WN Columns

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What do you think?

Geoffrey Cannon



Here is the original spiral of the New Nutrition Science, designed by calligrapher Ying Huang Bi in Beijing. People and societies always come back to where they have been, hopefully with more wisdom

Rio de Janeiro, Juiz de Fora. Last year all my columns began with strips of spirals and meditations on spiral philosophy. This shapes my thinking on private and public affairs. In the year I have tried to show that the linear (or 'straight arrow' ideology, a invention initially of European mathematicians about 400 years ago, is technically wonderful – thus, this machine – but does not work with anything involving quality and values – such as progress and development, properly understood.

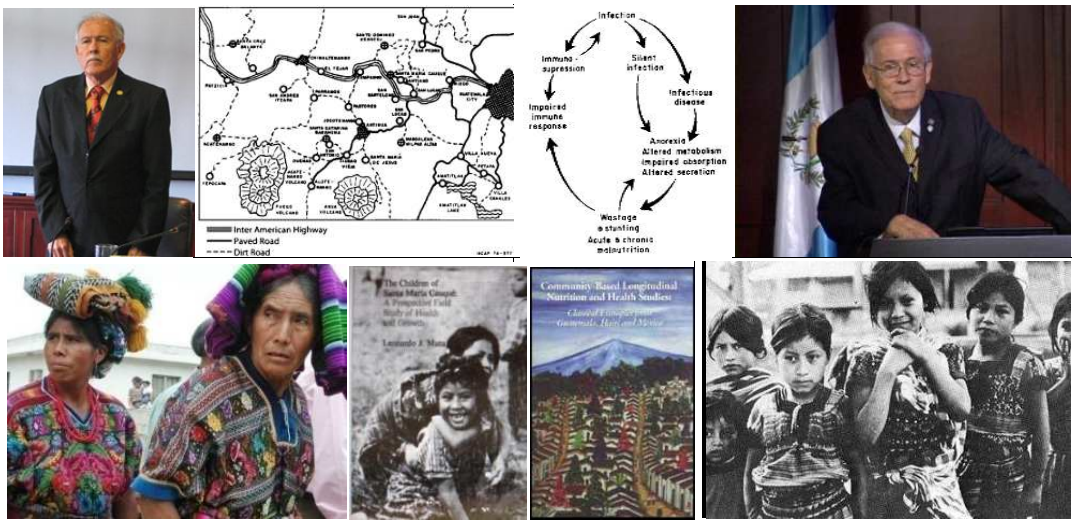
When the Victorian poet Elizabeth Barrett Browning wrote: 'How do I love thee? Let me count the ways' she was making a heartfelt joke. Love is immeasurable. Health, in the sense of risk, evidence or presence of disease, is measurable. So is nutrition when seen as a function of nutrients. But well-being and nourishment, while they can be correlated with quantified markers, in essence are beyond measurement. 'Not everything that counts can be counted, and not everything that can be counted, counts' said Albert Einstein. Quite.

Infection and malnutrition

This helps to explain why this month I celebrate Leonardo Mata, the Costa Rican physician, microbiologist and reformer. His findings, from his decade's study of a Mayan village in Guatemala, published in 1978 in his book *The Children of Santa María Cauqué,* should have overturned thought and practice concerning poverty, food and nutrition security and deficiency. It remains resisted or ignored because of the ethical, social and political principles that guide his thinking and conclusions. In this shorter than usual column, I also reflect on food labels and safety, and have something to say about low-calorie diet regimes – popular after the end of year feasting.

Food and nutrition, health and well-being

What they believe: 14 . Leonardo Mata Learning from the people



Leonardo Mata honoured (top left) and presenting a lecture on The Children of Santa María Cauqué (right), in 2012. The map shows the location of the village in Guatemala. The diagram is of the vicious circle of infection and malnutrition. Below left and right are women and children of the village, and between them books containing the full account of the study (1978) and summarising it (1995)

Thinking about Leonardo Mata now, having met him only once, in Acapulco a decade ago, the *Reader's Digest* tag-line 'the most unforgettable character I ever met' comes to mind. He is from Costa Rica, a scientist with deep field experience who worked for the Guatemalan-based Institute of Nutrition of Central American and Panama (INCAP) led between 1949 and 1961 by Nevin Scrimshaw (1). In common with some colleagues who remained in Latin America, who also include Noel Solomons from the USA and now Guatemala, and Aaron Lechtig from Peru, Leonardo is an astounding personality.

He was known to me before I met him. As told below (Box 1) he was at the London School of Hygiene and Tropical Medicine in the late 1970s, as was Caroline Walker, later my partner. He is charming and handsome and has always been a hit with the ladies. Caroline called him 'the Bandit', and I got the impression when I was with her in the 1980s that she had got close to going to Guatemala to work with him.

Leonardo is now in his 80s. The pictures of him above giving a lecture in Costa Rica, his country, before receiving a lifetime's achievement award, were taken in 2012. The project that makes him one of the great nutrition scientists of modern times, was conducted between 1963 and 1972 in a Cakchiquel (Mayan) village in Guatemala (map above) the book of which (above), sponsored by Nevin Scrimshaw, the *Children of Santa María Cauqué,* was published in 1978 (2), and later summarised (3).

Box 1

The Bandit

Edited from my Out of the Box column for Public Health Nutrition, May 2004 (4).

A privilege of attending international meetings is the opportunity to pay respect to and talk with great nutrition scientists. I first met Nevin Scrimshaw at the Latin American Nutrition Society (SLAN) congress held in Guatemala City in 1997. And I met and got to know Leonardo Mata at the 2003 SLAN congress held in Acapulco.

I had dinner with Leonardo in Acapulco. He took me to a backstreet seafood restaurant. He called for more limes for the tequila and also to kill the bacteria on our prawns. I had a personal reason to drink some toasts to Leonardo. In the late 1970s, before Caroline Walker and I met and worked together, she met him at the London School of Hygiene, affectionately dubbed him 'the Bandit', and came close to moving to Guatemala to work with him.

This was the time of publication of his epic study detailed in his *The Children of Santa María Cauqué*, publixhed in 1978, which is still challenging conventional wisdom about maternal and infant and young child health. As stated in a celebration of this ten-year study edited by Nevin Scrimshaw, many of its results 'were either new, poorly understood, controversial, or unbelievable when communicated to the scientific community'. For example, it was not lack of food that caused disease and death of infants and young children in this Cakchiquel Mayan village in the central highlands of Guatemala, but infections and infestations, whose effects were much more likely to be serious and lethal when children were not breastfed. Do Leonardo's findings have universal significance? He says yes.

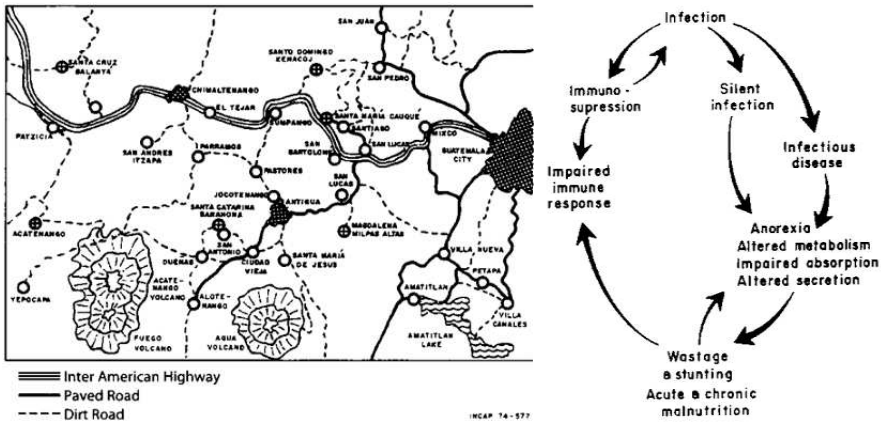
> The problem in the world today is not hunger. It is lack of appetite. The main symptom of infection is anorexia. The issue is not food. The issue is health. With health, children have appetite, and thrive

In Santa María Cauqué there was always enough food. When children recovered from infection they consumed 25 per cent more calories. In Leonardo's view it is an axiom of settled peasant communities, even in marginal environments, that there is always enough food farmed and stored for all seasons. (He is of course not referring to catastrophes like dislocation caused by war). So what about food aid programmes? He told me dismissively:

> For endemic malnutrition they are not justified. Nothing happens. All they do is produce overweight children and women. When women know their children will get food aid, they stop cooking. But food aid and supplementation programmes are very strong politically, they are used to get votes. Aid workers know this but usually keep quiet because they do not want to lose their jobs

The restaurant was closing. Leonardo got up, went out, and came back from a shop in the street with bananas and pears, and charmed the owner into making them into a dessert laced with more tequila. He also bought a *toronja*, rather like a grapefruit, the juice of which drunk every day for five days will, he says, dissolve kidney stones.

At the 2003 meeting of the UN Standing Committee on Nutrition in Chennai, Irv Rosenberg and I lamented that scientists now usually have little interest in work done more than ten years ago. Nevin and Leonardo should be celebrated in festschrifts and also in biographies for the intelligent lay reader showing that public health nutrition, practiced by scientists with vision, courage and persistence, sometimes can transform the quality of life on earth.



The map on the left shows Santa María Cauqué above the bend in the Inter-American Highway, fairly close to Guatemala City (the black mass on the right) The shapes at bottom left are volcanoes. The diagram on the right shows the concept of the vicious circle of infection, anorexia, malnutrition, weakened immunity, further infection, most of all in children after weaning and before the age of 3

Respect for the people

Leonardo's project had features of which I identify seven here, that together made it unique. First, within the village of about 1,000 people, it studied a small number of children, mothers and families in great detail. It was not an intervention. Its purpose was to discover what was so, and not to attempt to change this according to pre-set outside ideas of how to achieve better nutrition and health. In this sense it was a work of ethnography, in which researchers observe societies from the point of view of the people themselves. 'We did not teach them much' Leonardo wrote, 'but we certainly learned from them most of what has been written here' (3).

Second and therefore, the people of the village and the researchers who lived among them became friends. Leonardo had modest resources. In 1976 he explained (5):

> It began with a grant of $US 30 000 a year with a physician, myself, one nurse (then we hired a second and a third one) and two or three laboratory technicians. We recruited about 50 newborns a year. We were recruiting about 80 in 1974. The study continues. At the peak of the study about 22 people were directly engaged. We built a laboratory in the village in the first two years, and I spent almost every day either in the village or in the headquarters at the virus and cell culture laboratory.

Who knows best?

Third and associated, Leonardo was predisposed to believe that the villagers, and other rural communities in Guatemala, Central America, and elsewhere, already knew how to look after their children, as best they could in difficult circumstances, and that interventions in their ways of life could do more harm than good. The project reinforced this view. He describes the village (2) as living within

> A distinctive civilisation that functions most humanely, a community that conducts itself peacefully according to firm values, and with a sense of purpose that stems from the necessity to live, to create, to share with each other, and to suffer and die together – enviable qualities so frequently absent in many Western societies… The complete pattern of life within villages like Santa Maria Cauque causes one to meditate on whether man is really better off in the supposedly more enlightened Western industrial world. How much harm might be inflicted by recommending or implementing social or other interventions becomes a worry, once one gains insight into the ways of village life.

The impact of infection

Fourth, Leonardo was influenced by the work of his patron and mentor Nevin Scrimshaw, who with Carl Taylor and John Gordon at the time Leonardo's investigation began, was researching and writing what become a book length monograph on *Interactions of Nutrition and Infection*, published by WHO in 1968, now a classic of ecological nutrition (6).

One of its conclusions is that undernutrition and nutritional deficiency are almost always synergistic with infections and infestations caused by bacteria, viruses, helminths, protozoa and other microbes. The more infection and infestation there is, the more there is undernutrition and deficiency. This is displayed in the 'vicious circle' diagram above. Interventions devised by investigators from parts of the world where infection and infestation of young children have ceased to be a public health crisis, are likely to be unaware of or at least to underestimate the interactive and synergistic effect of infection and nutrition in children from tropical countries.

Especially in infants and young children, infection has ill-effects on nutritional status, most obvious with diarrhoeal diseases. The contribution Nevin Scrimshaw and his co-authors made, was to emphasise infection and to show how widespread it is, taking into account all sorts of microbial infection all together including some that in isolation seem insignificant, and to identify the synergistic effect.

Fifth, Leonardo went further. In a passage on 'effect of infection on food intake and growth' written more than 15 years after his original book (3) he says:

> Frequent symptoms and signs in children were despondency, prostration, fever, anxiety, and anorexia…The main nutritional consequences of infection are reduced consumption of calories; loss of ingested foods; increased transit of food through the alimentary canal; altered digestion and absorption; protein-losing enteropathy; loss of electrolytes, vitamins, and other nutrients; altered metabolism; sequestration of trace elements and nutrient diversion… Cauqué children ate less food during episodes of infectious diseases, regardless of etiology, severity, or target organ. The effect was more pronounced with fever, sepsis, diarrhea, and lower respiratory infection. A third of children with whooping cough consumed only one half of the customary amount of tortilla in the first month of illness; maize intake was also significantly depressed in the second and third month of disease.

The issue is not food. It is health

Then sixth, came the conceptual breakthrough, the new idea, in the form of one of the findings that Leonardo characterises (3) as 'new, poorly understood, controversial, or unbelievable when communicated to the scientific community':

> The evidence furnished by the Cauqué study... complemented by observations in Costa Rica, identified infections as the main cause of malnutrition, growth retardation, and premature death… Recurrent infections progressively lead to wastage and stunting. Severe infectious episodes precipitate acute malnutrition and cause death. In turn, some infections impair delayed hypersensitivity and other immune functions. Immuno-suppression favors infection, closing the vicious circle. These findings support the conclusion that to improve nutrition it is necessary to control and prevent infections.

This comes close to what Leonardo told me a decade later, after he had retired, when we met in Acapulco. Maybe his sponsors or colleagues had caused him to stop short of what he said to me, or maybe it was the result of further reflection (4).

> The problem in the world today is not hunger. It is lack of appetite. The main symptom of infection is anorexia. The issue is not food. The issue is health. With health, children have appetite, and thrive.

As mentioned above (Box 1) Leonardo believes as an axiom that in all settled peasant communities everywhere in the world, including those in marginal environments, there is always enough to eat, enough food farmed and stored for all seasons. (In disastrous situations such as earthquakes, invasion, expropriation or war, the story is of course different). In Santa María Cauqué there was always enough food. When the children recovered from infection they consumed 25 per cent more dietary energy. For endemic malnutrition, food aid projects are wrong, he told me (4):

> All they do is produce overweight children and women. When women know their children will get food aid, they stop cooking. But food aid and supplementation programmes are very strong politically, they are used to get votes. Aid workers know this but usually keep quiet because they do not want to lose their jobs.

This suggests that food and nutrition insecurity, undernutrition and deficiency persist in impoverished continents, countries and communities, not despite of but irrespective or even because of food aid.

Social reform

So seventh, Leonardo's concluding insight is that what least resourced communities and populations need is basic primary health care and other ways to empower themselves. His solutions do not include food aid, or food fortification, or anything of that sort. What improves nutrition is not administration of nutrients, it is the ability to eat well. He proposes public health and also economic and political reforms (2) of the type advocated in the mid nineteenth century by Rudolf Virchow:

- Better housing and sanitation
- More water available to households
- More beds in household
- Hygiene education such as washing, boiling water and waste disposal
- Weaning practices education
- Family planning
- Immunisation against measles, whooping cough, tuberculosis, tetanus
- Health services for treatment of acute infectious diseases
- Agricultural education is use of seeds, fertiliser, storage of grains
- Food price control
- Improvement of wages
- Agrarian reform

At national level, Leonardo says, nations need to determine their own destiny, and governments need to respect the culture, beliefs and practices of their people (2):

> The role of scientists must go beyond that of providing answers to specific questions. All too often the scientific community has been guilty of indifference…in issues pertaining to the welfare and survival of society. Scientists must take a firm position and be outspoken, so that their opinions sensitise policy-makers and elite groups…While our investigation identified health and growth problems of children and their causes, it extended beyond that [to] a recognition of socio-economic factors… The governments and nations themselves must decide on the particular applications of current knowledge essential to an effective national policy of development, without inflicting significant alterations to the positive values of the indigenous culture.

The force was not with Leonardo at the time. In Central and South America at least, with the emergence of national self-confidence in this century, the force could with him now. It is high time for his work and its conclusions and implications to become very much better known, as a basis for enlightened public policies and actions.

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Hot stuff

What's in the product, and is it safe?

My wise colleague Philip James says that it is perfectly acceptable to publish minority views, controversial opinions, or speculative ideas, as long as they are clearly identified as such. A personal column such as this, within a journal whose founding document states 'debates, commentary, challenges to conventional wisdom – these are the kinds of contribution that *WN* will carry' perhaps should have a 'watermark' on every page! But yes, I guess that some items in *WN* are more controversial than others. This is why we recently started to use the 'hot stuff' label and icon as you see above. This item is about food labels, and food safety, on which there are indeed strongly held contrasting views.

What's on and what's in products

It took me a long time to become fully awake to what is now called 'food politics'. For me and so many thousands of others, Marion Nestle's 2002 book of that name was an eye-opener. But during the 1990s, as chair of the UK National Food Alliance (now Sustain), I did become more aware. The example here, concerns food product labelling. Please do not get me wrong. Product labelling is important, indeed essential, even allowing for the caustic joke that it is useful mainly for customers with a magnifying glass, calculator, and basic knowledge of chemistry.

We at the NFA were delighted to be invited by civil servants on to a government - industry - civil society committee on nutrition labelling, which met regularly at the Ministry of Agriculture, Fisheries and Food, had agenda papers and minutes to read, and at which we felt we were being taken seriously. Also, this gave us a status that helped to raise funds. But after a while, a worm of doubt burrowed into my mind. Why labelling? Was this really a best use of our time? The questions produced the answers. More important than what is on the product, is what is in the product. That is, the main issue is not food labelling, it is food standards – which in that decade of 'market'-driven government, were being burned on a bonfire of regulations. The general idea was that manufacturers could put anything legal and safe into their products, as long as the ingredients and nutrients were stated on the label.

Furthermore, what is more important than the products that need to be labelled, are the natural and minimally processed foods that are not packaged and so do not have labels. It is these foods, and the farms that produce them, that need to have the highest priority and the most public funds and resources. And as for food products, the highest priority should once again be given not to information but to quality

standards. Had we been gulled by the government officials and the industry executives, diverted from the main issues which should matter most? Perhaps not by intention, but in effect yes, I rather felt that we had. To say again, product labelling is important and essential, but not as important as promotion and protection of natural and minimally processed food that is not labelled.

Different types of danger

An even hotter topic is food safety. Of course food and food products should be safe. While most contamination causes no symptoms, and most ill-effects of 'food poisoning' while acutely unpleasant are transient, contaminated food and products can cause serious illness, and indeed can be lethal, especially in small children and people who are elderly, infirm or whose immune systems are weakened.

But practically complete food safety comes with a price. Corporations go to great lengths to withdraw maybe millions of specific products from the market when samples are shown to be infected with microbes, because virtual absolute safety has enormous value to industries big enough to have the machinery needed to check and monitor to high standards.

The assurance of product safety carries an implicit message – 'beware of consuming anything that is not guaranteed safe'. That means most foods and products from farms, or made by small firms or artisans or family traders and street vendors – or freshly made in restaurants and canteens. These all are not as safe as ultra-processed products. Typically though, they are higher in quality.

A current example is ready-to-use therapeutic food (RUTF). In many countries in the global South where severe acute malnutrition of young children is still endemic, community health workers and parents themselves, now increasingly have the choice between variations of peanut paste with added fat and sugar, which is packaged, imported, sealed and guaranteed safe, or else energy-dense mixtures made from traditional local foods that always could be unsafe. Other things being equal, the safe option is obviously better. But other things are not equal – in nutrition, they rarely are! Making vulnerable populations dependent on handouts of imported products, so that small-scale producers lose business and communities lose their knowledge of what is naturally good for their children, is very dangerous in a different way.

Not easy. One distinction proposed by experienced field workers, is to distinguish between cases of severe acute malnutrition, when the safe product is used in effect as medicine, and populations, communities and families of children with no symptoms, who are best nourished with freshly prepared meals mainly made from local foods.

As this column is titled – please, what do you think?



Sick societies

Ho ho and yo-yo





Left, Coca-Cola hi-jacked Santa in 1931, made him obese, and dressed him in red, to sell the product throughout Christmas time. Right in 2014, a 'new you in 14 days' ultra-processed product

Ian Jack recently wrote in *The Guardian* 'Christmas just makes us fatter, drunker and lazier'. An average day's feasting in countries that make a big thing of Christmas, weighs in at around 7,000 kilocalories. Also, what do people eat and drink at Christmas? As well as booze, it is now customary to have not water but great big plastic bottles of sugared cola drinks on the table. The story of how Father Christmas was hi-jacked by Coca-Cola as from 1931 to market its product, including to young children, is told in a new 'anti-commercial' produced by the Nutritional Health Alliance in association with *El Poder del Consumidor* in Mexico.

Dieting is self-defeating

Another 'anti-commercial' hits home hard with estimates of the impact of sugared cola drinks on diabetes and thus blindness and amputation. It isn't just Christmas that makes people fat. It is also what they do afterwards. The fear of gaining more weight (meaning fat) after Christmas, prompts 'going on a diet' – which is to say, a weight (meaning fat) reduction regime. I declare an interest, as author of *Dieting Makes You Fat* (1). Since its first version was published in 1983, the concept has gone through the classic stages of being ignored, ridiculed and attacked. It is now, thanks to persistent investigators such as Rudolph Leibel of Columbia University, New York, generally accepted except by the enormous weight loss business, which boosts gross national products and thus 'development'.

Tara Parker-Pope gives a good account of why dieting is self-defeating (2). Three-fifths of those who struggle to reduce weight have failed more than six times, of which one-third have failed more than 20 times, and one fifth have failed so many times they've lost count. Yoni Freedhoff, quoting this poll, says in one of his blogs

> Every year there's a new crop of New Year, New You books, each boasting its own set of draconian rules…Recurrent dieting leads to feelings of failure, shame, hopelessness, insecurity and sometimes even deep and abiding depression. The body images of constant dieters are often worse than when they started dieting. In many cases they feel threatened by the very foods they love most…People don't fail diets, diets fail people.

The fact that weight reduction regimes typically cause the condition they are supposed to cure, and that the 'yo-yo' effect of dieting eventually ends up with the victim regaining the weight lost and also being fatter than before, is now well-known. The story told by weight loss regimes has shifted from 'my diet works' to 'all the other diets don't work but my diet does', with mumbo-jumbo about metabolism.

Two questions continue to interest me. One is, what proportion of obesity is caused mainly or partly by dieting? An investigation could start by discovering what percentage of obese people have never endured a dieting regime, and then by tracking the incidence in any country of obesity and of dieting. Two, takes into account all the food and drink manufacturers that now sell ultra-processed products, and also ultra-processed products claiming to make you slim (see picture above) and also own 'slimming' companies. How many of these entrepreneurs know that dieting regimes make their clients fat? Is any corporate executive prepared to blow a whistle?

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Status

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