2011 February blog

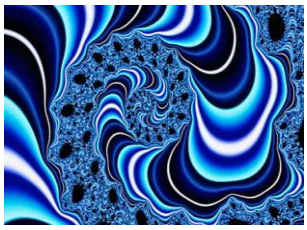
Geoffrey Cannon

Natal, Rio Grande do Norte, Brazil. Here is your opportunity to make jokes about my name and style. Above is Samuel Champlain, the founder of New France in what is now Canada, drawn by himself four centuries ago. It is 1609. He is lightly armoured, and on his helmet he wears a *panache*, a plume of feathers signifying that he is an emissary of the French king Henri IV. He is leading a small band of Huron, Algonquin and Montagnais warriors against three times the number of Mohawks. Note the arrows. The battle was unequal, because he is armed with the cruise missile of its day, an *arquebuse à rouet*, a self-igniting weapon that could fire four bullets at once. The battle was by the side of what is now Lake Champlain. The Mohawks fled, and the name of the plume became a word for audacity. As Cyrano de Bergerac is supposed to have had as his life's motto: *Toujours du panache!*

This month's column also ends with Samuel Champlain, after an appreciation of the work and life of Glyn Davys, a champion of leaf concentrate. I keep on meaning to write a sensible length column of around 3,000 words, but now I see that this one yet again is a bumper number, coming in at close to 5,200. There is much to say, and after all, you can browse. The column begins below with a general meditation on the relationship of humans with the world of which we are part. This is the context for what follows, which is the first of a two-part reflection on the priorities for public health nutrition, looking forward to 2050, and then back from there to 2025, to this and next year. For it is only by looking a generation and more forward, to a time when you and I will be dead, retired, or well into the Third Age, that we can get a proper sense of the work we should be doing now. This is not a good time in history to be preoccupied with our personal interests.

Classification

Big pictures



Some of us see our discipline principally as a biological or biochemical science. In this view, our task is to apply 'classic' or clinical nutrition to communities and populations without engaging in their contexts or circumstances. Others of us, including me, see nutrition itself as a multi-dimensional discipline, and more, as a branch of public health, and therefore necessarily engaged with public policy. In this view, rather than public health nutrition being subsidiary to nutrition, as the longer name implies and as many still think, it is and should be the other way round. The entire discipline of nutrition should usually if not always be concerned with public health. Clinical nutrition, whose unstated principles follow the medical model with its focus on the insulated individual human being, is and should be seen as the ancillary discipline.

Such differences of view are partly a matter of training, temperament or background, and are partly generational. They are also partly a matter of professional position. For example, a senior academic originally trained as a medical doctor, who then moved into nutrition, specialising in, say, zinc metabolism, may be identified as a public health nutritionist, but would be unlikely to accept that the discipline involves areas of social science, or any other knowledge of which she or he has no special knowledge. By contrast, a food policy specialist with an academic background in nutrition taught as part of international development, say, would be equipped with a larger scale professional map. He or she might well have some knowledge of systems theory (as indicated by the spiral pattern of a fractal, above), and would be more likely to see public health nutrition as a social, economic, and perhaps also environmental as well as a biological discipline.

Being with other living things

It seems to me now that differences of view about public health nutrition are also a reflection of how and where we ourselves live. After over ten years now of being in

Brazil, in the tropical South, it is obvious to me that nutrition itself is a multi-dimensional discipline. If I had stayed in temperate Britain, of which I am a national, I probably would *think* this view was correct, but I doubt that I would *feel* so, and it is feelings that generate energy.

To explain, here is a story that may well not immediately seem relevant to our work. But I believe it is. Trust me! Working through a hot night recently at home in the South-Eastern state of Minas Gerais, I felt a soft damp impact on my right wrist, and there was a black millipede, about 6 centimetres long, that must have fallen from the ceiling. Ugh! I shook it to the floor, pushed it on to some card, carried it to the verandah, hoping that it didn't have the speed of the venomous small jumping spiders that sometimes pop up on my desk, and shook it out on to the garden (good luck, millipede!). An hour later I felt a much softer and more precise impact on my right wrist, and in the same place was a butterfly with long oval translucent wings. It licked the sweat from the back of my hand, and I encouraged it to perch on my left hand forefinger. Then I opened the window in front of me and let it fly away. Or so I thought, because when I looked out a little later it was settled outside the window, right by the glue that had made the foundations of a hornets' nest two years ago, and just above it was a lizard, suckers splayed, utterly still, about to pounce. I feel friendly with the little lizards that nest near the ceiling of my study, and come out at night to catch mosquitoes, and poo on my computer, but I was on the side of the butterfly. I scared the lizard off its dinner (sorry, lizard), and the butterfly flew in as if to be with me again.

This mysterious experience made me think about how we relate to other living things. Apart from people, pets, and plants, the 'modern' convention is to destroy anything living within a human dwelling place with toxic disinfectants and insecticides, and in the garden also to engage in an equivalent of 'surgical strikes' with poisons meant to destroy any living thing classified as a pest. A well-known UK slogan for a household chemical is 'Kills all known germs, dead'. As well as the amount of poison this general policy is likely to generate, with likely or possible ill-effects on the immune defences of pets and of us, and the vast magnification of this policy in the incessant and increasing use of biocides on humans, animals and plants, this all now seems strange and wrong to me. We are evolved as part of the living and natural world. There is no clear dividing line between our biology and that of other creatures, and it is a mistake to separate humans from our environment, let alone try to exterminate most of the other living things closest to us.

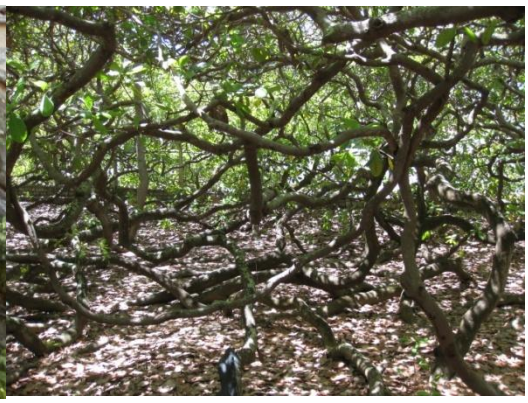
There are exceptions. I cannot abide with cockroaches, for example, and here in Brazil, some snakes and spiders are too dangerous. Millipedes I prefer to be out of the house. But I am not about to go on some rampage – which in the warm verdant place where I live would in any case be futile. My body and I are now more or less used to mosquitoes, and I have learned that if you don't bother hornets they don't bother you. Ants are no trouble to me unless they look as if they are thinking about building a house inside my sound system. Outside the house I have an almost Jain-

like sense about leaf-cutter ants. Our six year-old Gabriel once stopped his mother backing the car out of our drive until we had created diversions in the processions of these astounding creatures.

Nature is curved

Yes, I am gradually moving to a nutritional point. When I lived in a big city – London – I never felt any problem with thinking in terms of categories and divisions. But living close to teeming nature in the tropics, as I now do in Brazil, you lose this sense of boundaries and separation, and instead gain a sense that everything relates to something else, and even, getting more cosmic, that in some way everything relates to everything. What we see all the time in cities, are straight lines, which signify separation. Nature, as shown in the fern above, is curved, which signifies connection.

Take trees, for example. To anybody accustomed to living in a country where trees are carefully cultivated, modified, classified and planted in measured rows, trees like these below that I photographed in Brazil, the one on the left outside the imperial palace in Rio de Janeiro, the other in the town of Parangi in the North-Eastern state of Rio Grande do Norte (where I am now as I write this) feel chaotic and almost scary.



Is the tree on the left one species, or two or more bound up with one another? Or is it a tree meshed with creepers, together with commensal lichen? The branches of the tree on the right, the biggest *caju* (cashew) tree in the world with an area of almost one hectare, bury themselves and emerge again, and then bury themselves again, and so on in continual undulations. So which are branches and which are roots? In each case, it seems to me, the answer is both, and more besides. Names and concepts

designed to keep the outside world and our lives and jobs neat and tidy, don't work in the tropics.

Trees contain other life, too. Just as the vast majority of the cells in our bodies are bacterial, with all this should imply for nutritional science, trees are cities with great populations of vast numbers of different types of living things whose existence is interdependent with one another and with the trees. It is we who have categorised trees, as if to separate them one from the other, and from other forms of life (1). After a while in the tropics, even quite often within big cities, it is what is wild that is sensed as beautiful, while that which is organised loses its charm.

The limit to resources

Now, nourished and illuminated by these examples of the living and natural world, and of our place in and take on nature, I come to the point. Modern nutrition science was initially shaped in the early 19th century CE, at a period in history when the first scientists to be called by that name (2), and all types of public policy decisions and actions, assumed that the natural and physical resources of our planet were limitless. For instance, until very recently, when experts, individually or in committee, have estimated human protein requirements, they have paid practically no attention to the capacity of the planet to provide their specified adequate or desirable quantities of protein, or to the social, economic and political implications of recommending greater consumption of animal protein (3). Apparently they assumed there was no issue – or alternatively, that any issue they might be aware of as citizens was not their problem as scientists. Surely this is strange (4).

Comparably, recommendations made in and for the US or European countries to consume increasing amounts of fruits, have tacitly assumed that if production of temperate crops such as of apples, pears and plums dwindled, or if the populations of higher-income countries greatly increased, ships would constantly bring abundant consignments of cheap or affordable tropical fruits, such as bananas, mangoes and pineapples. Until very recently, nutrition scientists typically have not considered possible eventual outcomes of their findings and recommendations. To the best of my knowledge, the first time the limitation of resources has even been mentioned in an expert report on nutrition and health, is the case of fish. This note of concern was not expressed 150, 50 or 25 years ago, but a mere few years ago, in this century, a long time after it was common knowledge that the world's fish stocks are liable to dwindle irretrievably. Surely this is irresponsible.

Around the time of the rise of modern nutrition science, many wise people, including leaders of the indigenous nations of the Americas, warned against the attitude that material growth and development is limitless, saying that this was crazy as well as vicious. But capitalism, colonialism and industrialisation, and indeed the whole notion of 'development', are all about incessant increasing exploitation, production, and consumption. For people in Europe and then also North America in the 19th century, if some resource was scarce at home it would always be plentiful somewhere else in the world. We were here, and – separate from and subordinate to us – it was there, to serve us. The saying was 'Nature will provide'. But 'Nature' in this sense actually has been and still is the people and the other living resources as well as the natural resources, of Asia, Africa and Latin America, as well as those within the most powerful countries. Sooner or later this will all end, and there will be a reckoning, warned far-sighted people. They were right. Here we are.

The Giessen Declaration

Thoughts like these led my friend and colleague Claus Leitzmann and me, with a number of distinguished colleagues, including the now Association president Barrie Margetts, to convene a three-day workshop meeting at the University of Giessen, Germany, in April 2005. Here we are, below, in the suitably grand setting of our meeting, the Schloss Rauischholzhausen, a property owned by the university.

Participants included Michael Krawinkel (top row, fifth from left), Tony McMichael, Joan Sabate, Colin Tudge, Ibrahim Elmadfa, Prakash Shetty, and Tim Lang (middle row, first, third, fourth, fifth and sixth from left, and at right), and Barrie Margetts, Mark Wahlqvist, me, Claus, and Esté Vorster (front row, first, second and third from left, third and second from right). Barry Popkin and Ricardo Uauy were part of the process, but were committed to other events at the time. The workshop was chaired by Christopher Beauman (top row, in the middle), and supported by the Baroness Mariuccia Zerilli-Marimò (front row, in the middle).

The purpose of the workshop was to agree *The Giessen Declaration*, on the nature, scope and purpose of nutrition science for the 21st century. This was done, and the Declaration was published in September 2005 in a special issue of *Public Health Nutrition* (5,6). Here follow some extracts.

The Declaration begins by proposing that nutrition professionals, in common with other health professionals, have a grand task: 'Those now concerned with the future of the world at all levels from local to global, generally agree that their over-riding shared priority is to protect human, living and physical resources all together, in order to enable the long-term sustenance of life on earth and the happiness of humankind. Nutrition science is one vital means to this end … This implies expansion and enlargement of the science, and its identification as a broad, integrative discipline, enabled to identify and address the circumstances, challenges and opportunities of the twenty-first century… The biological dimension should therefore be one of the three dimensions of nutrition science. The other two

dimensions are social and environmental'. After Giessen, as a result of a further workshop held in Hobart, Australia, the economic dimension was added.

The Declaration continues: 'The human species has now moved from a time in history when the science of nutrition, and food and nutrition policy, have been principally concerned with personal and population health and with the exploitation, production and consumption of food and associated resources, to a new period. Now all relevant sciences, including that of nutrition, should and will be principally concerned with the cultivation, conservation and sustenance of human, living and physical resources all together; and so with the health of the biosphere'.

A curious aspect of nutrition science, as taught and practiced and as evident in textbooks, is that its principles are not specified. Therefore: **'**All sciences and all organised human activities are and should be guided by general principles. These should enable information and evidence to be translated into relevant, useful, sustainable and beneficial policies and programmes… The overall principles that should guide nutrition science are ethical in nature. All principles should also be guided by the philosophies of co-responsibility and sustainability, by the life-course and human rights approaches, and by understanding of evolution, history and ecology'. The special issue of *PHN* also included a paper introducing and listing a series of principles, as work in progress.

This passage is followed by a statement of definition and purpose: 'Nutrition science is defined as the study of food systems, foods and drinks, and their nutrients and other constituents; and of their interactions within and between all relevant biological, social and environmental systems… The purpose of nutrition science is to contribute to a world in which present and future generations fulfil their human potential, live in the best of health, and develop, sustain and enjoy an increasingly diverse human, living and physical environment… Nutrition science should be the basis for food and nutrition policies. These should be designed to identify, create, conserve and protect rational, sustainable and equitable communal, national and global food systems, in order to sustain the health, well-being and integrity of humankind and also that of the living and physical worlds'.

The findings of the Declaration have been endorsed and developed in later workshops held in Barcelona, Hangzhou and Santiago, as well as Hobart. It has stood the test of time, and interrogation by scores of scholars not initially involved, in the last several years. The principles have been developed and refined. More work – shared thinking, rather than research – is needed, on general and specific principles, and on the ethical, evolutionary, historical, ecological and other aspects of nutrition. A book is due to be published next year.

Also, as a result of further meetings and agreements in Hyderabad in 2008 and Istanbul in 2009, I now believe that the bounds of nutrition need to be set wider and

wider yet, in order that we can really meet the challenges of this century. That's for my next column.

Notes and references

1 Two wise writers on the topics of evolution, the interdependence of living things, and trees, are Lynn Margulis and Colin Tudge. In particular I recommend: Margulis L, Sagan D. *What is Life*? Los Angeles, CA: University of California Press, 2000; and Tudge C. *The Secret Life of Trees*. London: Allen Lane, 2005.

2 The term 'scientist' was coined by William Whewell, then Master of Trinity College, Cambridge, in 1833. The term previously used was 'natural philosopher', which suggests a broader scope. The term 'scientist' was not generally used until the late 19th century.

3 On animal foods in general, two food policy-makers who work in the US, who should know better, state that 'the main cause of vitamin A deficiency is low intake of animal products, many of which contain a large amount of retinol'. This is not correct. Few animal products contain substantial amounts of retinol, and many plant foods are rich in carotenoids. But in any case, what are they thinking? That populations identified as at risk of vitamin A deficiency should eat liver or burgers, or drink lots of cow's milk? Or keep on taking the pills? Perhaps they are. The reference is Allen L, Gillespie S. *What Works? A Review of the Safety and Effectiveness of Nutrition Interventions.* UN ACC-SCN/ Asian Development Bank, 2001.

4 Towards the end of his life Peter Medawar grappled with these issues. The reference is: Medawar P. *The Limits of Science.* Oxford: Oxford University Press, 1985. So did John Waterlow, whose conclusion on population growth and food production needs was 'The outcome depends… not on science alone but also on political and economic factors over which, as scientists, we have little control, but we can at least act as advocates'. The reference is: Waterlow J. Needs for food. [Chapter 1] In: Waterlow J, Armstrong D, Fowden L, Riley R (eds). *Feeding a World Population of More Than Eight Billion People. A Challenge to Science*. Oxford: Oxford University Press, 1998.

5 *The Giessen Declaration. Public Health Nutrition* 2005; **8**, 6A: 783-786.

6 *The New Nutrition Science. Public Health Nutrition* 2005; **8**, 6A: 667-804

7 The sections of this item here include pictures that feature spirals. Those above are of a fractal, a shell, a fern, hillside rice paddies, and Kwa-Zulu bowls made with telephone wire. Spirals are the 'brand' of the *New Nutrition Science project*. They indicate that progress and development are not well signified by the straight lines which suggest that the present is by its nature superior to the past. Instead, the knowledge that produces wisdom is best symbolised by an organic shape, indicating that we constantly come back to where we were, but hopefully in a better place.

Leaf extract

The legacy of Glyn Davys

Glyn Davys, an esteemed colleague who I never met, died last month. You may not have heard of him, but if you read the new FAO book on food-based approaches to malnutrition (1, 2), you can become aware of his work, which I now believe will continue and flourish. It is an example of the new nutrition science in action. Glyn was an engineer specialising in appropriate technology. He worked with Norman Pirie on how most effectively to extract what was originally termed 'leaf protein' – now 'leaf concentrate' – as a solution to nutritional deficiencies (3).

John Waterlow advised me to contact Glyn, saying that leaf concentrate is 'one example of an initiative that is plausible, simple and sustainable, and which, like undernutrition itself, is neglected. In either case I can think of a number of reasons why this is so, but I cannot think of a good reason' (4). So I did. My interest came partly from personal conviction. Powdered cassava (manioc) leaves, rich in carotenoids, other micronutrients, and indeed protein, are part of the artisanal 'multimixture' (*multimistura*), widely used to treat and prevent nutritional deficiencies in Brazilian children which, I have no doubt, is effective (5,6).

Part of Glyn's concern, in trying to help to continue Norman Pirie's work, was that food and nutrition policy power-brokers in UN agencies and aid organisations do not take leaf concentrate seriously, saying that its efficacy has not been demonstrated in a series of consistent statistically high-powered trials. The people who are interested don't have the money; and the people who have the money are not interested. One reason is that in places where there are few resources and children in immediate need of food and care, creating the conditions for controlled trials is not a high priority (7). Another reason is that nobody has worked out how to patent or brand leaves.

At that time I was a commissioning editor of *Public Health Nutrition*, co-responsible for its editorial pages. In response to Glyn (8), I said that if he encouraged workers in the field to attest to the benefits of leaf concentrate, *PHN* would publish their letters. This was what he wanted to hear. We published the testimonies of physicians and other health professionals with direct experience, from Burkina Faso, the Democratic Republic of the Congo, Madagascar, Mexico, and Rajasthan, throughout 2009. A methodical account of the case for leaf concentrate was also needed. Brian Thompson and Leslie Amoroso of FAO said they would consider a chapter on leaf concentrate in their forthcoming book on food-based approaches to malnutrition, Simon Collin of the School of Social Medicine in Bristol became committed to this project. David Thurnham of the University of Ulster in Coleraine agreed to advise and review the document. All was agreed, and the book with what I feel is 'Glyn's chapter' is now published (1).

Throughout this time Glyn knew that the cancer he suffered was likely to be fatal before very long. He wrote a characteristically sparky email to me in mid December saying that he would not live much longer. By then he had the FAO book chapter in his hands, just in time for him. As I told him, he also now had some good evidence that the work pioneered by Norman Pirie, recommended by John Waterlow, and championed by him, will become a really significant sustainable protection of children's health and lives especially in impoverished areas of the world. We would all like to leave such a legacy.

References and note

1 Food and Agriculture Organization of the United Nations. *Combating Micronutrient Deficiencies: Food-based Approaches.* Thompson B, Amoroso L (eds): CAB International, with: Rome: FAO, 2011

2 Davys MN, Bertin E, Collin S, Davys MJ, Olivier D, Mathen O, Richardier F, Subtil J. Leaf concentrate and other benefits of leaf fractionation. In: *Combating Micronutrient Deficiencies: Food-based Approaches.* Thompson B, Amoroso L (eds). CAB International, with: Rome: FAO, 2011

3 Pirie NW. *Leaf protein and its by-products in human and animal nutrition.* Second revised edition. Cambridge: Cambridge University Press, 1987. (First edition, 1978).

4 Waterlow J. Undernutrition should be the first priority. [Letter]. *Public Health Nutrition* 2008; **11** (6): 651.

5 Cannon G. A legacy for the world's children [Column]. Website of the World Public Health Nutrition Association, April 2010. Obtainable at www.wphna.org

6 Cannon G. *Alimentação Alternativa.* [Report]. July 2002. Unpublished.

7 This provokes the subversive thought that populations that can readily be corralled into intervention and control groups – doctors and nurses, for instance – are, by this fact alone, not typical of any wider population. If true. this puts the kybosh on randomised controlled trials.

8 Davys G. The greatest untapped food resource on earth? [Letter]. *Public Health Nutrition* 2009; **12** (1): 142.

Samuel Champlain

Prevision

Champlain argued that a leader must be *prévoyant*, a word that has no exact equivalent in modern English. His ides of *prévoyance* was different from foresight in its common meaning. It is not a power to foresee the future. To the contrary, *prévoyance* is the ability to prepare for the unexpected in a world of danger and uncertainty. It is about learning to make sound

judgments on the basis of imperfect knowledge. Mainly it is about taking a broad view in projects of large purpose, and about thinking in the long run.

David Hackett Fischer
on Samuel Champlain, 1670-1735

When I was a boy, Great Britain had 'dominion over palm and pine', and in England even working-class kids had a sense of superiority over 'lesser breeds without the law' (to quote Rudyard Kipling again). A quarter of the land surface of the globe (or so we were told, it didn't look that much to me) was coloured red to denote the British Empire. Living as I did in England, school books skirted over the 'loss' of what is now the USA, as a glitch within a general epic of triumph. They also failed to explain why a lot of people within Canada still spoke French. Later in life, I wondered why the French and various native American nations were allies against the English in the glitch – the conflict that became known as the War of Independence.

There are two lessons here. One is that everybody, everywhere, is brought up to believe in some or another system of ideas, sustained by selecting and treasuring some facts, and ignoring and discrediting others. This is always true. Two is that it is never too late to learn, disturbing though this may be.

When I travel to the US, I take one big case and pack an empty holdall inside it. Once settled at my destination, I find the local branch of the national bookstore chain Barnes and Noble, which towards the back always has tables stacked with deeply discounted hardback books. In Denver in December I found an 834 pager, complete with scores of maps, *Champlain's Dream* (1), reduced from $40.00 to $7.98. My resistance was nil.

As every Canadian schoolchild knows, the French got to Canada first. Samuel Champlain is the founder of Québec City, and of many other settlements in Acadia and along the St Lawrence. He effectively established New France. What I did not know, was that notwithstanding early forays such as the battle of Lake Champlain (see the beginning of this column) he always regarded the native Canadians as equal with and in important ways superior to Europeans. In response, during his 30 years as pioneer and representative of France, he was respected and even revered and loved by the leaders of most of the native nations he encountered, who were well aware of the disdainful and brutal style of the British in what became New England.

So I read the story of Champlain's life thinking that I might well learn more, which I did. The idea expressed in the displayed text that begins this item, speaks to us now.

Many of us who work in the field of nutrition see it as a thoroughly surveyed, nicely fenced and well tended pasture. Nutrition journals attest to this view. But once we start to be aware of the new world in which nutrition has biological and also social,

economic, environmental and other dimensions, which are vast and can never be mastered, our whole attitude necessarily must change. Indeed, the wisdom needed to 'make sound judgements on the basis of imperfect knowledge' is an indispensible part of the art as well as science of public health and of all matters of public policy, as Barrie Margetts says in his *president's letter* also published on our website this month. We do indeed need *prévoyance*. And also, *toujours du panache!*

Reference

1 Fischer DH. *Champlain's Dream*. New York: Simon and Schuster, 2008.

Acknowledgement and request

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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