

## Out of the Box

In this column I rant and rave against nutrition labelling. Like glucose drinks marketed for hospital patients, broad-spectrum antibiotics and low-tar cigarettes, nutrition labelling is a problem masquerading as a solution which, if relied upon by purchasers, would increase rates of obesity, diabetes and heart attacks.

But first... The late great John Rivers said that nutrition scientists are engaged in a relentless quest not so much for the truth, as for research grants: to which a research scientist might reply – well, but the purpose of research is to seek the truth. So...

### What is truth?

I do indeed meet researchers who say they seek the truth. Investigators of randomised controlled double-blind cross-over prospective trials involving cohorts of squillions of people consuming quantiles of bourbon, burgers, biscuits, bon-bons, beans, beetroot, bagels, bread and boil-in-a-bag beefy bits, measured by questionnaires and bloods, who then may or may not go on to suffer borborygmi, bloody flux, bladder cancer and so forth, say things like this. As well they might, given the fabulous amounts of money such projects cost. Maybe as much as the business end of a bomber! And could you dare to contradict scientists whose methodologies and protocols have enjoyed the incantation, incense and imprimatur of the Cochranic illuminati?

Yes. Well I could, and on the theme of 'the truth' I do. When I hear research scientists saying 'we are getting closer to the truth', as they often do in media stories with screamers like *Cancer Cure: New Breakthrough Say Top Docs*, in my mind's eye I see (or rather, do not see) an end of a rainbow, or the Holy Grail.

For no scientific proposition is true, if the word 'true' implies totality or finality. Outside the belief systems of followers of Abrahamic religions (Judaism, Christianity, Islam), truth is never absolute. The term may be used as shorthand, to mean something like 'a conclusion or judgement founded on good evidence'. Examples are, 'it is now accepted as true that *trans*-fatty acids are a nutritional cause of heart disease', and 'it is unlikely to be true that salted fish *per se* is a proximal cause of nasopharyngeal cancer'.

But in science, as all human activity, to say something is true is to make an assertion that might later turn out not to be the best fit with the evidence. What this means is that truth is relative. Notice also that 'true' in the examples above is redundant: 'it is now accepted that *trans*-fatty acids are a nutritional cause of heart disease' has the same literal meaning. What is lost is an emotional meaning: the use of the word 'true', not to mention 'truth', 'the truth' or The Truth, as a flourish of a staff of office, a descent from

the mountain with Tablets of Stone. But scientists should be the first to agree and insist that there is no such thing as 'the truth'.

### What are facts?

So what about facts? Science certainly seems to be into facts. Stacks of them – riffle through this journal! The Tao says: 'There are already enough names. One must know when to stop'<sup>1</sup>. That was 2500 years ago! Why is current nutrition science so taken up with statistical calculations – lists, tables, charts, correlations, classifications, and so on? In finding the forest (or is it Forrest) plot, have we lost the plot?

Perhaps this is for the same reason that economics dominates human affairs: few people understand the principles and assumptions that govern statistics, let alone the disputes between devotees of different methods. I remember a conversation in 1997 when walking to a meeting of the UK Parliamentary Food and Health Forum. My companion was in a state of shock. She had been entered into the mysteries of multiple regression analysis as an epidemiological tool. Tell me about it, I said. She said: this makes it possible to use any given data set as a basis for any conclusion you want to make. That's handy, I said.

There is another reason. The prevailing preference is for inductive, not deductive reasoning. Deductive thinking begins with ideas; inductive reasoning begins with observations. As a generality the Latin world prefers ideas, the Anglo-Saxon world prefers observations (also known as facts... read on). When I studied philosophy in England at Oxford, any timid request to study metaphysicians such as GWF Hegel or Jean-Paul Sartre, or even British idealist philosophers, was met with an admonition to take (as if Epsom salts) a dose of AJ Ayer or early Ludwig Wittgenstein, and in recurrent cases Gottlob Frege and his English translator JL Austin, who thought that thinking should approximate to arithmetic.

But science does not (or should not) merely consist in accumulation of observations (also known as data or information), assuming that conclusions somehow spring from the collection and organisation of observations, as if they are coins, the truth (whoops, the well-founded judgement) is the chocolate bars in the slot machine, and the researcher the seeker after choccie with the pile of money and the strong right hand. While of course observations prompt ideas, the scientific process typically works the other way round. It begins with ideas (also known as theories or hypotheses) which are then tested against observations. The idea comes first, logically and chronologically. Science is always of its times. As usual, Karl Popper is right<sup>2</sup>, as in this respect is Justus von Liebig<sup>3</sup>.

So, what about facts? It seems reasonable to say that 'science is concerned with facts'. But does this mean that science is concerned with data or information? Surely more, because if only that, science would be in a class with compilation of railway timetables.

So what is a fact, or to be more precise, what does 'fact' mean? My dictionary<sup>4</sup> in effect identifies it as what linguistic philosophers call a 'family word', meaning a term with a number of related meanings. In this case the family is extended and some members hardly speak to one another! 'Fact' can mean an action, deed or event, either good or bad (as in a murder trial, 'after the fact'). This clearly is not what the champions of science as factual mean. It also has a range of related meanings, from 'a thing alleged or assumed as a basis for inference' through 'a thing known for certain to have occurred or to be true'; to 'reality' or 'truth'. But 'truth' goes from a sticky patch into a tar-pit. So what is 'fact'?

First here is some underbrush clearance. In his commentary on Ludwig Wittgenstein's *Tractatus*, Max Black points out that, as above with the word 'true', in most of its uses the word 'fact' is redundant<sup>5</sup>. Try and you will see. There is no difference between 'it is a fact that you are reading this column' and 'you are reading this column'.

Now back to science and facts. Try the three related meanings above. Put 'truth' aside. What about 'reality'? This also has problems. To say there is one reality defines the term as practically identical to 'truth' (as in *The Truth*). And the plural 'realities' sounds very different from the plural 'facts', because of the implication of different and competing realities. Oo-er! Further, to say 'science is concerned with what is real' is almost empty of meaning because its opposite is close to absurd.

So let's try: 'Science is concerned with things (or information) assumed (or calculated) as a basis for inference'. Or, to move away from the dictionary: 'Science is concerned with the accumulation and organisation of information as evidence to test hypotheses and as a basis for judgements'. This certainly is a rough definition of most ordinary nutrition science. Like the term 'truth', the term 'facts' disappears, and most scientific work is shown, while intricate, to be a rather humble trade. Perhaps Mrs Worthington is better advised to put her daughter on the stage.

### What is the cure?

Truth, implying finality, is an illusion. Those who speak of truth in this way are distracted from reality. Take cancer. As I say above, people who say of factor X and cancer Y, or cancer and its causes generally: 'We are getting closer to the truth' are in the same universe of discourse as people who talk about 'the cure for cancer'. And here is what I have to say about that.

I affirm that cancer can often be prevented and treated effectively, and that wholesome nutrition from

pre-conception throughout life could reduce cancer incidence by maybe 30–40%<sup>6</sup>, maybe more<sup>7</sup>. But as the sage Tony McMichael has said, cancer is the price *H. sapiens* pays for our uniquely flexible genome<sup>6</sup>. The older any population, the higher are the rates of cancer. In this respect cancer is not like coronary heart disease, which is practically entirely caused by environmental circumstances. Evidence of the rarity of cancer in wild animals and historically in humans is not impressive: usually they die young, before their gene sequences become corrupted.

The analogy with computers is rather good. I write with feeling, for Guilherme Faule my computer surgeon is, as I write, reinstalling Windows Office XP Professional on both my 4-year-old laptops, plus new modem links, the previous software all having become corrupted (or maybe zapped by my on-line service forcing its customers to go broadband) and so all my 56 668 folders and files are now tossed in the trash; which means that anything I failed to back up is now pffh\*t. Genomic prophets see this as becoming possible in humans. Hmm. I don't believe in human external disk drives, except perhaps some time in the future for extremely rich individuals.

So what now? Brace yourself for the unsayable. Medical interventions enable the birth and survival into adult life of babies that normally would be aborted, stillborn, or quietly smothered by a wise midwife. At the other end of life, medicine and surgery enables survival of old people who normally would die earlier as a result of infection overwhelming an infirm state. You and I may be alive because of medical and surgical interventions. All this means populations with artificially low rates of tough genes. So of course there is more cancer.

Given continuation of current global demographic, economic, political, industrial, technological, commercial and other relevant trends, and their driving forces (of which the impact of the foreign policy of the current US administration is salient) whose consequences include more smoking and pollution, and production and consumption of cakes, confectionery and cola drinks (up), and corn, cruciferous vegetables and cool clear water (down), we can expect rip-roaring global increases in absolute and relative rates of cancer at all ages. Younger readers! File this column and retrieve it in 2025 and 2045! Remember this foretelling!

Given the cost of medicine and surgery, this is excellent news for economic development, so do not expect senior policy-makers to get serious about prevention. Nobody will ever say that the more cancer the better. But in terms of what makes a country 'developed', this is true. What cranks up the engines of 'development' are populations that are suitable cases for treatment throughout a long diseased life. People who pay for drugs, surgery and 'homes' for much of their lives, with taxes, cash and both, are good business. People who stay healthy are in this respect primitive: they have no added value. A healthy person is an unpeeled potato. Somebody with cancer is a

chip (French fry) or a crisp (chip) with hickory bacon flavour; collect 50 packets and get a Merle Haggard CD.

I repeat: much cancer is preventable. We need to pay attention to cancer in early life. We need to put 'truth' and 'facts' aside, and stop imagining that accumulation of data will make up our minds. We need to think. Thought is what makes our species distinctive.

Premature, unnecessary cancers are mostly caused by factors that overwhelm the natural integrity of our genomic and immune systems. One is keeping people alive who without 'heroic' interventions would be dead. Some of my money goes on formula feeds followed by energy-dense processed food. Or, to be positive, the best nutritional protection against premature cancer is at the beginning of life: exclusive breastfeeding for six months plus, followed by nutrient-dense fresh food throughout childhood. In adult life, smoking and other use of tobacco are probably most important. Three other factors I bet are underestimated are cell phones, broad-spectrum antibiotics, and despair. Such hypotheses will not be generated by data. The ideas come first. I would like to believe that the research and the good evidence will follow, but meanwhile parents should not feed their babies and children with stuff not fit for a dog. And don't smoke!

### What's in the label?

Here is a whiff of a riff<sup>8</sup> on nutrition labelling. Everybody thinks that nutrition labelling (as distinct from ingredient labelling and from claims and descriptions in the big print) on processed foods is a Good Thing. Right? I say wrong.

My first in-depth experience of nutrition labelling was in the 1990s, when I was chair of the National Food Alliance (now Sustain), the UK umbrella civil society organisation. We were invited to help create a joint government, industry and civil society working party on nutrition labelling. I thought this was a breakthrough. We heard speeches from officials from the then Ministry of Agriculture, Fisheries and Food, and the Food and Drink Federation, including warm phrases like 'working together for the common good'. This was just before the days of the copying and pasting of ineffable bullshit such as 'multi-stakeholder collaboration' and 'public-private-people partnerships'.

After a couple of years or so, the joint working group (or was it a Task Force) was stuck on fat. Industry was OK about total fat, but unsaturated with enthusiasm about fatty acid fractions. And there was no progress on the 's' word – s\*g\*r. Carbohydrates were OK though. We read papers on the impossibility of a rational definition of dietary fibre, drafted by the biochemical equivalents of Little Enders and Big Enders.

After this most of us civil society people became fed up. Then I realised what was going on. Why were government and industry keen to gain a joint agreement with consumers? Was it because the Min of Ag officials and

the FDF people (almost all from the fatty sugary salty calorie-dense food manufacturing industry) believed in The Common Good? Of course not! Get real! Government and industry wanted consumer representatives to sign up to a system of useless meaningless baffling<sup>9</sup> information.

The issue is not what is on the label but what is in the product. Useful nutrition labelling would use something like a 'traffic-light' system, plastering packets of processed products with red warning signs – or better, 'Don't Eat Me', plus a variation of the messages on cigarette packets with references to obesity, diabetes, coronary heart disease and cancers. Again on an analogy with cigarettes, a thundering great tax on fatty, sugary and salty processed foods would also be and do good.

Burgers might fly. My second experience was when some years later I was working with the federal Ministry of Health in Brasília. My colleagues in the food and nutrition policy section were proud that they had reached agreement with industry on a system of mandatory nutrition labelling. And indeed, when I go to any supermarket in Brazil, there they are. I can learn what is the percentage of the DV (Daily Value) for vitamin A, sodium and carbohydrates in Kellogg's Sucrilos<sup>®</sup> ready-to-eat cereal (the equivalent of Frosties<sup>®</sup>) plus full-fat milk, and Nestlé's Nesquik<sup>®</sup> ready-to-drink fruit-flavoured sugary milky gunk. Such information, as you will know, 'triggers' big-print claims on the labels designed to give customers, especially mothers, the impression that this stuff is not only yummy scrummy but also the best thing since, well let's say mother's milk.

In Brazil the DV for energy is, like the DRV<sup>8</sup> (Dietary Reference Value), a one-size-fits-all figure for energy turnover. The Brazilian Reference Person is on 2500 calories a day and (as with all nutrition labels) the DVs for nutrients are worked out relative to the DV. Thus, the purchaser is told that a standard portion of Sucrilos<sup>®</sup> supplies 8% of the DV of saturated fat.

This creates a series of problems (assuming the purchaser is poised with pocket calculator and ready reckoner). First, 'value' is not a neutral word: to say that saturated fat has a Daily Value (or a Dietary Reference Value) suggests that it is a Good Thing to tot up its consumption to 100%. Bingo! Second, the Brazilian food manufacturers must have been chuffed that the energy DV was set at 2500 calories, based on outdated US figures. Any Brazilian with the money to buy processed food is just as sedentary as people from the UK or the USA. Average size women are therefore likely to be in energy balance around 1600–1800 calories a day<sup>10</sup>. If they totted up their saturated fat DVs and consumed to the bingo! of 2500, they would be stuffing themselves with around 50% more calories than they need and get fatter and be on course for a coronary bypass. Bad for consumer energy balance, good for corporate bank balance.

Do you use nutrition labels? I bet if you do, it is only in a cursory way. Do you know people who study nutrition

labels before making food purchases? If yes, do you think their choices are healthy as a result? Be honest! My observation is that shoppers pay much more attention to the big-print health and price claims on the labels, point-of-sale display and the tannoy that blasts out news of offers. Children who accompany their mothers to supermarkets have brains and guts blitzed by advertising, marketing and consumption of fatty, sugary and/or salty calorie-dense processed foods and drinks. And, a whole other story I touch on elsewhere<sup>8</sup>, their mothers are deceived by health claims about vitamins, minerals *et cetera* made on the labels of these products, legalised by the nutrition labelling system. So what I think about nutrition labelling is: Buyer, beware!

### What a good idea

Next month the 18th International Congress on Nutrition is held in Durban, South Africa. To mark the occasion this journal is accompanied by another, special issue, on *The New Nutrition Science project*<sup>11</sup>. This is also a topic for plenary lectures and a linked symposium. See you there, I hope.

The special issue includes proceedings of a workshop held at the Justus-Liebig University at Giessen, Germany. I mention all this again partly as an advertisement, and also to end this month with a cheering item.

The 14 writers of the 12 papers prepared for publication in the special issue, who were also invited to participate in the workshop, were each asked to list the sources that have most influenced them in their own work, and which they would most recommend to nutrition scientists now. Almost all the sources listed are 'non-fiction' books, although this was not specified – two respondents, imagining they were rebels, pointed out that the novelist Upton Sinclair<sup>12</sup> had more salutary impact on US food policy than any scientist in his day. Most concern nutrition and food and nutrition policy as conventionally or broadly defined, and most are published after 1980.

The recommendations are roughly balanced between technical and specialist work, and books and other writing in plain language accessible to or aimed at the general reader. Next month's special issue will reveal the source and the writer most often recommended, as inspiration for new nutritionists. As a taster, the sources most often mentioned, in alphabetical order, are the writings of Alan Berg<sup>13</sup>, Denis Burkitt with Hugh Trowell<sup>14</sup>, Susan George<sup>15</sup>, Ivan Illich<sup>16</sup>, Francis Moore Lappé<sup>17</sup>, Marion Nestle<sup>18</sup>, John Boyd Orr<sup>19</sup> and Amartya Sen<sup>20</sup>. And the winner is... announced next month.

### Was bedeutet ein Name?

One more thought about language. We should be aware that English has become the dominant scientific language. If scientists now want to get on, they have to read and

write in English. No, I am not thinking of starting a campaign to revive German as the first language of science, as it was until the collapse of Imperial Germany and the Austro-Hungarian Empire less than a hundred years ago. But no language is neutral: the structure of English embeds just one idea of reality, one world view<sup>21</sup>. There are others<sup>22</sup>.

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### References

- 1 Tsu L. [Chapter 32]. In: *Tao Te Ching*. Feng G-F, English J, trans. London: Wildwood House, 1973 [first written in Chinese 6th century BCE].
- 2 Popper K. The problem of induction [Chapter 1, Section 1]. In: *The Logic of Scientific Discovery*. London: Hutchinson, 1959 [first published in German, 1934].
- 3 Liebig J von. Lord Bacon as natural philosopher. *Macmillan's Magazine* 1863; **8**: 237–49, 257–67.
- 4 *The New Shorter Oxford Dictionary*. Oxford: Clarendon Press, 1993.
- 5 Black M. [Chapters I–VI]. In: *A Companion to Wittgenstein's Tractatus*. Cambridge: University Press, 1964.
- 6 World Cancer Research Fund (WCRF)/American Institute for Cancer Research (AICR). *Food, Nutrition and the Prevention of Cancer: A Global Perspective*. Washington, DC: WCRF/AICR, 1997.
- 7 Leitzmann C. Wholesome nutrition. A suitable diet for the new nutrition science project. *Public Health Nutrition* 2005; **8**(6A): 753–9.
- 8 Cannon G. *The Fate of Nations*. London: Caroline Walker Trust, 2003. Obtainable from the author at geoffreycannon@aol.com
- 9 Cowburn G, Stockley L. Consumer understanding and use of nutrition labelling: a systematic review. *Public Health Nutrition* 2005; **8**(1): 21–8.
- 10 Department of Health. *Dietary Reference Values for Food Energy and Nutrients for the United Kingdom*. Committee on Medical Aspects of Food Policy. Health and Social Subjects No. 41. London: HMSO, 1991.
- 11 Leitzmann C, Cannon G, eds. The New Nutrition project [special issue]. *Public Health Nutrition* 2005; **8**(6A): 667–804.
- 12 Sinclair U. *The Jungle*. New York: Bantam, 1981 [first published 1906].
- 13 Berg A. *The Nutrition Factor. Its Role in National Development*. Washington, DC: The Brookings Institution, 1973.
- 14 Trowell H, Burkitt D. *Western Diseases: Their Emergence and Prevention*. London: Edward Arnold, 1985.
- 15 George S. *How the Other Half Dies. The Real Reasons for World Hunger*. London: Penguin, 1976.
- 16 Illich I. *Limits to Medicine. Medical Nemesis: The Expropriation of Health*. London: Penguin, 1977.
- 17 Lappé FM. *Diet for a Small Planet*. New York: Ballantine, 1971.
- 18 Nestle M. *Food Politics. How the Food Industry Influences Nutrition and Health*. Berkeley, CA: University of California Press, 2002.
- 19 Orr J. *As I Recall*. London: MacGibbon and Kee, 1966.
- 20 Sen A. *Development as Freedom*. New York: Anchor, 2000.
- 21 Whorf B. *Language, Thought and Reality*. Cambridge, MA: MIT Press, 1956.
- 22 Schlain L. *The Alphabet Versus the Goddess*. New York: Compass, 1999.