

## Out of the Box



What is right and good? What is wrong and bad? Can such questions be addressed by science? And to use an ethical term, *should* scientists ask and answer such questions? I think so, yes. I believe that avoidance and evasion of ethics on any grounds, such as that these are metaphysical and therefore meaningless, and in any case off limits, is the bane of science as now taught and practised.

This is the first of two columns concerning values. If we are committed not just to making a difference but a difference for the better, and are prepared to specify what we mean by 'right', 'good' and 'better', and thus openly admit ethics into our thinking and work, this is a reason to be hopeful. Before you flip over, I promise some stories.

### A rare moral judgement

All sciences should begin with principles. So it is with the new nutrition science<sup>1</sup>, whose conceptual framework includes biological, social and environmental dimensions and thus the human and also the living and physical world. *The Giessen Declaration* states: 'The overall principles that should guide nutrition science are ethical in nature'<sup>2</sup>. This stance is consonant with the 'Hippocratic Oath for Scientists' now issued in the UK by the Royal Society<sup>3</sup>.

As a signatory of the *Declaration*, I was encouraged to endorse this statement after reading an impressive judgement published in 2000, signed by Mahbub ul Haq, Philip James, Kaare Norum, Suttalak Smitasiri, MS Swaminathan, Julia Tagwireyi and Ricardo Uauy. It says: 'The persistence of malnutrition, especially among children and mothers, in this world of plenty, is immoral'<sup>4</sup>. Ricardo Uauy says the same in his vision and mission for the International Union of Nutritional Sciences, of which he is President<sup>5</sup>.

The judgement 'immoral' is not within the range from 'unnecessary', 'inappropriate', 'undesirable' and 'unacceptable' to 'intolerable'. Terms in this range sometimes crop up in the summary pages of reports signed by experts convened to consider uncomfortable issues such as food and nutrition insecurity, infant and young child feeding practice, and the impact of accelerated production and consumption of fats and sugars on the incidence of chronic diseases in middle- and low-income countries.

Such terms are within the lexicon of the secretariats who draft such reports, I suggest, for three related reasons. First, they are ambiguous. They seem to be qualitative value judgements, but they suggest quantitative technical solutions: 'unacceptable' ranges of iron intake, for example, could – it might be supposed – become

'acceptable' by mass distribution and administration of pills, courtesy of Sir Bill and Lady Melinda Gates.

Second, their meaning has become eroded. The burden of epidemic childhood obesity and early-life diabetes on countries already suffering from endemic deficiency and infectious diseases is intolerable, but the term can be – and no doubt has been – used in reports on trends in the punctuality of public transport systems.

Third, they evade the issue of responsibility. The current level and nature of advertising and marketing of processed energy-dense food to children is inappropriate, but so is wearing blue socks with brown shoes. Given the mass of evidence available to industry as well as to academia in the last 15 and more years on the destructive impact of food marketing on the nutrition and health of children<sup>6–8</sup>, 'inappropriate' does not hit the spot.

### How ethics are erased

Anybody involved in the development of official food and nutrition policy statements may have noticed the neutering of key language. Here is an example. In 1992 the relevant UN agencies issued a *World Declaration on Nutrition*. This followed a series of meetings I attended as a member of the UK delegation, so I saw successive drafts of the document. As finally published after the final meeting in Rome in December it began: 'We, the Ministers and Plenipotentiaries representing 159 states... declare our determination to eliminate hunger and reduce all forms of malnutrition'<sup>9</sup>.

What follows was reworked at the Rome meeting and at a preparatory meeting in Geneva. Here are the key changes. In the passage below the phrasing of an earlier draft is shown struck-through, ~~as here~~. Thus: 'We all view with the deepest concern the ~~shocking~~ unacceptable fact that about 780 million people in developing countries, 20% of their population, still do not have access to enough food to meet their basic daily needs for ~~leading a fully productive life~~ nutritional well-being'<sup>10</sup>. The changes are different in nature as well as degree. The original phrase, referring to fulfilment of economic, social and communal potential, becomes a reference to quasi-medical status. The word 'unacceptable' extinguishes any sense of outrage conveyed by 'shocking'.

It isn't only officials who equivocate. With exceptions, so do the experts. By convention, scientific papers are 'value-free': only remnants of rhetoric such as mild irony and the odd parenthetical flourish are normally allowed. The data, methodically gathered and plainly displayed, are

supposed to speak for themselves. Scientists believe they stay faithful to their calling by remaining detached. 'Here you are', they can say to their 'political masters'<sup>11</sup>. 'This is what the data show. This is the truth, or as close as modern science can get to it. Over to you'. And then they can walk away.

These are all reasons why use of the word 'immoral' in a scientific report is impressive. This is not just a stronger term than, say, 'intolerable'; it is a different type of term. It judges that something is wrong for which an identifiable human agency is responsible. It admits the social dimension, of which ethics and rights are two aspects<sup>12</sup>. It indicates that those making the judgement will stay involved. They are committed: to use the metaphor derived from trench warfare, they have 'gone over the top'.

### How to make principles work

It needs to be said with emphasis that sound judgements are derived from principles and evidence, in that order and that in all good processes evidence and judgement are separated. A principle suggested in *The New Nutrition Science project* work in progress is: 'The overriding responsibility of nutrition science is to work to handing on to future generations an improved human, living and physical environment: healthy people, healthy populations and a healthy planet'<sup>13</sup>. The key concept is that of responsibility. (Working to agree definitions of 'improvement' and 'healthy' is also part of the task of nutrition science.)

It follows from such a principle that acts that have an opposite effect are wrong; mistaken if inadvertent, and if deliberate, anything from misguided to outrageous to abominable, depending on assessment of the evidence both of the degree of conscious knowledge and the amount of damage done. Take depletion of fish stocks by methods of trawling known to destroy the breeding grounds of fish, which on a turpitude scale might rate above pushing of junk food to children. Judged ethically this is not merely a matter for 'concern' (the term used in a recent expert report<sup>14</sup>). It is wrong in both senses of the word: a mistake, and something more than misguided.

So what is the right ethical judgement in any such case? A common objection to normative language is that it is vague and subjective, whereas science is precise and objective. And yes, ethical judgements commonly express little more than feelings. Mr Grouser, a character in *Toytown*, a beloved BBC radio children's series, characterised everything he disliked as 'Disgraceful!', which said a lot about him and not much about what concerned him.

But we can do better than that. For a start, the polarisation of 'subjective' and 'objective' is misleading. Both terms have a range of meaning. Data can be said to be objective in the sense of being 'out there' rather than 'in

here'. But using an analogy with architecture, by themselves data (facts, information, suchlike terms) are bricks, and accumulation of data the piling of bricks<sup>15</sup>. It is the selection and assessment of data that builds the mansions of science. This intelligent organising and patterning process involves judgements based on specifications – in the analogy, blueprints – that cannot be axiomatic<sup>16</sup>. Nor does use of statistics and mathematics by any science make it beyond dispute: these are merely methods of measurement, and strictly speaking all scientific findings, however well supported, must remain provisional<sup>17</sup>.

Conversely, rational and reliable judgements of *all types* are well based on evidence, which is to say, information organised according to agreed principles<sup>18</sup>. These can be given a precise meaning. For example, within nutrition science the judgements 'convincing', 'probable', 'possible' and 'insufficient' have been defined by specifying the types and quantities of evidence that are (or are not) substantial enough to generate public health recommendations<sup>19,20</sup>.

The same can be applied in ethics. For instance, and somewhat similar to the process in courts of law, moral judgements used in the application of science to food and nutrition policy could be graded using a consensual standard benefaction–malefaction scale in which degree of consciousness and extent of benefit or damage were weighed together. This would expose casual or reckless use of ethical terminology, and enable precise comparative judgements within and between scientific disciplines. It would also be a guide to the importance and urgency of recommendations for action directed to international agencies, governments and other policy-makers.

Am I seriously advocating a grand policy that could generate media headlines such as 'Top Profs Judge Big Burger Trade "Outrageous"', together with a table showing how the experts scored the O word? Yes, although the idea may at first seem zany, I think I am. After all, distinguished statisticians and epidemiologists already judge the conscious damage done by the tobacco trade by using such terms, which can only be made more effective by being given a precise definition. Why not?

### Ethics and religion

So why is modern conventional science 'value-free'? *The Giessen Declaration* states that nutrition science should be guided by an understanding of history<sup>3</sup>; and a principle suggested for the new nutrition science is that we can properly understand the issues that face us now only after examination of historical decisions<sup>13</sup>. So it proves here.

The overriding political issue of medieval Europe (then known as Christendom) was maintenance of a balance of authority between church and state. This issue remained fundamental after the Reformation. The balance was

disturbed in the 17th and 18th centuries by investigators such as Nikolaus Copernicus and Isaac Newton, who sought to discover how the physical and living worlds work, and who were supported by the temporal powers when their theories proved useful. What then were the things that were God's? After the shock of accepting a heliocentric cosmos, balance was restored by a concordat according to which the new discoveries were agreed to be marvellous machinery of divine design. This big deal was epitomised by Alexander Pope's epitaph for Isaac Newton in Westminster Abbey: 'Nature and Nature's laws lay hid in Night/God said: "Let Newton be!", and all was Light'.

In the 19th century the ascent of natural history, especially the theories of Charles Darwin championed by Thomas Henry Huxley and interpreted by Herbert Spencer, seemed to show that humans are evolved from a nature without morality. Darwin's contemporary, the physicist and mathematician James Clerk Maxwell, wrote that scientists 'must begin by asking, not whether a thing is good or bad...but of what kind is it? And how much is there of it?'<sup>21</sup>. However, most scientists still accepted some form of Christian doctrine, England had an established Church, and in Rome the Pope commanded a global allegiance. The Royal Society and suchlike bodies were not about to declare God redundant. A second concordat separated the descriptive from the normative. As aptly said by Richard Dawkins: 'This appeasement policy partitions the intellectual territory into "how questions" (science) and "why questions" (religion)'<sup>22</sup>.

### The creation science wars

You may think this story is of 'mere' historical interest. Ha! Not so. In the US where Big Science, dependent on federal funds, is now internationally dominant, the great turf wars between science and religion are being fought once again. Presidential candidates now depend on the votes of the 'religious Right', whose armies have invaded territory precious to science. The doctrine of 'creation science', aka 'intelligent design', contradicting Darwinian evolution, was promoted by Ronald Reagan as Governor of California and as US President, and by the younger George Bush as Governor of Texas and now as US President<sup>23</sup>. God as interpreted by militant Christians has Caesar on his side, as much now as in the era of the medieval Crusades. Since the 1980s court cases have been fought on the question of whether theories that build God into evolution should be taught in schools, and these will continue<sup>24</sup>.

The biggest legal set-piece on the theory of evolution since the 1925 Tennessee 'Monkey Trial' began in the state of Louisiana, went to appeal, and in 1987 ended with a majority decision in the US Supreme Court against the teaching of intelligent design. It was a close-run thing: one of the minority opinions was given by the Chief Justice. The verdict will have been influenced by a conciliatory *amicus curiae* statement to the Court made *inter alia* by

72 Nobel laureates in physics, chemistry, physiology and medicine. This says that creation science 'sets up a false conflict between science and religion'. Why, is because: 'Science is not equipped to evaluate supernatural explanations for our observations...science leaves their consideration to the domain of religious faith...an explanatory principle that by its nature cannot be tested is outside the realm of science'<sup>25</sup>.

Very well: but what about ethics? Common sense suggests that the US scientific establishment has a fall-back position, in preparation for the next creationist assault, and is prepared not to occupy territory precious to the Church. A clue to this position is in a statement made by the US palaeontologist Stephen Jay Gould, who was engaged in the Supreme Court battle. As he prepared to be President of the American Association for the Advancement of Science in 1999, he wrote: 'The canonical attitude of scientists...and the argument that finally secured our legal victory before the Supreme Court in 1987 – holds that science and religion operate in equally legitimate but separate areas. This "separationist" claim allots the mechanisms and phenomena of nature to scientists and the basis for ethical decisions to theologians and humanists in general'<sup>26</sup>.

This summary is intriguing, for it goes further than the actual statement. My guess is that Gould forgot what the 72 Nobel laureates wrote, but remembered from inside information what they might have agreed, perhaps on his advice. For after a visit to the Vatican organised by the cosmologist Carl Sagan, and reflecting on the statement made by Pope John Paul II on evolution in 1997<sup>27</sup>, he advocated the doctrine of 'Non-Overlapping Magisteria', NOMA for short. This makes a new big deal: 'The net of science covers the empirical universe: what it is made of (fact) and why does it work this way (theory). The net of religion extends over quality of moral meaning and value. These two magisteria do not overlap... We get the ages of the rocks, and they get the Rock of Ages'<sup>28,29</sup>.

### Science and conscience

This, I believe, is the fundamental reason why science still almost always keeps off the patch of ethics and its expression in normative including ethical judgements. Ethics remains ceded to religion, which suits both sides. Conflict between the scientific establishment and the Christian churches is avoided, the churches remain a great power in human affairs, and the armistice gives scientists immense privilege without fundamental responsibility. It is sometimes said that on the great issues that confront us, scientists are distrusted. If so, this is why. The recent moves by UNESCO<sup>30</sup> and the Royal Society<sup>3</sup>, to affirm ethics as a responsibility of scientists, are in the right direction.

The ability to identify, agree and follow norms and standards is unique to humans. The teaching and practise of values is what gives our lives and works their full meaning. Religions of all types, with or without gods,

include ethical precepts. But as tolerant believers in god and followers of non-theistic philosophies will agree, this does not mean that values are 'owned' by religions – enclosed within their domain.

For Europeans of my generation and that of my parents, humanism was forged in the fires of the First and Second World Wars, the Jewish Holocaust, and the time of fear of a Third War in which human life would be extinguished. The leading thinkers were also actors in those times. They experienced what they were writing about. The philosopher of science Karl Popper, a refugee from Hitler's Germany, published *The Open Society and its Enemies* in 1945. He says: 'It is we who impose our standards upon nature, and who in this way introduce morals into the natural world. . . We are products of nature, but nature has made us together with our power of altering the world, of foreseeing and planning for the future, and of making far-reaching decisions for which we are morally responsible'<sup>16</sup>.

Ethical issues and moral judgements are our responsibility not just if we follow a religious or philosophical system, but as humans. Acceptance by scientists of this responsibility gives their work its full meaning. This is where the new nutrition science begins.

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