WORLD PUBLIC HEALTH NUTRITION ASSOCIATION

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JOIN US, WORK WITH US, AND HELP TO MAKE OUR WORLD A BETTER PLACE

June blog

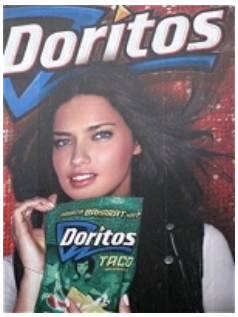
Geoffrey Cannon

How wonderful is on-line invention using the extremely amazing Word Office 7. I feel like I've graduated from a Vespa to a Harley, and am finding out what it can do when opened up on the information super-highway. How nice to use colour to badge types of contribution – thus, purple for commentary (as in purple prose…). How agreeable to be part of a website that uses only elegant typefaces – this is Garamond and the headings are Franklin Gothic, one named after Claude Garamond the 16th century typefounder (here he is, above), the other after an 18th century printer, the great Ben himself – rather than boring Times and ecch Arial.

Also how good it is to use pictures, as evidence and illustration, and not just as décor. In contrast to print-only references to usually erudite and occasionally arcane original academic papers, how much more purposeful are hot links to hot stuff. And how exciting is the facility to be topical – although for at least for a while this year, we are sticking with monthly issues of this website and of ***World Nutrition***. Altogether this is psychotropic stuff. .

Labelling of processed products Advertising iconography

Nutrition misinformation



Blue-eyed women with tip-tilted noses are uncommon in Istanbul, where I took this picture of a street advertisement. The image is intriguing. What is it saying? That if as a woman, you make a habit of nibbling Doritos®, your eyes will turn blue, as desired by the sultans of old, and these days by arms traders? Or that if as a man, you offer a woman Doritos, she will turn the pack round to face you, and give you a smouldering glossy-lipped invitation to a salted kiss and all that may follow? What was the model thinking, having been told to hold the pack to show off her long fingers, while her hair waved in the wind of the fan in the photographer's studio? Any ways round, sales of Doritos, and their Frito-Lay stable-mates Ruffles® and Cheetos®, are booming in Turkey and the Near East. Doritos are one of the 18 PepsiCo product lines whose total annual retail sales are over $US 1 billion. They are indeed more-ish.

World Nutrition

Harriet Kuhnlein

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HOT TOPIC

IS THE UN IN BED WITH INDUSTRY?

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Geoffrey Cannon

In praise of electronic publishing

Doritos are also on display in all sorts of shops in Rio de Janeiro. Waiting at the check-out at the local minimart while the customer in front of me rummaged in her bag for her debit card, I picked up a pack, in the interests of public health nutrition. It's in front of me now. In Brazil this package is the same glossy yellow as used for the coveralls of men who mend motorways. In small letters on the back it says 'PepsiCo. For a tomorrow better than today', which is perhaps an oblique reference to the credit crunch. In big letters on the front it has some playful remarks about being back by popular demand, and says 'Original Doritos. Limited edition'. Maybe this refers to repentance by PepsiCo of some commercially ill-advised adventure of phasing out good ole' Doritos in favour of honey-coated Doritos and smokey camp-fire coffee'n' bean Doritos and Formula 1 burning brake-rubber Doritos, but we do not need to know.

What most interested me had nothing specifically to do with Doritos, or salty snacks. It was the nutrition information. In common with processed foods all over the world now, this says how much of selected nutrients are in a portion of processed products, which in the case of Doritos is made from corn, palm oil, and salt.

Firstly, the portion size. The small pack I purchased contained 50 grams of Doritos. The portion/serving size, which manufacturers specify, is 25 grams, or as it says, '1½ *xicara*'. Does this mean one half cup, or one and a half cups? Search me. The idea seems to be that the purchaser shakes one-half of the contents of the packet into one large cup (or one and a half small cups) and gobbles them up, while 'reserving' (as they say in recipes) the other half in another large cup (or one and a half small cups) to wolf the next day. The chance of anything like this happening seems to me to be about as likely as England winning the World Cup. So, point number one is that realistic nutrition information would be for the whole 50 grams.

The value of words

Second, the nutrition information itself. This is calculated in terms of 'daily reference values', or DRVs for short. The term 'DRV' can also stand for 'dietary reference value'. You can see this term used in packaged products of all types all over the world. And so I learn that a 'portion' of 25 grams of Doritos contains 125 calories, or 6 per cent of the DRV, and then 0 per cent of the DRV for sugar, 11 per cent of the DRV for fat, 11 per cent of the DRV for saturated fat, and 5 per cent of the DRV for salt. These are all calculated in terms of a 'reference Brazilian', a compromise between a man and a woman, who turns over 2,000 calories a day.

The term 'dietary/daily reference value' was originally dreamed up not by industry, but by nutrition scientists and government officials in the UK and then the USA in the 1990s. The term was accepted and I am sure welcomed by industry, if only because of one little key word – 'value'. For in the ordinary sense of the word, anything with 'value' is good.

So now, thousands of miles away from the corridors of Whitehall and Washington, round the corner from my local mini-mart in Rio, I put myself in the shoes of somebody scoffing his or her Doritos, while perusing the smartly presented nutrition information. What is he or she to think? 'Portion, 11 per cent of the daily value for saturated fat'. Oh good, if I eat another nine packs, I'll be up to 99 per cent of the daily value'. And then, after a careful scan of the small print, maybe 'oh, I'm eating the whole pack, so I'll only need to eat another four and a half packs'. And salt? 'Ah, I see, 20 packs, oh no ten packs, and I'll be on target'.

But the 'value' for saturated fat (and total fat, and salt, and so on) is not a target. It's a recommended *maximum*. The advice is not to exceed the amount in a day – or, when official recommendations are a tad more candid, to consume less than the amount specified – or to be even more candid, for all practical purposes, the less the better, certainly of saturated fat and salt. Is this the impression the average consumer of Doritos – and any other packaged product with a 'nutrition information' display – would get, looking at the label? No, I submit, it is not. Would it be more helpful if, by law, manufacturers of snacks had to say on the label of their products: 'This is an energy-dense, fatty, salty snack', using three red circles for 'watch out'? Yes, it would. Will any such 'traffic-light' system be imposed, anywhere in this globalised world whose laws are imposed by bodies such as the World Trade Organization, whose governance evades anything you or I would identify as democratic? When it is, I will let you know.

Evolution. Darwinism. Lamarck. Paradigms

Do our genes jump?

Now for a topic to which I will return in later columns: evolution. A proper understanding of evolution is crucial to all biological sciences. If we misunderstand how evolution works, the foundations of nutrition, inasmuch as it is a biological science, will be built on sand. But the fundamental assumptions concerning evolution are now being questioned, by a growing number of 'out of the box' thinkers, including leaders in the relatively new science of epigenetics (1-3). Fasten your seatbelts!

You recognise the gent on the right. He features on the current UK £10 banknote. This is Charles Darwin (1809-1882), who is right up there with Isaac Newton as the towering British scientific genius of the ages. You may not know the evidently less well-fed gentilhomme on the left. This is Jean-Baptiste Lamarck (1744-1829), who was a little younger than Charles Darwin's grandfather Erasmus (1731-1802).

What you almost certainly will know – or believe that you know – is that Darwin was right and Lamarck was wrong, on the great issue of evolution. Richard Dawkins avers in characteristically papal style that it is a 'universally admitted fact that the "Lamarckian" theory of evolution is false'.

Lamarck believed that characteristics acquired in life can be inherited. Darwin believed (or is said to have believed) that evolution is only a consequence of random mutation as a result of which more valuable characteristics are 'naturally selected'. (In fact Darwin himself was a hesitant thinker and was never as dogmatic as this, but as happens, what he has been taken to say is usually a rather radically revised version of what he actually said).

Weak point. Shout

Since I was a child, I have never felt comfortable with the Darwinist position. It feels wrong. What has impressed me as an adult is that when I have tried to have a discussion with academics specialising in evolution, conversations have quickly become heated. Oh I see, they declare, eyes rolling and arms waving, you're a Lamarckian, you think giraffes have acquired long necks by stretching for food, ha ha, ludicrous. What next, God invented the universe in 4004 BC and that the world is flat?' Or words to that effect. Then with a 'why I am wasting my time with this idiot?' gesture, they turn to talk to somebody else.

The emotion is telling. It reminds me of the story, perhaps more or less true, of a meeting of national leaders at which the Emperor of X made an occasionally impassioned oration. Afterwards a civil servant from country Y saw that the master copy of the speech had been left behind on the lectern. Intrigued, he looked through it, and found that a civil servant from empire X had occasionally marked the margin of the manuscript with the same phrase, which was: 'Weak point. Shout'.

Also, as a child from time to time I timidly asked my elders and betters 'Why is north up, and south down?' Timidly, because I got the same sorts of answer – 'Don't be silly, it's obvious', or 'Anybody can see why', or 'It just is'. It wasn't obvious to me, so I decided I must be stupid, and stopped asking. Then lo, when as an adult I got interested in maps, what did I find? What no doubt you know, which is that early Christian maps centred on Jerusalem and early Chinese maps centred on the Middle Kingdom did not show north as on top (why on earth should they?). The convention whereby Europe is shown in the centre-top position, using a projection that exaggerates its size, was originated by Europeans at the time when a number of European nations with coastlines started to become dominant world powers and put their countries in the dominant position on the

globe – centre and top. Conventional world maps are propaganda. If China had ruled the waves as from half a millennium ago, maps would usually project Europe, no doubt at the bottom, as a peninsula of Russia.

Where is fancy bred?

Why do Darwinists get so waxy when questioned? Note the term 'Darwinist', because their position, that evolution comes about principally or solely as a result of random mutation, was not one held by Darwin himself. Indeed, he never used the term 'evolution' (4). One reason, I suppose, is they believe that once Darwin is questioned, the head of God is reared. This of course was the big issue in Darwin's own day. His interpreters proclaimed that he had abolished the Creator. It is not I think by chance that one of the most fervent Darwinists, Richard Dawkins, is also a rampant atheist. As it happens, I have never believed in God, at least not of the type in Christian and Jewish scripture, but I also have never believed in Darwinism.

The felt objection to Darwinism (a philosophy which to repeat for the last time here, was not espoused by Charles Darwin) is forever best expressed by Bernard Shaw in the preface to his play 'Back to Methuselah' (5). As a boy I read it in my school library and was enthralled. Shaw agreed with Lamarck and was a follower of (the younger) Samuel Butler, whose assault in Darwinism was and remains generally ignored (6). Of Darwinism , Shaw said: 'But when its whole significance dawns upon you, your heart sinks into a heap of sand within you. There is a hideous fatalism about it, a ghastly and damnable reduction of beauty and intelligence, of strength and purpose, of honor and aspiration, to such casually picturesque changes as an avalanche may make in a mountain landscape, or a railway accident in a human figure'. Bernard Shaw was saying what I felt. The Darwinist position is mechanical, which is what materialists and many atheists like about it. But where in it, is life?

What bugs tell us

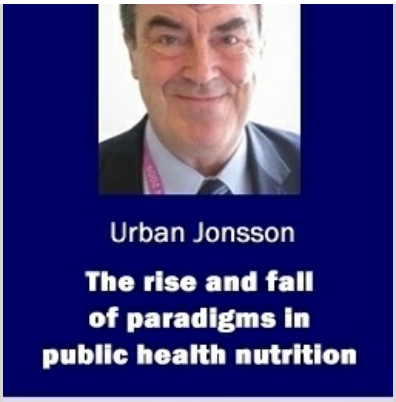
Shaw wrote 'Back to Methuselah' nearly a century ago. What's the story now? Well, it's been known for practically half a century that one force that makes bacteria mutate is not random. In the environment where antimicrobial drugs are used extensively, bacteria become multiply-drug resistant by means of 'jumping genes', sections of sort-of viral-type genetic information carrying codes for drug resistance which, like fleas, transpose within and also between bacterial species. Drug resistance is infectious. This is why an increasing number of antibacterial drugs have become useless, ironically apart from some that are so toxic that they are rarely used. This is also why it's a really bad idea to take antibiotics for anything other than really serious bacterial infections, and why hospitals have regained their notoriety as pest-houses (7,8). If the Darwinists were right, none of this would have happened.

So that's bacteria. We are not bugs (though the vast majority of the cells within our bodies are bacterial) and what we as a species gain in complexity we lose in adaptability. But as indicated at the beginning of this item, as with bugs so, it now seems, with people. It looks likely that Darwinist random mutation, taking place gradually or in leaps over aeons of time, is only a minor explanation for evolution. As with bacteria, the main reason seems to be 'selective pressure' exerted not only by external events, but also by the way we live.

Is human adaptation fast?

This is partly what epigenetics is all about. The implications are mind-boggling. For a start, selective pressure affecting the human genome implies that adaptation can and does happen quickly. The rise and fall of epidemics is immediately explained. The reason why different populations are more or less vulnerable to different aspects of diet becomes obvious. Maybe (we are not suppose to say this) the human species will and can adapt to Whoppa cheeseburgers and Big Gulp colas, given a couple more generations, and obesity will become uncommon again. (No no, I didn't say this, erase, erase). And, even more wonderful, Bernard Shaw may well have had a real point. Cutting edge research is now indicating that the way we live, before we procreate, may indeed affect our children and their children (1-3). This, it seems to me, is why I always wanted to believe that Lamarck is essentially right. It's because he puts a fundamental purpose back into life. And it now does look as if he is now becoming vindicated.

Scientists in this field divide into two camps. Most continue to use Darwinist



language, much as scientists up to the 19th century usually included a bow to God in their work. Some, however, have come out of the closet. Well, (as my beloved grannie from Poplar used to say in her letters to me) I will close now. Meanwhile, try googling 'epigenetics' together with 'evolution' and 'Lamarck', and the front page of these links perused, try adding 'Ted Steele' and 'Eugene Koonin'. Prepare yourself for a roller-coaster ride.

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The dimensions of time and space

What matters now and in future

This column started with enthusiasm for electronic publication with all it can offer. Readers of and contributors to top range vehicles, weekly journals such as *The Lancet, Nature, New Scientist* and the *New England Journal of Medicine*, are accustomed to such treats. They also make vigorous use of what is the even more energetic facility for immediate response and debate.

But if we see ourselves mainly as nutritionists, our own profession has with some exceptions remained stuck with text-only black-and-white journals. Also, these publish little else but papers reporting the results of what Thomas Kuhn has called 'normal' science, using or assuming standard conceptual frameworks that may or may not be useful. Such papers are published in print usually anything from three months or even more after they are accepted, which may be another three months or even more after they are submitted. True, thanks to the competition of on-line only journals, on-line publication has speeded up this snail pace.

Do these papers advance knowledge and careers? Yes. Do they matter? Some yes, most not a lot, many not at all. Are they interesting? Well, how many subscribers actually read most of the papers in these journals? Around 3 per cent of small readerships, I'd guess. Are they keeping pace with the changes in the world that they are meant to measure and master? With important exceptions, no. Their general purpose, by analogy, is to make sure the tomes are in the shelves and that the Bible continues to be preached in Latin.

The issue is linked with one of professional prestige. Just as journalists often yearn to be seen as members of a profession, many members of the nutrition profession want to be seen as 'hard' scientists. Physics and chemistry are the hard sciences, biology somewhat less so, even when plumped up with statistical Viagra.

From bench to eternity

A perceived difference between the hard and the soft sciences concerns the dimensions of time and space. The attempt to position nutrition as a hard science involves an approach implying that its findings are eternal. Take the phrasing of the titles of two recent papers in distinguished nutrition journals. One is: 'The red wine polyphenol resveratrol reduces aromatic hydrocarbon-induced DNA damage in MCF-10A cells'. The other (brace yourself) is: 'Effectiveness of recombinant human erythropoietin, vitamin D3 and iron therapy on long-term survival of patients with end-stage renal disease receiving haemodialysis: analysis of 702 patients after 10-year follow-up'. Both good stuff no doubt, though I doubt that in vitro veritas.

The underlying concept of all such research, is that if it is good stuff, when it is replicated the results of any further studies will be the same, any time, any place. Research scientists are sometimes known as seekers after truth, in the sense of eternal truth. This seems to me to be either a mathematical or a religious notion. What is more important is what is more useful. Research science needs to take down the idol of 'truth' and instead pay most attention to relevance, which is multitudinous, always invites discussion, and is based in time and place.

For example, take *trans-fatty acids*. Studies show that trans-fats, when administered to animals using all sorts of protocols, or in the amounts consumed by populations whose food supplies are industrialised, do horrible things to cardiovascular systems. Google them, together with *Walter Willett*, and you'll see what I mean. Given this, the point is established as always the case – as true.

Public health comes first

But so what? Obviously the answer is time and place-based. The issue is not trans-fats as such. Are surviving gatherer-hunters, peasant agriculturalists, and lifelong followers of the *Slow Food Movement*, overall in any danger of disease caused by trans fats? No, they are not. The issue is that as a result of industrial food processing, in most countries trans-fats are contained in a vast array of products. (You may think not, because you may have noticed food labels boasting about the products they contain being trans-fat free, including some that never contained trans-fats in the first place – on this, see Association founder member *Marion Nestle's* book *What To Eat* – but there are plenty of products that keep quiet on their labels).

The basic problem here is not chemical (hard science) but social and economic (among other soft sciences). In societies whose food systems are not industrialised, trans-fats are not an issue; nor will they be when legislators, backed by global agreements, prohibit their creation in the process of food manufacture.

Nutrition science is valuable only inasmuch as it is relevant; and the relevance of the findings of nutrition scientists necessarily shifts with time and place. What was once generally insignificant – obesity and coronary heart disease, for example – may now be important and urgent public health crises What was once reckoned to be pandemic – beri-beri and pellagra, for example – may now be relatively insignificant. Times change. These are all reasons why we should position our profession first and foremost as an integral part of public health, with nutrition as our speciality. Public health nutritionists need to think like statesmen and women.

To circle back to the beginning of this column and this item, that's why on-line publishing, with all its features, is changing the nature of our work. It brings us into time and place. It reconfigures the human brain, it makes us think differently. It's good to incorporate Claude and Ben in this.

Request and acknowledgement

You are invited please to respond, comment, disagree, as you wish. Please use the response facility below. You are free to make use of the material in this column, provided you acknowledge the Association, and me please, and cite the Association's website.

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This column is reviewed by Fabio Gomes. I have learned a lot about evolution from Stanley Falkow, Tore Midtvedt and Richard Novick, and from the writings of Lynn Margulis. On the nature of science, I mention Thomas Kuhn but he should be taken as an amuse-bouche only – read Steve Fuller on Kuhn to see why, and prefer Paul Feyerabend (especially Against Method, and the essay 'Notes on relativism' in Farewell to Reason, and also as usual prefer Karl Popper. My partner in the New Nutrition Science project is Claus Leitzmann. My thanks also and always to Google, Wikipedia, and the astonishing Guardian On-Line.

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June blog: Geoffrey Cannon

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