

2011 November blog Geoffrey Cannon



Valparaiso, Chile. Tim Lang will be giving one of the keynote plenary presentations at the Rio2012 congress at the end of April next year. He was chosen by Brazilian colleagues who know how Tim speaks to the South. Twenty years ago he coined the term 'food miles' to refer to the environmental impact and carbon footprint of food sourced from distance. He observes: 'It is a myth that nutrition science was ever neutral. Nutrition has made advances only when engaged with society'. He is my hero this month. There is more on Tim at the end of this column. He is also featured in the fourth and final part of my series on 'the great British food movement', which will appear in January. After the first item below, on Wangari Maathai, and trees and their meaning, I continue my occasional series on reasons to be small, one of which is that small people can easily get out of tight spots.

Ecology. Trees

The preservation of the world



A baobab seed pod and fruit, from Brazil and Angola, and the ancient baobab tree in Nisia Floresta, Brazil. Trees provide food, water, medicine, much else

Wangari Maathai, whose life and work is celebrated in **World Nutrition** this month, makes us think about the meaning of trees. This includes their relevance to nourishment in every sense, from vitamin A, to sustainable livelihoods, to well-being.

As for me, growing up in north London, I saw trees and had a sense of them, but I didn't think about them, probably in common with most city-dwellers. It was only after leaving London that I learned that Highgate Wood, opposite the house of my parents, and the adjacent Queen's Wood, include primal remnants of the ancient Forest of Middlesex. My picture of trees was like the drawings I made of them as a child: straight brown trunk, symmetrical branches, lots of green leaves, standing alone or else in ordered rows. The big garden of a house where I lived as a small child contained a 'monkey puzzle tree' (the Chilean pine), whose strangeness for me was like a horror comic, fascinating and dreadful. While I knew that apples and pears come from trees, I didn't think of trees as useful (meaning, to me) except the horse-chestnut, whose inedible hard seeds or 'conkers' are used for a game that boys play.

Trees as pets and pests

So what were trees for me then? Separate, extras, ornaments, a bit like pets. And like barking dogs and squalling cats, they could be pests. The municipal authorities that governed Notting Dale in west London, where I lived later, decreed that the lime trees in my street could be only lightly trimmed. These big broad-leaved trees blocked the light from all the front windows of my house, and dripped acid sticky sap all over paths and cars. Thus 'slime trees'. Eventually I found a tree surgeon prepared to be slipped a cash bonus to do my business, and we no longer had to have electric lights on all day and could see outside.

Plane trees were favoured when London was grimy and sooty, and those planted in what became back gardens when my street was built around 1870, a century later were colossal. They were at least 40 metres high with roots undermining the houses, and they made the back gardens dark and barren. Eventually I hired the heroic Robert Swan to swarm up the monster in my garden, and cut it down with his giant chain-saw, section by section. People in the facing houses slammed up their windows and screamed 'murderer!' at him. I screamed back 'this tree is a mass murderer!'

Robert Swan later walked to the North and then the South Pole. Maybe he got bored with trees and with people shouting at him. A main branch of the plane tree in a neighbouring garden broke off in the great southern English storm of October 1987, missing my house and wrecking the roof of the house next to me. So living in a big city, my own direct experience of trees was as intrusive – and expensive – ornaments.

Trees as having their own nature



Brasília: how many trees is this? (left). Minas Gerais: papaya grow out of the trunk (centre). Tocantins: the products of babaçu sustain communities (right)

After moving to Brazil in 2000, it was trees as much as anything that shook me up. In different ways, many of them seemed like monkey-puzzles to me. The one above, left, was five minutes' walk away from my apartment in Brasília. What disturbed me was not its size or the gap in its middle, but its identity. The trunk is interpenetrated with creepers. Or are they roots, or more trunks, or what? Is it a tree, or two, or many trees? After living in Brazil for a while, you get less anxious about identity. What does it matter if the living monument on the left is one, or two, or many species? In any case, just as the *H. sapiens* part of us is commensal with and depends on myriad species of bacteria that form our outer and inner immune system, so that who we are as a whole is mammalian and also microbial, all kinds of trees depend upon and are inter-related with many species of birds, insects, fungi and lichen.

My next shock was that papaya, as seen centre, above, and other Brazilian fruits such as *jaca* (jackfruit) and *jaboticaba*, grow out of the trunk of their trees. *Jaboticabas*, which look like big black cherries, grow not in bunches but all over the trunk. This seemed chaotic to me. Everybody knows (so I thought), that first there is the trunk, then – in ordered sequence – the branch, then the twig, and then the blossom, flower, then fruit. What I perceived in trees was organisation, by very many generations of human breeding and husbandry. Species: differentiated. Individual trees: often in rows planted in military rows and, like pedigree pets, subject to specifications of height and width, and to docking and pruning. Fruit growing out of trunks? Unthinkable.

But no, trees are not like pets and are not mere ornaments. When first in Brazil I learned that close to half a million impoverished people, in communities often led by women, in the semi-arid parts of the states of Tocantins, Maranhão, Pará and Piauí, subsist on products of the *babaçu* palm, indigenous and unique to northern Brazil. Practically every part of the *babaçu* is useful. The stem (trunk) is wood for buildings and carving. The leaves are used as thatch, matting and baskets. The *babaçu* is also a vital part of traditional food and nutrition, and must have been so for thousands of years before the Europeans and Africans came. The flesh and milk of the nut, as

shown above, right, is consumed. The fruit is a food that can also be made into flour, and has healing properties. The seed is crushed into oil used for cooking, as well as for burning and lubrication, and is marketed as soaps and cosmetics. Much of the rest is fuel. It was then that I started to understand the usefulness of trees, including the relationship of rural populations – and us all – with trees.

Trees as sustenance and as sacred



Now I will explain the pictures of the baobab tree and its fruits that introduce this item. It relates to the story of Nisia Floresta, seen here as a young and old woman, whose work, spirit, courage and legacy have much in common with those of Wangari Maathai. Born in 1810 on a farm in the North-Eastern state of Rio Grande do Norte, she was the first notable Brazilian feminist. Aged 22 she wrote a tract on the rights of women and the wrongs of men, lived in Olinda, brought up her children alone, then moved to Rio de Janeiro, and there founded a school for girls. Again like Wangari Maathai she travelled extensively, in her case for 30 years in Europe.

She knew and was admired as a poet, educator and thinker by Auguste Comte (1798-1857), whose political philosophy of positivism provided the principles upon which, four years after her death, the Republic of Brazil was founded in 1889 (1). Thus her ideas have infused Brazilian political and social culture, just as those of Wangari Maathai are surely now bound to flavour the nature of Kenya. Nisia Floresta died in Rouen, France. Eventually her remains were brought and interred in the place where she was born, now named after her.

Feminists like my wife Raquel make a detour to visit Nisia Floresta's tomb. Then we drove into the small town itself, and there was the baobab tree whose picture is above. Raquel talked to the guardian of the tree, who said that an agronomist from the US had dated it as 450 years old. This was significant, because the baobab is not native to Brazil. It comes from Madagascar and Africa, and is very strange to eyes used to oak, ash, beech and birch. There is a reason. For humans (see Box 1) it has almost as many other uses as the *babaçu* palm.

Box 1

Baobab as useful

The baobab is fairly common in Africa, in the sub-Saharan savannah and semi-desert regions. It can be seen as the world's largest succulent plant; the function of its colossal trunk is to store water, crucial for its survival and that of nearby humans at times of drought. Amounts of up to 120,000 litres have been recorded. As needed, local people make holes in the trunk and insert plugs and taps. In time some dry up and become hollow. Its wood is spongy, no use for building, so many baobabs are ancient. The bark is stripped to make nets, ropes, fishing lines, sacks and clothing; the bark grows back

. The tree is a source of nourishment. The leaves are commonly used as a vegetable, eaten fresh and dried as an artisanal supplement. In Nigeria, the leaves are used to make soup. The fruit is rich in vitamin C and calcium. The dry fruit pulp is eaten directly, mixed into porridge or milk, and made into juice. In various parts of East Africa, the pulp is covered in a sugary coating and sold in packages as a sweet and sour candy called *umbuyu*. In Tanzania it is added to aid the fermentation of sugar cane for beer making. The seeds are used as a thickener for soups and may also be fermented into a seasoning, roasted for direct consumption, or pounded for oil.

The seeds of the tree in Nisia Floresta must have been secreted by an African about to be enslaved and carried to an unknown faraway land, around the year 1650, with all that meant. The guardian of the tree gave Raquel a seed-pod. She already had a baobab fruit from a trip to Angola, which as you see (top of this story, left) is bigger than a US or rugby football. We keep them, and think about them, and about trees, and what these mean.

Trees as a secret of life

The story of trees is a story all about nourishment in the broad sense, as well as trees being literally a source of nutrition for local communities. Humans and their activities use oxygen and emit carbon. Plants use carbon and emit oxygen. Therefore the rational approach to climate change, caused by increase of carbon dioxide in the atmosphere, is to bring the oxygen-carbon exchange back into balance. No, this does not mean that the solution to climate change is business as usual and a shock programme of tree planting. But as Colin Tudge says, commenting on climate change in his masterpiece on trees: 'The sum of evidence, plus common sense and basic biological theory, suggest that the more forest we retain and the more new forest we plant, the better' (2).

Box 2

Baobab as sacred

Traditionally in West Africa *griots*, like the bards of mediaeval Europe, are keepers of history and legend. Probably all oral societies protect and even venerate the keepers of their stories. *Griots* are singers and poets, and some have special powers, like shamans, with wisdom rooted in the experiences of peoples whose beliefs and values come from nature.

Griots have passed on their abilities from generation to generation forever, as far as anybody knows. Richer families may have their own humble *griot*, a little like the priest once attached to rich European families, whose task is to remember and recount the family stories. As Africa became subject to colonial religion and ideology, and increasingly literate, and then urbanised and industrialised, *griots* have been seen as part of the past. But many of the great recent and living West African writers state that they are carrying on the *griot* tradition; and as in most Asian and Latin American countries, in Africa oral culture still survives.

Baobabs? *Griots* have never worked the soil, and so by tradition cannot be buried in the ground. In Africa it has been believed that if a *griot* should be ever buried, a drought will ensue. So their bodies have been placed within hollow *baobab* trees. There is a story that Léopold Senghor, the first president of Senegal (1960-1980), who as a poet himself might for all sorts of reasons have thought twice, outlawed entombment within hollow baobab trees. Droughts ensued.

As mentioned in the eulogy to Wangari Maathai in *WN* this month, it's estimated by NASA that as well as Earth containing 7 billion people, it now contains something like 400 billion trees – a ratio of roughly 1 to 60. It is also reckoned that every year a net 2 billion trees are cut down, at which rate the last tree on Earth would be felled around the year 2200.

But let's be positive, and plan to ensure that the ratio of trees to humans increases once again. In 1800 the world human population was around 1 billion, and given the vast deforestation caused by industrialisation and urbanisation, the number of trees on Earth might have been – who knows – say 750 billion. (My guess is that it was a lot more). So that's a ratio of 1 to 750. If the world's human population is 10 billion in 2050, and trees go on being cut down at a net 2 billion a year, that would be a ratio of roughly 1 to 30 – half what it is now. Rational goals for human/tree ratios on which effective policies can be based, surely are essential.

What about a ratio of say 1 to 75 by 2050? That implies an increase in trees from the current estimate of 400 billion, to 750 billion – almost double. To put it another way, the policy implies a net increase in trees of almost 10 billion a year. In effect, it implies multiplying Wangari Maathai's Green Belt Movement achievements in Kenya alone, by around 50, and matching this everywhere. Conceivable? The enterprise would amount

to a great public works project, but far less ambitious than say the building of the Great Wall of China, or the Aswan Dam. It would sharply reduce unemployment. It would go some way to repopulate rural areas. And if the cost of planting and husbanding a thousand tree averaged say \$US 5,000 – five dollars a tree, but with economies of scale – the total cost would be \$US 50 billion a year, which is roughly the cost of construction of 40 stealth bombers, not including operating costs. So yes, it's do-able.

My house backs on to protected forest and we have an additional plot of trees. When I started to write this piece I felt that this family at least was doing its bit to keep the human-tree ratio healthy. Not so. I've done a count. Some was easy: the hibiscus tree in front of the house, the plum tree outside our kitchen, the *ipê* tree with its exquisite yellow blossoms, are tropical versions of English trees. But does a stand of bamboo count as one, or do all its shoots count? Likewise coconut palms. Likewise the magnificent *areca* (or *arecas*) we have outside the house. But the most generous count comes to around 175, and 5 people live here. So that's a human-tree ratio of 1 to 35. To be global average we would need to be looking after 300 trees, and to be doing our bit towards my suggested plan, the number would be 375. Hm. How can NASA reckon the total number of trees on Earth is 400 billion? A recount, please...

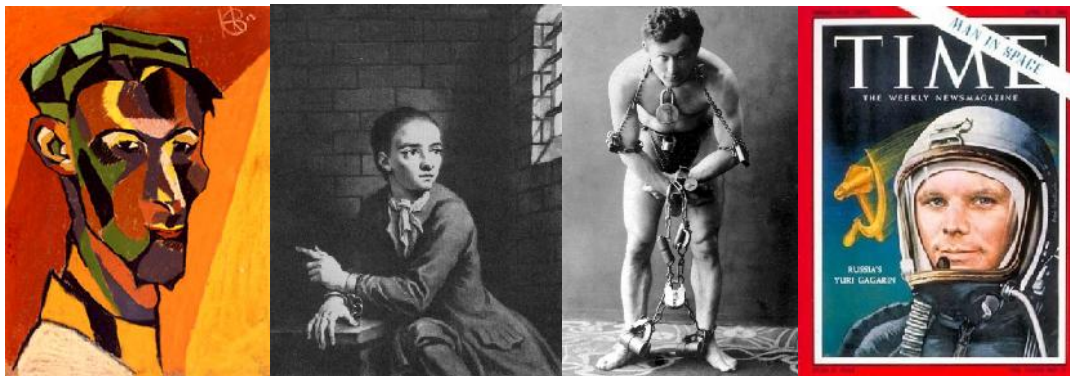
Half a century ago the naturalist Joseph Wood Krutch wrote (3). 'The human race has lost its way. The road upward from the savage does not lead to the cluttered, materialistic, and desperate life such as that he sees his neighbours leading. To find the right road one must return in reality as well as in imagination to the origins. From them one might go forward again to a truly civilized, not a merely artificial, way of life'.

He was right then and he is, at a worse time, right now. Our task is to understand and act on the relevance of the natural world, including trees, to the nourishment of humans, of all creatures of whom our species is one, and to the biosphere. Otherwise we will all decay.

Note and references

- 1 The Brazilian flag includes a 'national motto': '*ordem e progresso*' (order and progress), meant by the founders of the republic to pep up the population. This misquotes Auguste Comte, who held that the principles, basis and purpose of a rational state are '*amor, ordem e progresso*'.
- 2 Tudge C. *The Secret Life of Trees. How They Live and Why They Matter*. London: Allen Lane, 2005.
- 3 Krutch JW. Introduction. In: Porter E. *In Wildness is the Preservation of the World*. New York: Sierra Club/ Ballantine, 1967.

Human growth, height, size
Let the light shine



Small people are best able to get out of tight spots and into confined spaces.
Left to right, Henri Gaudier, Jack Sheppard, Harry Houdini, Yuri Gagarin

There are so many reasons to prefer policies that encourage small while healthy people – like, other things being equal, smaller people use less energy and leave lighter carbon footprints. Ever since **World Nutrition** published Thomas Samaras's commentary on the wisdom of being short and small, with its accompanying editorial, I've become more aware of situations where it's helpful or necessary to be little.

An example is getting out of literally tight spots. The sculptor Henri Gaudier, the subject of Ken Russell's movie *Savage Messiah*, his self-portrait Vorticist-style is above, left), decided to join the French army at the outbreak of the 1914-1918 war. He left London and his partner Sophie Brzeska, arrived in France, got to the front, was arrested as a deserter and flung into jail, and told he would be imprisoned for 12 years, and shot if he tried to escape. Then, he wrote: "There was a tiny window in my cell, with a bar across the middle, and as I had one of my chisels with me, I managed after many hours to get one of the bars loose. I looked out, and saw no sentry; so being small, I succeeded in squeezing out, scaled a wall and ran across many fields" (1). He kept running until he reached Calais, hitched a trip on the night boat, and was in London the next day.

There is no record I can find of Henri Gaudier's height, but it is known that Jack Sheppard, who escaped from London prisons four times in 1724 (next picture), who was the model for Macheath in John Gay's play *The Beggar's Opera*, was 5 foot 4 (1.63 metres), and that the escapologist Harry Houdini (second from the right) was 5 foot 5 (1.65 metres). The flexibility and endurance that tends to come with being small, as well as smallness itself, was essential. True, a chisel, training as a locksmith, and (in Houdini's case) ability to dislocate both shoulders at will, also helps.

Getting into confined spaces is also an example. Yuri Gagarin, who first travelled in space around the world, a feat which triggered the race between the USA and the USSR to the moon, was 5 foot 0 (1.525 metres). This was not by chance. The smaller and lighter the spaceman, the smaller, lighter and more economical can be the cockpit and the payload.

Invader of Baghdad (1) Height (man) 1.60 m (5 ft 3) * Weight (man) 65 kg (144 lb) Weight (pony) 160 kg (350 lb) Fuel (man) forage; (pony) grass Biogradable: both yes	Invader of Baghdad (2) Height (man) 1.78 m (5 ft 10) Weight (man) 85 kg (187 lb) Weight (tank) 60,000 kg (130,000 lb) Fuel: (man) burgers, coke; (tank) petrol mpg 1 Biogradable: man yes, tank no
* Matthew Paris, 1240	

Small people often make better soldiers. In history, it was light cavalry who were the conquerors. These days, wars tread very heavily on the earth

War is a bigger issue than escapology or space travel. Here too, it helps to be small and light, if 'foot soldier' means what the phrase says. Height and weight are irrelevant for 'infantrymen' who travel in helicopters and humvees, provisioned with burgers and soda. But for foot soldiers who may need to live off the land and to walk or run many miles every day, and whose survival depends on concealment, it's a different story.

The Vietnam war was won by light infantry. On the left below is General Vo Nguyen Giap, the mastermind of victories against France and then the US in Vietnam, who was 100 last year. Himself 5 foot 0 (1.525 metres), he commanded armies whose survival depended on foraging for food in jungles (2), concealed in systems of tunnels that fitted them, but which foreign soldiers could not enter.



Small soldiers who attacked and defended the mighty. Left, General Giap. Centre and right, Gurkhas, the most ferocious and decorated foot soldiers

Other wars have been vitally affected by physically small soldiers. The two pictures on the right above, show Gurkhas, the Nepalese warriors 200,000 of whom fought in the 1914-1918 war, and 250,000 in the 1939-1945 war, on the side of the British and their allies. For enlistment, men had to be at least 5 foot 3 (1.60 metres) and 7 stone 12 (110 pounds or 50 kilograms), indicating that average soldiers were taller than the hill farming communities from whence they came. The Gurkhas had special strength, stamina, and ferocity in hand-to-hand fighting, using their *kukris*, long curved razor-sharp knives. Without the Gurkhas, history might have taken different turnings. On the right above are two veterans recently allowed to remain in Britain, as championed by the actor Joanna Lumley.

There is also a universal argument for being small, in the times we now live in and face, as stated by John Waterlow. He says: 'If everyone were to achieve the height now common in industrialised countries, the height explosion would be almost as disastrous as the population explosion, carrying with it the need not only for more food, but for more clothing, more space, more natural resources of all kinds... The declaration in the UN Convention on Human Rights that all people have a right to fulfil their genetic potential does not seem realistic if the race is to survive' (3).

Box 3

Tallness and cancer

As a tailpiece... It is generally accepted that in high-income countries at least, being relatively tall protects against heart disease. However, a recent study (4) supports the finding of the World Cancer Research Fund/American Institute of Cancer research 2007 report (5) that tall people are more likely to suffer a number of cancers, including those of the colo-rectum, breast (post-menopause) and – probably – breast (pre-menopause) and ovary. The recent study also identifies skin cancer and leukaemia. Commenting, cancer specialist Karol Sikora said that for women, hormones were implicated, and that 'dietary factors may also be important'. Another theory is that the bigger people are, the more cells they have and therefore the higher the risk of carcinogenesis. A comment from Cancer Research UK was: 'Tall people should not be alarmed by these results. Most people are not a lot taller than average'.

References and note

- 1 Ede HS. *A Life of Gaudier-Brzeska*. Limited edition. London: Heinemann, 1930.
- 2 There is a nutritional aspect to the Vietnamese victories. A former president of the nutrition society of Vietnam, Tu Giay (below, right) was an agronomist and biological scientist whose great achievement was to compile 'a little green book' given to every Viet Cong soldier, which explained what plants in the jungle were safe to eat, and how to cook with fire but without smoke.



- At centre above he is being greeted in the field by Vietnamese president Ho Chi Minh (5 foot 3 or 1.60 metres), seen on the cover of *Time* magazine in 1975, at left above. Unless Uncle Ho was standing on tiptoe or a tussock, Tu Giay, who died in 2009, looks about the same height as General Giap.
- 3 Waterlow J. Needs for food. Are we asking too much? [Chapter 1]. In Waterlow J, Armstrong D, Fowden L, Riley R. *Feeding a World Population of More Than Eight Billion People. A Challenge to Science*. New York: Oxford University Press, 1998.
 - 4 Campbell D. Taller women more likely to develop cancer. *The Guardian*, 21 July 2011.
 - 5 World Cancer Research Fund/ American Institute for Cancer Research. *Food, Nutrition, Physical Activity and the Prevention of Cancer: A Global Perspective*. Washington DC: AICR, 2007.

Tim Lang

Time to get tough

Nutrition has fissured into two broad but divergent directions. One is biologically reductionist, now to the genome; the other sees nutrition as located in social processes, now also requiring an understanding of the physical environment. As a result, nutrition means different things to different people... Nutrition is generally blind to the environment, despite the geo-spatial crisis over food supply, which will determine who eats what, when and how. How can we ask people to eat fish when fish stocks are collapsing, or to eat wisely if water shortage dominates or climate change weakens food security? ... Nutrition science needs to re-engage with society and the environment.

Tim Lang, 1948 –

Food control or food democracy? PHN 2005, 8, 6(A): 730-737 (1)

Tim Lang is in the line of British radical academics, like Peter Townsend and Peter Hennessy, who have intriguing early careers, combine scholarship with action, are well aware of history, have an instinctive as well as trained commitment to justice and equity, serve indefatigably on committees including in bad times, and who think, speak and write vividly and memorably.

As a young man Tim was an organic farmer of marginal land in the north of England. In his mid 30s he became director of the London Food Commission, which in that decade was the most effective and influential civil society organisation in its field. He then became an academic, first at Thames Valley and then at City Universities, London, where he created what is still a unique specialist food policy centre. Observing the formulation of the GATT (now World Trade Organization) rules for agriculture in the late 1980s, he became a trenchant analyst of the consequences of so-called 'free market' ideology, and warned of the consequences of food and nutrition deregulation in the name of economic globalisation. Unlike many English people in public life, Tim is not insular, perhaps because of having spent early years in India. He notes that global and national food policies have been re-cast by relatively weak governments, ever more powerful transnational corporations, and noisy but rarely effective civil society organisations.

He is co-author – usually with colleagues at City University, London – of three books on food and nutrition policy (2-4). Another, on ecological public health, looks at what is meant by health itself (5). All round the world, his books are on the curricula of teachers of public health and nutrition, and in the shelves of food and nutrition professionals and civil society organisers. So they should be. They are treasure troves of salient facts and information, often categorised in illuminating and challenging ways, with vivid quotations and illustrations. Did you know, for example, that in the

US now, there are more prisoners than farmers? Tim is also evolving a general theory of food and nutrition policy and practice, which endorses the position of *The Giessen Declaration*, agreed in 2005 by a working group of which he was a key member. This is that nutrition, as a science, has social, economic and environmental as well as biological and behavioural dimensions. And his bottom line? ‘Nutrition scientists must get tougher, more active and organised... Nutrition must engage with society and environment, or risk a slide into policy irrelevancy’.

References

- 1 Lang T. Food control or food democracy? Re-engaging nutrition with society and the environment. *Public Health Nutrition* 2005; **6**(A): 730-737.
- 2 Millstone E, Lang T. *The Atlas of Food. Who Eats What, Where and Why*. London: Earthscan, 2003.
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- 4 Lang T, Barling D, Caraher M. *Food Policy. Integrating Health, Environment and Society*. Oxford: Oxford University Press, 2009.
- 5 Rayner G, Lang T. *Ecological Public Health: Reshaping the Conditions of Health*. Abingdon: Earthscan/Routledge, 2012

Acknowledgement and request

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geoffreycannon@aol.com

