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Out of the Box

This is my second column on ethics as the right foundation for nutrition science and food and nutrition policy. First there is a sketch of developments in bioethics; then a preview of the move made by the UN this month to establish prescriptive values as the basis for child growth; then a tale of two moral stands made by distinguished nutrition scientists that have had lasting salutary impacts; and a suggestion for progress.

The ' is' and the 'ought'

The avoidance of ethical and other normative principles is a defining characteristic of modern science. Students are trained to think that science aspires to the state of mathematics, and that its business is with what David Hume classifies as 'matters of fact'[1]. Which is to say, that science works with the 'is', and not the 'ought', and disciplines dealing in questions of quality, such as anthropology and sociology, are for this reason 'soft' sciences, or even not 'real science'. Thus with nutrition; its teaching and practice (insofar as its subject plausibly allows) as a 'hard' science, has led to a 'cleansing' of the ethical principles explicit in predecessor disciplines.

Since the beginnings of modern science, ethics expressed as moral discourse has largely remained the territory of the Christian churches[2]. Scientists are trained to leave other types of normative judgement to politicians, lawyers, or 'activists' – civil society organisations. So most scientists are dunces at ethics, and inept at making prescriptive judgements, which necessarily go beyond matters of fact[2]. Riffle through 'conclusion' sections of any journal, where 'so what?' questions are supposed to be addressed and answered, to see what I mean.

Ethical principles and practice

You may feel that what's above is exaggerated or mistaken. Isn't public health nutrition concerned with normative including ethical principles and practice? Yes, it is. But this is the very reason why, certainly since the second half of the 20th century, nutrition concerned with public health has been positioned as just one offshoot of 'classic' nutrition science: its very commitment to social and other values has kept it relegated. The same is so of the movement to establish adequate food and nutrition as a human right[3], an aspect of public health nutrition. Its normative ethical and legal approaches have so far kept it beyond the pale of conventional nutrition science.

The New Nutrition Science project, as recently outlined in this journal[4], creates the conceptual framework within which all of nutrition science is concerned with public health in social and environmental as well as biological dimensions; with biochemical aspects positioned as one vital part of the biological dimension. As soon as nutrition as a whole is taught and practised as part of public health, then yes, it should and will be based on ethical principles, as proposed in *The Giessen Declaration*[5], and the discipline will be positioned to gain and use the power and funds enjoyed by the founders of public health before the ascendancy of the germ theory. This new era is yet to come.

Another apparent objection to what I have said so far is that 'bioethics' is now a flourishing discipline in itself, with dedicated university departments, journals and textbooks[6,7]. UNESCO, the UN agency whose remit includes science, has just launched its Global Ethics Observatory (GEO), one of whose functions is to enable scientists to locate a local ethics specialist[8]. The preamble of the UNESCO *Universal Declaration on Bioethics and Human Rights*, adopted last October, asserts that 'moral sensitivity and ethical reflection should be an integral part of the process of scientific and technological developments'[9,10]. The ethics code *Rigour, Respect and Responsibility*, issued in the UK this January by the Royal Society, enjoins scientists to 'minimise and justify any adverse effect your work may have on people, animals and the natural environment'[11].

These admirable developments also make my point. First, they are recent responses to the felt urgent and imperative need for science to relate to ethics. Second, the discipline of bioethics runs parallel to but is not integrated with the mainstream biological sciences – not yet, anyway. Third, bioethics mostly deals with the ethical aspects of the work of scientists, such as patient consent, bio-terrorism, bio-patenting, and the integrity and transparency of research. These are all important but are not what I am concerned with here, which is the ethical basis of science itself, and in particular nutrition science.

Ethics and standards

To illustrate, here is an inspiring and positive example of an explicit ethical approach to the theory and practice of nutrition science: the new growth standards for infants and young children. The most fundamental ethical principles, such as the golden rule, may be universalisable. But in a broad sense, ethics can be defined as 'a discipline that guides our choices between forms of life'[12]. That is to say,

ethics begins with norms, standards and values in general, not only with morals. The example here is of ethics in this broader sense.

The long awaited UN child growth standards will be published this month, on 20 April[13,14]. They have been more than 10 years in the making[15]. With the new UN standards for energy[16] and for protein requirements (still awaited), they are the most important development in public health nutrition so far this century[17].

The current growth charts now universally used to gauge the health of infants and young children are based on data collected in the USA, before and between 1960 and 1975, of the average increase of heights and weights of 'predominately formula-fed infants who resided in a restricted geographical area and were of relatively high socio-economic backgrounds'[18]. Parents throughout the world are still told that if their children do not increase their growth at a rate that measures up to that of middle-class US children consuming artificial milks with obsolete formulations[18], over 10% of whom are by the ages of 2–5 years now obese even by US measures[19], they are 'failing to thrive'.

That is to say, the child growth charts universally applied since the late 1970s as an essential measure not just of health but also of safeguard against life-threatening danger, are designed to make children throughout the world the size and shape of children in the USA. Once the word gets out to the lay media, current practice may be characterised, with some justification, as the Frankenstein formula designed to breed human humvees.

This is now agreed to be wrong, in both senses: a mistake, and a misjudgement. Phew! So what to do? By contrast, the new standards are based on measurements made between 1997 and 2003 on a total of 8500 infants and young children predominantly breastfed for up to 6 months and beyond, in Pelotas, Brazil (the pilot site) and in Ghana, India, Norway and Oman, as well as the USA[20]. It is already known that healthy breastfed children need less energy from food and are slim and light by contrast with formula-fed children[16]. I write before the standards are released; as from this month you will be able to examine the new charts[13,14]. It is safe to predict that growth trajectories for after the first four months of life will be lower than now.

Technically the new standards are altogether more reliable: based on data from more subjects, from a range of centres, using tight methodology, swish inclusion and exclusion criteria, high follow-up rates, and so on. The key difference though, aver the study leaders, using their terms and emphases, is that whereas the current standards are *descriptive*, based on data of how evidently healthy children *did* grow, the awaited standards are *prescriptive*, which is to say based on data of how evidently healthy children *should* grow. The 'is' has become an 'ought'. Aha!

Instead of the study design 'being a device for grouping and analyzing data (a *reference*) for the purpose of enabling value-free comparisons', it explicitly recognises 'the need for *standards* … i.e. devices that allow value judgments by incorporating norms or targets in their construction'[18]. The selection of breastfed infants and young children as the standard 'also contributes significantly to advocacy in support of current international feeding policies'[18]. In an earlier less veiled passage, the study leaders said: 'This new policy takes the breast-fed infant as the biological norm… Policy implications and public perceptions should change dramatically when the reference for normal growth and development is based on the breast-fed infant[2,21]. Indeed so.

The values of child growth

The acknowledgement of values in such an important aspect of food and nutrition policy is a good example of the new nutrition science[4] already in action. But the authors of the passages quoted above are mistaken in what they say. The new growth standards do indeed derive from an ethical principle, that infants and young children should be breastfed; and this sound judgement is well based on carefully presented evidence of good health as now conceived, including the need to prevent obesity in infants, diabetes in early life, and these and other chronic diseases throughout life.

But even if the current standards have always been thought to be 'value-free', they are not. They derive from an alternative concept of what is good health in early life. This is that accelerated growth in early life is healthy; that 'more is better'[22,23]. This concept, also normative and prescriptive, was understandable and indeed appropriate at a time in recent history when nutritional deficiency, then only recently receded as a public health priority in rich countries, was the outstanding emergency in most countries.

The extent to which the current standards are a relic of the ideology of health professionals trained in the imperial era, to raise up children of 'lesser breeds without the law' to aspire to the standards of higher (and heavier and taller) civilisations, is a theme for a book in a series on the consequences of European empires. In case you feel this is an outrageous insinuation, do you really believe that children from Ghana, India, Oman and Brazil might in the 1970s have been accepted by policy-makers, schooled around the time of the Second World War, as models for the growth of children in Britain and the USA?

Concepts derive from ideological contexts: mind-sets as well as data-sets. From the time of the creation of the League of Nations and then the UN system, the standard for 'realisation of genetic potential' was that of children in the USA, and achievement of this standard depended on the use of formula feeds based on cow's milk, and during weaning and later of dried, whole and condensed cow's milk, processed locally or shipped in from countries with dairy surpluses. The US child was the model, and the fact that US data-sets were in the 1970s more complete than those from other countries was not just an accident of the

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USA having more money for such research. As Western European hegemony collapsed, food and nutrition policy-makers looked to the USA.

The current growth charts are based on values, just as much as the new charts. This would be true even if those who devised and use the current charts were or are not aware of these values. In such case the values are implicit; they operate 'surreptitiously, and without debate'[12]. My guess is that a historian will find that these values were explicitly stated in notes of meetings, even if not in the 'objective' published reports. The admirable difference is that now the basis for the rate and velocity of growth of infants and young children is revealed and explicitly identified as ethical, in the broad sense of the word. It is not 'value-free'. It never was. Science never is.

'Milk and murder'

Now for examples of ethics expressed as moral judgements of phenomena identified as right and wrong, in a sense that implies responsibility and culpability. For scientists, two arguments against crossing the line into moral judgements however meticulously based on evidence (apart from regarding such a move as 'unscientific') are first, this is more than your appointment is worth, and second, it's a waste of energy because nothing good will come from apostasy. But sometimes such judgements do need to be made, and if scientists evade this responsibility, or leave it to a minority of their colleagues who thereby become identified as rabble-rousers, bad gets worse. All that is needed for evil to flourish is that good people remain silent.

The two examples following are of forthright judgements, derived from ethical principles and informed by expert knowledge, that continue to have a salutary impact. First, in 1939 Cicily Williams, originally from Jamaica and already then celebrated for her identification of kwashiorkor in Ghana (then the Gold Coast)[24], was working in what was then another outpost of the British Empire, Singapore. She gave a speech on the pushing and feeding of sweetened condensed milk as ideal nourishment for infants, by manufacturers and also by physicians and health workers.

As a paediatrician with international experience and local knowledge, having considered the degree of conscious knowledge and the amount of damage done, she entitled her speech *Milk and Murder*, saying: 'If your lives had been embittered as mine is, by seeing day after day this massacre of the innocents by unsuitable feeding, then I believe you would feel as I do that … these deaths should be regarded as murder… Anyone who, ignorantly or lightly, causes a baby to be fed on unsuitable milk, may be guilty of that child's death'[25].

Her speech began the most successful global public health nutrition campaign of modern times. The International Baby Milk Action Coalition (IBFAN) and the World Alliance for Breastfeeding Action (WABA) both record that the movement that led to the UN International Code of Marketing of Breastmilk Substitutes, adopted by the World Health Assembly in 1981, was sparked by her passion as well as her reason[26,27]. In turn, the Code and other agreements led to the 2003 UN global strategy for the feeding of infants and young children, which is based on ethical principles[28].

Having spoken out as she did, was Cicily Williams ostracised by the scientific establishment? No, she was not. After the foundation of the UN system she became head of the WHO maternal and child health department, and in 1953 was a leading invited participant in a conference on protein malnutrition convened by WHO and the FAO, held in Jamaica[29]; and she is now generally regarded as one of the founders of modern public health nutrition.

'An outrageous program'

The forces of other circumstances also turned Jean Mayer, professor of nutrition at Harvard who later became president of Tufts University, into an activist as well as an academic, at the time of intense civil disturbance in the USA. Throughout the late 1960s he wrote regularly in medical and science journals on 'the practical and the ethical implications of our destruction of rice crops and grain stores, by chemicals and by fire, in South Vietnam'. Two of these articles are reprinted in his book *Human Nutrition*[30].

From knowledge of droughts, plagues, blights, floods and earthquakes, and use of sieges and blockades to enforce mass starvation, he concluded: 'There has never been a famine or a food shortage … which has not first and overwhelmingly affected the small children'. Of crop destruction he said: 'My point is not that innocent bystanders will be hurt by such measures, but that only bystanders will be hurt'. On the use of herbicides he said: 'Food shortage will strike first and hardest at children, the elderly, and pregnant and lactating women; last and least at adult men, and least of all to soldiers… The attempt to starve the Viet Cong can be expected to have little or no effect'[30].

In 1971 he said that five years of campaigning by an alliance of academics and citizen action groups, of which he was inevitably a conspicuous member, had led to President Richard Nixon officially forbidding continuation of 'this outrageous program'. As with Cicily Williams, his stand has had a lasting impact. Additional Protocol I to the 1949 Geneva Convention, passed in 1977, rules that 'The starvation of civilians as a method of war is prohibited', and that 'It is prohibited to attack, destroy, remove or render useless … agricultural areas for the production of foodstuffs … for their sustenance value to the civilian population or to the adverse party, whatever the motive'[31]. Cited in the 2005 UN voluntary guidelines on the right to adequate food[32], this protocol was one of the inspirations of the human rights approach to food and nutrition policy.

There is no reason to believe that Jean Mayer's career was in any way damaged. In 1969 Richard Nixon

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appointed him chair of the White House Conference on Food, Nutrition and Health which convened hundreds of scientists, some (for example, Nevin Scrimshaw, Michael Latham, Johanna Dwyer and Noel Solomons) still active. Its opening statement on 'the state of nutrition of the American people' exposed the 'disgraceful scale' of hunger and poverty in the USA, going on to assert: 'The nation's conscience will no longer stand for the toleration of these conditions. The President and the Congress must supply the leadership in closing this hunger gap'[33].

The moral of these stories

Nutrition is and should be a social and environmental as well as a biological science, and the foundation for the principles that guide our work is and should be ethical[5]. Many if not most of the scientists whose work has had most impact on public nutrition and health have thought this way, from Justus von Liebig and Rudolf Virchow, through Elmer McCollum and John Boyd Orr, to the giants of recent times and today. Meticulous collection and ordering of data as evidence on which sound judgements can be based is, to quote Mercedes de Onis and Cutberto Garza: 'a first step to carrying forward our duties and obligations to the human family'[18].

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