

Feeling climate

THE SHAMAN'S CURE



PETER BUNYARD recently revisited Colombia where he met a Shaman who told him he must be valiant after showing him the annihilation development is bringing to the planet. Peter was invited by the Kamsá people to talk about the trees of the Amazon, and how, without the rainforest stretching thousands of miles to the tropical Atlantic, Colombia would desiccate and die. We must stop the destruction of the world's tropical forests and understand the extraordinary role rainforests play in making global climate, to avoid disrupting the recycling of rain that keeps forests healthy, feeds mighty river systems and carries energy and water vapour to distant parts of the world.

The shaman's incantations were rising and falling; I felt my body, as if floating at sea, rising gently over the swell. Waves of sound rippled through me, helped on by the heavy pulsing of feet and the pentatonic blowing of mouth organs. Shafts of colour, more brilliant than I had ever seen before, vibrated through my mind's eye, turning me into a media player with its swirling fractals, as images of pagodas, of filigree trestles and chairs dissolved and reformed, at times taking on the squirming form of brightly coloured serpents.

For a moment I was being transported to Colombia's Sierra Nevada de Santa Marta, back in time 15 years ago, on a visit to the land of the Kogis and Arhuacos, those extraordinary indigenous peoples, who in resisting the childish behaviour of their 'young brothers', the rest of humanity, declared themselves the Guardians of Mother Earth. I was on my way back to the town, to Santa Marta and the 'civilized' world, so renounced by the Kogi, and in descending

I found a steep, eroded mule track, its walls as high as my chest. I was cutting corners, taking the quick way down instead of the more ambling route the rest of our small party was taking. I had forgotten what I had learned from the indigenous peoples of the Colombian Amazon, that short cuts spell danger, they are the bifurcations in our lives when discretion may well prove the better part of valour.

In my exhilaration, I was jumping down from one side to the other of the track, like a bob-sleigh gathering speed as it hurtles down from one icy corner to another. Suddenly a flash of vivid colours and I was leaping instinctively upwards and upwards, barely realizing what had impelled me to jump. At that moment, like an arrow from a bow, a coral snake launched itself at me, but in my leap I was already above it and it passed harmlessly beneath me. "Culebra, culebra," I shouted, warning the ten-year-old boy, the son of a coffee grower, whom I had met on the road, who was a willing accomplice in our ruse to get down the mountain first and fast. He ground to a halt and dispatched the unfortunate creature with a stick he found lying on the ground.

I am sure that snake saved my life. Ten minutes later I was in a village, when a drunken man, his eyes bloodshot and his hands gripping a shot gun, told me with unadulterated menace

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that I was a CIA agent who had to die. But the snake had given me a sangfroid I had never experienced before, and I thrust the gun away from my stomach. Meanwhile, rushing up to where I was standing, the boy told the man, I was a friend and please not to shoot. The gun thrust at me was not an idle threat, just days before, two young Italian men of a party of three had been killed near that spot, and I wondered whether the brute of a man who threatened me could have had anything to do with it.

Colombian women replanting forests

But now I was not in the Sierra Nevada, I was in the upper Putumayo, close to Colombia's border with Ecuador, with the Kamsá people who invited me to talk about the trees of the Amazon, and why, without the rainforest stretching for thousands of miles to the distant tropical Atlantic, Colombia would desiccate and die. I was with more than 50 indigenous women, all working communally to plant native species in areas shorn of their trees by colonizers who saw fit to convert once luxuriant forests into poor cattle pasture. That morning, walking in the mountains with the Kamsá I had seen a lone cow emerging forlornly from the mist. What a contrast with some of the richest, most biodiverse forests in the world, that had bridged the gap between the lowland Amazon and the high Andes of the Putumayo, with its extraordinary upland páramos, those regions unique to Colombia, Ecuador and Venezuela, where the slender, bizarre, friar-like 'frailejones' grow among the water-holding sphagnum mosses. It's a world of mists and mystery, where some of the great rivers spring, like the Putumayo, the Caquetá, the Magdalena, the Orinoco, the latter winding its way across the Colombian Plains to Venezuela and into the tropical Atlantic.

"You are the heroes," I told the women, wrapped in their brightly coloured shawls to protect them from the damp, penetrating cold. "You are the protectors of the Earth and may you continue to keep the rapacious land-grabbers at bay. Without you and others like you, we would be doomed to the ravages of global warming and climate change." And we talked about the new road that was to pass by their territory which would link the Amazon lowlands to the Pacific Coast, to Buenaventura, and allow the Chinese and others along the Pacific, easy access to the riches of the Amazon, apparently oblivious to the destruction of a powerful, vital climate

system that carries energy and water vapour to distant parts of the world. The Argentinians, no less, thousands of miles to the South, get half their rain from the rainforests of the Amazon, as does the State of Sao Paulo in Brazil. Not least, the United States Mid-West receives its bounty of Amazonian rains just in time for the Spring sowing of soya and corn. I wonder how many US farmers know about this?

I had told the women how the Amazon rainforests recycle the rains that arrive from the tropical Atlantic, between Africa and Brazil; how the massive thunderstorms draw in the Trade Winds, with their rich burden of many millions of tons of water vapour; how without the trees to relay the water via their roots and leaves, Colombia and the Putumayo would lose their precious watering. All that made complete sense to a people who, from time immemorial, had guarded the source of the grand Putumayo River, revering the forests and the páramos of that incomparably beautiful region of Colombia.

My visions were no longer of swirling ever-transmuting patterns of colour. I was flying over the surface of the Earth: my trip had begun. The Taita was again chanting, the cadence of his voice causing me

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to tremble as I swooped over forests, rivers, lakes and then, as a rude awakening, over an Earth ripped clean of its trees. Deserts loomed as the Taita lamented at the sacrilegious disregard of mankind for his home, the only Earth. As his voice swelled I felt my throat grow dry and I was gripped in a burning thirst. "I need water," I cried, "I need water."

"The Taitá is saying how the Earth is suffering from all we are doing to it; it's getting hotter and you are in the desert. That's why you're thirsty. But feel it, feel the Earth's suffering." With that I was given a few drops of water, when I felt I could have drunk a tankful.

Wonders of life on earth

Suddenly, I had a revelation, a moment of exquisite truth. For years I had been advocating Lovelock's Gaia theory, of life on Earth interacting as an entity with

a capacity to regulate the climate, and how bacteria ruled the world, regulating gases in the atmosphere, to make it just right for lumbering mammals like ourselves, who simultaneously need a lot of oxygen to give us access to energy to think, walk talk and run, but not too much or fires would rage destroying most of the plants on the planet. And the miracle of the nitrogen fixers, tucked away in the roots of legumes, which bring the gas down to the surface and convert it into substrates vital for making practically every important component of our cells, from proteins, amino acids and

even DNA and RNA. Bacteria are the heroes and have been around for a very long time, more than 3,500 million years. They are almost as old as the Earth itself. And if it hadn't been for the early photosynthesizers, the cyanobacteria, now embedded in the leaves of all plant life, we wouldn't have had an oxygen-rich atmosphere, let alone the stratosphere where dangerous ultraviolet gets transformed into heat after interacting with oxygen and ozone. Some believe that without bacteria generating oxygen, our extraordinary planet might have lost the greater part of its water through hydrogen escaping into space for lack of something to react with.

The wonders of our planet never end. Life has surely made this Earth a place very different from our flanking planets, Venus and Mars. How apt it is that we have just the right concentration of greenhouse gases in the atmosphere to notch up the temperature over the planetary surface from a bitter minus 18°C to a comfortable 15°C. On the other hand, if life hadn't taken a hand in absorbing carbon dioxide from the

atmosphere, if life didn't exist on Earth, then today the surface temperature might be an extremely uncomfortable 240°C. That would certainly bake the life out of us.

We won't understand climate change and the impacts of global warming, if we don't understand climate is an emergent property of life's interaction with its environment, both through life reacting to the environment and simultaneously transforming it. Just consider, all the gases in the atmosphere, apart from the noble gas argon, are the products of the metabolism of life on earth and its exhalations. How can climate possibly be nothing more than a response of the Earth to conditions on the Sun? Even those who just put climate change down to greenhouse emissions from our cars, factories, homes and agriculture are missing the point that the great ecosystems of the world, like the rainforests of the Amazon Basin, are absolutely crucial in giving us a climate we can live with. We chop the rainforests down at our peril, and are getting perilously close to the time when the forests will start falling apart, even if we don't bulldoze down one more tree.

Now that I was coasting from horizon to horizon, I saw clearly our only Earth, was truly and absolutely alive and not just a scientific idea of counter-balancing systems, with positive and negative feedbacks. It was as if the landscape was rushing towards me, in all its variety of forms and colours, showing me what it was made of and what we had done to it. I felt the love of the Earth for all its creatures and that we humans, we modern humans with our need for technologies and gadgets, had wrenched us away from nature and into an unreal world that was increasingly looking as if it had no future. This revelation, despite the intense sadness it provoked, was at the same time, a glorious feeling of knowing the Earth was far more than inanimate rocks and H₂O, with soil and plants and animals. It was a vibrating, pulsing super-organism, hung together in transient, ever-changing harmony, always striving to 'be' against the physical forces of space, stars and the universe.

Just a week previous to my encounter with the Shaman, I had read some fascinating new 'truths' about the way the Amazonian rainforests make their own climate, and so make the climate for the rest of South America and the world. Like most rational biologists I had always assumed when the tropical Sun beat down in the summer months, when there were few clouds to send its rays back into space, the rainforest lost something of its ability to grow, to put on biomass, primarily because of lack of rain and humidity. But that isn't the case. Analyzing satellite pictures taken over the Amazon, scientists have discovered when

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it's summer over one of the Earth's hemispheres the forest fills out its foliage and captures as much as it can of sunlight for photosynthesis, literally while the Sun shines.

Integrated forests, water, hemispheres

The beauty of it is the trees are able to draw down deep for their water, which they not only direct upwards through the trunk and branches to pass water vapour out of the stomatal pores in the leaves, they also direct water out sideways through a lateral root system, dampening the soil around and feeding the sub-storey vegetation. The net result is the rate and extent of the water flow out through the leaves increases by a quarter or more consequently bringing about the formation of storm clouds which, because of their upward convection, suck in humid air from the other hemisphere undergoing winter.

This is a vital process, bringing the rains the forest needs for its survival. It's a process that transfers solar energy, 6 million atomic bombs' worth every day, out of the Amazon Basin to the higher latitudes. Without the forest to export and distribute the Sun's energy the entire region would heat by 10°C or more. What a beautiful way to make life possible over such a vast continent and how brutish our ongoing onslaught against the forests.

Remembering the Shaman's words I must be strong, valiant, I recalled why I had spent years fighting for the Amazon's rainforests and for the indigenous peoples who had lived sustainably in the world's richest ecosystems without destroying them. In Brazil alone, we 'Whites', had cleared an area bigger than France in a few decades. Worldwide we were clearing the equivalent of several football pitches worth of tropical rainforests every minute. And now we are engaged in annihilating rainforests to plant energy crops, such as African Palm, that would take more than a century, if ever, to replace the carbon lost to the atmosphere by such a destructive, inane practice.

Nearly 40 years ago, in 1968, the investigative journalist Norman Lewis wrote an article for the *Sunday Times* which sent shock waves around the world. FUNAI, the Brazilian agency for protecting indigenous peoples in Brazil and especially in the Amazon, had been engaged in a ruthless campaign of ethnocide, in part by scattering measles-infected blankets among 'Indians' who had no resistance and therefore died like flies. This article was responsible for spawning organizations such as Survival International and it certainly had something to do with the publishing of *The Ecologist* a couple of years later. For me that article was apocalyptic. I saw clearly that if we wiped out the



last vestiges of indigenous culture and knowledge in the Amazon we would be tolling the death knell of our own western civilization. This vision, even after so much time, was now bursting yet again into my consciousness and I was aware of its pressing message. We must stop destroying the great tropical rainforests of the world, if we ourselves are to survive. We must come to understand the extraordinary role rainforests, particularly those of the Amazon Basin, play in determining global climate through their energy distributing power, quite aside from harbouring many thousands of species.

We barely have time to stop what we call 'development' in the Amazon Basin, which is proving to be the greatest anti-evolutionary force since the Permian, 340 million years ago, when runaway warming caused three quarters of all living species to vanish. That was a natural, inevitable event, whereas now the option to avoid such a disaster lies in our hands. We have to act promptly, to avoid fatally disrupting the recycling of rain that keeps the forests healthy and feeds the mighty river systems of the Colombian Macizo. How close are we to the tipping point when the mighty system of forest, rain and river breaks down? ■PE

■ Peter Bunyard is a biologist and is science editor and co-founder of *The Ecologist*, U.K. He has lectured on the Amazon at various universities and colleges in the UK, Colombia and the US. He has worked with many organisations and done field work in Colombia from 1989 - 2005. He has written several books and chapters in books, including: *The Politics of Self-Sufficiency*; *Dam Building in the Tropics*; *Nuclear Energy after Chernobyl*; and a chapter in the book *The Amazon and Gaia*.

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