplinary social as well as biological science. Nutrition scientists should pay at least as much attention to the history, tradition and culture of food, nutrition and health, and also to the impact of nutrition and food policies on living and natural resources, as they do to studies confined within biochemical and other corrals.

Country and city

I now turn to another case of the contexts of change in patterns of food, diet and disease: China. I have already mentioned the mooted plan of the Chinese government to shift 300–500 million of its people from rural areas into cities by 2020¹⁹; and also the dramatic rise in disease, and fall of life expectancy, in Russia since the collapse of the USSR²⁰.

The Chinese authorities are planning their version of the British enclosures and clearances that provided the human fuel for the original Industrial Revolution in England, but with 50 times more people in a fifth of the time.

The conventional view is that industrialisation and urbanisation have the effect of reducing the incidence of nutritional deficiencies and infectious diseases, and that

while the incidence of chronic diseases increases, this is offset by an increase in life expectancy; so gauged in this way, there is an overall net gain. Is this always true?

We can now guess at future trends of public health in China, as the country becomes by the current definition more developed. A new Red Cross report states that 70% of the people of Beijing, Shanghai and Guangzhou say that they are tired, unfit or ill. Moreover, the Chinese Academy of Sciences reports sharp decreases in life expectancy, most of all among the educated and professional classes. Intellectuals are dying at an average age of 58 years, 10 years below the national average. The life expectancy of managers and programmers in China's 'silicon valley' is 53 years; and of Shanghai journalists, 45 years²¹.

Why? One theory is that the generation which, when young, suffered through the years of the Great Leaps Forward and then the Cultural Revolution, is now in middle age, paying the price. However, debility and premature illness and death did not surge in post-Hitler West or East Germany, or in post-Stalin USSR, and there is an obvious motive for current politicians in China to deflect blame for any current national malaise on the national policies of their fallen idol Chairman Mao.

A representative of the World Health Organization (WHO) in Beijing proposes another reason²¹: 'There is a contradiction in China, that as the country becomes wealthier it faces a whole new set of health problems related to diet, pollution, smoking and stress. The pattern of their diseases is becoming more like that of the West'. This seems to me to be pointing in a more plausible direction, but what does this artfully value-free phrasing really mean?

The redoubtable Barry Popkin of the University of North Carolina at Chapel Hill and his colleagues persistently point out that the consumption of animal foods, fats and saturated fats, and the incidences of obesity, diabetes and heart disease, are both rocketing in China, most of all in the cities. They see the 'nutrition transition' as a major cause of the 'epidemiological transition', and they project accelerations in these trends^{22,23}. But again, what is behind this: why are the Chinese people consuming more meat and fat, and no doubt also more alcohol, sugar and salt?

Wealth and development

An answer requires scrutiny of the meaning of words such as 'wealth' and 'development'. Adam Smith wrote *The Wealth of Nations* to advocate his theories of effective use of capital and trade as a means to the end of human health, welfare and happiness, which was roughly what 'wealth' meant in those days. Since then the term has become narrowed in meaning, and 'wealthy' has come to mean 'having and using a lot of money'. The means has become the end.

Suppose the WHO representative had said: 'As the country becomes more capitalised and urbanised, it faces... (etc. etc.)' Such dangerous phrasing would suggest that increased stress, smoking, pollution and pathogenic diets in China, and increased incidence of premature disability and death, could be caused by its current government's traumatic trade policies.

Similarly, it may seem self-evident that the more developed a country is, the better. This is because, as with 'wealthy', 'developed' is a 'good' word, ordinarily meaning to unfold, mature, evolve. But as now applied to countries, the word has a technical meaning, of more industrialised and urbanised; and the standard gauge for degree of development is money, expressed as GNP (gross national product), averaged as per head per year.

Conscientious public health nutritionists in China must suffer some sense of despair. Rocketing supply and consumption of foods and drinks processed and preserved with hard fats, salt and sugars, and of cigarettes, alcohol and illegal drugs, is part of the package when populations are shoved off the land into cities. These products keep city people sated and dependent and, if they earn spare money, turn them into regular customers for legal drugs, which increases the GNP and the 'wealth' and the 'development' of their country while in reality the mass of people in the cities are impoverished in any real sense of the word.

Money and freedom

Machines, cities and money are not roots of evil. Rather, they are not ends in themselves, but means to the ends of security, health, education, fulfilment, happiness and all the other aspects of wealth in its original and authentic sense. Amartya Sen is right to see development as freedom²⁴. The more freedoms – personal, communal, social, economic, political – we have and hold, the healthier and yes, wealthier we are.

Countries, and societies and communities within countries, that are relatively self-sufficient and make relatively little use of money, are not for this reason impoverished or undeveloped. Indeed, if they maintain their common and private holdings and property, in places where the climate and terrain are benign, and are not subject to tyranny and invasion, they are wealthy. I suggest that, in all our discourse, we should use words in their original and ordinary meanings.

The sustenance of healthy food systems and healthy nations requires governments to balance between change and conservation, between urban and rural environments, and between traditional and industrial ways of life. Governments stand in need of advice from health professionals who see public health nutrition as not only a broad subject but also part of a very big picture.

This could mean you. Out of my Christmas Box, I wish you a healthy and wealthy New Year.

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