

Chaff

by Greg Egan

El Nido de Ladrones -- the Nest of Thieves -- occupies a roughly elliptical region, fifty thousand square kilometers in the western Amazon Lowlands, straddling the border between Colombia and Peru. It's difficult to say exactly where the natural rain forest ends and the engineered species of El Nido take over, but the total biomass of the system must be close to a trillion tonnes. A trillion tonnes of structural material, osmotic pumps, solar energy collectors, cellular chemical factories, and biological computing and communications resources. All under the control of its designers.

The old maps and databases are obsolete; by manipulating the hydrology and soil chemistry, and influencing patterns of rainfall and erosion, the vegetation has reshaped the terrain completely: shifting the course of the Putumayo River, drowning old roads in swampland, raising secret causeways through the jungle. This biogenic geography remains in a state of flux, so that even the eye-witness accounts of the rare defectors from El Nido soon lose their currency. Satellite images are meaningless; at every frequency, the forest canopy conceals, or deliberately falsifies, the spectral signature of whatever lies beneath.

Chemical toxins and defoliants are useless; the plants and their symbiotic bacteria can analyze most poisons, and reprogram their metabolisms to render them harmless -- or transform them into food -- faster than our agricultural warfare expert systems can invent new molecules. Biological weapons are seduced, subverted, domesticated; most of the genes from the last lethal plant virus we introduced were found three months later, incorporated into a benign vector for El Nido's elaborate communications network. The assassin had turned into a messenger boy. Any attempt to burn the vegetation is rapidly smothered by carbon dioxide -- or more sophisticated fire retardants, if a self-oxidizing fuel is employed. Once we even pumped in a few tonnes of nutrient laced with powerful radioisotopes -- locked up in compounds chemically indistinguishable from their natural counterparts. We tracked the results with gamma-ray imaging: El Nido separated out the isotope-laden molecules -- probably on the basis of their diffusion rates across organic membranes -- sequestered and diluted them, and then pumped them right back out again.

So when I heard that a Peruvian-born biochemist named Guillermo Largo had departed from Bethesda, Maryland, with some highly classified genetic tools -- the fruits of his own research, but very much the property of his employers -- and vanished into El Nido, I thought: At last, an excuse for the Big One. The Company had been advocating thermonuclear rehabilitation of El Nido for almost a decade. The Security Council would have rubber-stamped it. The governments with nominal authority over the region would have been delighted. Hundreds of El Nido's inhabitants were suspected of violating US law -- and President Golino was aching for a chance to prove that she could play hard ball south of the border, whatever language she spoke in the privacy of her own home. She could have gone on prime time afterward and told the nation that they should be proud of Operation Back to Nature, and that the thirty thousand displaced farmers who'd taken refuge in El Nido from Colombia's undeclared civil war -- and

who had now been liberated forever from the oppression of Marxist terrorists and drug barons -- would have saluted her courage and resolve.

I never discovered why that wasn't to be. Technical problems in ensuring that no embarrassing side-effects would show up down-river in the sacred Amazon itself, wiping out some telegenic endangered species before the end of the present administration? Concern that some Middle Eastern warlord might somehow construe the act as license to use his own feeble, long-hoarded fission weapons on a troublesome minority, destabilizing the region in an undesirable manner? Fear of Japanese trade sanctions, now that the rabidly anti-nuclear Eco-Marketeers were back in power?

I wasn't shown the verdicts of the geopolitical computer models; I simply received my orders -- coded into the flicker of my local K-Mart's fluorescent tubes, slipped in between the updates to the shelf price tags. Deciphered by an extra neural layer in my left retina, the words appeared blood red against the bland cheery colors of the supermarket aisle.

I was to enter El Nido and retrieve Guillermo Largo.

Alive.

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Dressed like a local real estate agent -- right down to the gold-plated bracelet-phone, and the worst of all possible three-hundred-dollar haircuts -- I visited Largo's abandoned home in Bethesda: a northern suburb of Washington, just over the border into Maryland. The apartment was modern and spacious, neatly furnished but not opulent -- about what any good marketing software might have tried to sell him, on the basis of salary less alimony.

Largo had always been classified as brilliant but unsound -- a potential security risk, but far too talented and productive to be wasted. He'd been under routine surveillance ever since the gloriously euphemistic Department of Energy had employed him, straight out of Harvard, back in 2005 -- clearly, too routine by far ... but then, I could understand how thirty years with an unblemished record must have given rise to a degree of complacency. Largo had never attempted to disguise his politics -- apart from exercising the kind of discretion that was more a matter of etiquette than subterfuge; no Che Guevara T-shirts when visiting Los Alamos -- but he'd never really acted on his beliefs, either.

A mural had been jet-sprayed onto his living room wall in shades of near infrared (visible to most hip fourteen-year-old Washingtonians, if not to their parents). It was a copy of the infamous Lee Hing-cheung's A Tiling of the Plane with Heroes of the New World Order, a digital image that had spread across computer networks at the turn of the century. Early nineties political leaders, naked and interlocked -- Escher meets the Kama Sutra -- deposited steaming turds into each other's open and otherwise empty brain cases -- an effect borrowed from the works of the German satirist George Grosz. The Iraqi dictator was shown admiring his reflection in a hand mirror -- the image an exact reproduction of a contemporary magazine cover in which the mustache had been retouched to render it suitably Hitleresque.

The US President carried -- horizontally, but poised ready to be tilted -- an egg-timer full of the gaunt hostages whose release he'd delayed to clinch his predecessor's election victory. Everyone was shoe-horned in, somewhere -- right down to the Australian Prime Minister, portrayed as a pubic louse, struggling (and failing) to fit its tiny jaws around the mighty presidential cock. I could imagine a few of the neo-McCarthyist troglodytes in the Senate going apoplectic, if anything so tedious as an inquiry into Largo's defection ever took place -- but what should we have done? Refused to hire him if he owned so much as a Guernica tea-towel?

Largo had blanked every computer in the apartment before leaving, including the entertainment system -- but I already knew his taste in music, having listened to a few hours of audio surveillance samples full of bad Korean Ska. No laudable revolutionary ethno-solidarity, no haunting Andean pipe music; a shame -- I would have much preferred that. His bookshelves held several battered college-level biochemistry texts, presumably retained for sentimental reasons, and a few dozen musty literary classics and volumes of poetry, in English, Spanish, and German. Hesse, Rilke, Vallejo, Conrad, Nietzsche. Nothing modern -- and nothing printed after 2010. With a few words to the household manager, Largo had erased every digital work he'd ever owned, sweeping away the last quarter of a century of his personal archaeology.

I flipped through the surviving books, for what it was worth. There was a pencilled-in correction to the structure of guanine in one of the texts ... and a section had been underlined in "Heart of Darkness." The narrator, Marlow, was pondering the mysterious fact that the servants on the steamboat -- members of a cannibal tribe, whose provisions of rotting hippo meat had been tossed overboard -- hadn't yet rebelled and eaten him. After all:

No fear can stand up to hunger, no patience can wear it out, disgust simply does not exist where hunger is; and as to superstition, beliefs, and what you may call principles, they are less than chaff in a breeze.

I couldn't argue with that -- but I wondered why Largo had found the passage noteworthy. Perhaps it had struck a chord, back in the days when he'd been trying to rationalize taking his first research grants from the Pentagon? The ink was faded -- and the volume itself had been printed in 2003. I would rather have had copies of his diary entries for the fortnight leading up to his disappearance -- but his household computers hadn't been systematically tapped for almost twenty years.

I sat at the desk in his study, and stared at the blank screen of his work station. Largo had been born into a middle-class, nominally Catholic, very mildly leftist family in Lima, in 1980. His father, a journalist with El Comercio, had died from a cerebral blood clot in 2029. His seventy-eight-year-old mother still worked as an attorney for an international mining company -- going through the motions of habeas corpus for the families of disappeared radicals in her spare time, a hobby her employers tolerated for the sake of cheap PR brownie points in the shareholder democracies. Guillermo had one elder brother, a retired surgeon, and one younger sister, a primary school teacher, neither of them politically active.

Most of his education had taken place in Switzerland and the States; after his PhD, he'd held a succession of research posts in government institutes, the biotechnology industry, and academia -- all with more or less the same real sponsors. Fifty-five, now, thrice divorced but still childless, he'd only ever returned to Lima for brief family visits.

After three decades working on the military applications of molecular genetics -- unwittingly at first, but not for long -- what could have triggered his sudden defection to El Nido? If he'd managed the cynical doublethink of reconciling defense research and pious liberal sentiments for so long, he must have got it down to a fine art. His latest psychological profile suggested as much: fierce pride in his scientific achievements balanced the self-loathing he felt when contemplating their ultimate purpose -- with the conflict showing signs of decaying into comfortable indifference. A well-documented dynamic in the industry.

And he seemed to have acknowledged -- deep in his heart, thirty years ago -- that his "principles" were less than chaff in a breeze.

Perhaps he'd decided, belatedly, that if he was going to be a whore he might as well do it properly, and sell his skills to the highest bidder -- even if that meant smuggling genetic weapons to a drugs cartel. I'd read his financial records, though: no tax fraud, no gambling debts, no evidence that he'd ever lived beyond his means. Betraying his employers, just as he'd betrayed his own youthful ideals to join them, might have seemed like an appropriately nihilistic gesture ... but on a more pragmatic level, it was hard to imagine him finding the money, and the consequences, all that tempting. What could El Nido have offered him? A numbered satellite account, and a new identity in Paraguay? All the squalid pleasures of life on the fringes of the Third World plutocracy? He would have had everything to gain by living out his retirement in his adopted country, salving his conscience with one or two vitriolic essays on foreign policy in some unread left-wing netzine -- and then finally convincing himself that any nation that granted him such unencumbered rights of free speech probably deserved everything he'd done to defend it.

Exactly what he had done to defend it, though -- what tools he'd perfected, and stolen -- I was not permitted to know.

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As dusk fell, I locked the apartment and headed south down Wisconsin Avenue. Washington was coming alive, the streets already teeming with people looking for distraction from the heat. Nights in the cities were becoming hallucinatory. Teenagers sported bioluminescent symbionts, the veins in their temples, necks, and pumped-up forearm muscles glowing electric blue, walking circulation diagrams who cultivated hypertension to improve the effect. Others used retinal symbionts to translate IR into visible light, their eyes flashing vampire red in the shadows.

And others, less visibly, had a skull full of White Knights.

Stem cells in the bone marrow infected with Mother -- an engineered retrovirus -- gave rise to something half-way between an embryonic neuron

and a white blood cell. White Knights secreted the cytokines necessary to unlock the blood-brain barrier -- and once through, cellular adhesion molecules guided them to their targets, where they could flood the site with a chosen neurotransmitter -- or even form temporary quasi-synapses with genuine neurons. Users often had half a dozen or more sub-types in their bloodstream simultaneously, each one activated by a specific dietary additive: some cheap, harmless, and perfectly legitimate chemical not naturally present in the body. By ingesting the right mixture of innocuous artificial colorings, flavors and preservatives, they could modulate their neurochemistry in almost any fashion -- until the White Knights died, as they were programmed to do, and a new dose of Mother was required.

Mother could be snorted, or taken intravenously ... but the most efficient way to use it was to puncture a bone and inject it straight into the marrow -- an excruciating, messy, dangerous business, even if the virus itself was uncontaminated and authentic. The good stuff came from El Nido. The bad stuff came from basement labs in California and Texas, where gene hackers tried to force cell cultures infected with Mother to reproduce a virus expressly designed to resist their efforts -- and churned out batches of mutant strains ideal for inducing leukaemia, astrocytomas, Parkinson's disease, and assorted novel psychoses.

Crossing the sweltering dark city, watching the heedlessly joyful crowds, I felt a penetrating, dream-like clarity come over me. Part of me was numb, leaden, blank -- but part of me was electrified, all-seeing. I seemed to be able to stare into the hidden landscapes of the people around me, to see deeper than the luminous rivers of blood; to pierce them with my vision right to the bone.

Right to the marrow.

I drove to the edge of a park I'd visited once before, and waited. I was already dressed for the part. Young people strode by, grinning, some glancing at the silver 2025 Ford Narcissus and whistling appreciatively. A teenaged boy danced on the grass, alone, tirelessly -- blissed out on Coca-Cola, and not even getting paid to fake it.

Before too long, a girl approached the car, blue veins flashing on her bare arms. She leaned down to the window and looked in, inquiringly.

"What you got?" She was sixteen or seventeen, slender, dark-eyed, coffee-colored, with a faint Latino accent. She could have been my sister.

"Southern Rainbow." All twelve major genotypes of Mother, straight from El Nido, cut with nothing but glucose. Southern Rainbow -- and a little fast food -- could take you anywhere.

The girl eyed me skeptically, and stretched out her right hand, palm down. She wore a ring with a large multifaceted jewel, with a pit in the center. I took a sachet from the glove compartment, shook it, tore it open, and tipped a few specks of powder into the pit. Then I leaned over and moistened the sample with saliva, holding her cool fingers to steady her hand. Twelve faces of the "stone" began to glow immediately, each one in a different color. The immunoelectric sensors in the pit, tiny capacitors

coated with antibodies, were designed to recognize several sites on the protein coats of the different strains of Mother -- particularly the ones the bootleggers had the most trouble getting right.

With good enough technology, though, those proteins didn't have to bear the slightest relationship to the RNA inside.

The girl seemed to be impressed; her face lit up with anticipation. We negotiated a price. Too low by far; she should have been suspicious.

I looked her in the eye before handing over the sachet.

I said, "What do you need this shit for? The world is the world. You have to take it as it is. Accept it as it is: savage and terrible. Be strong. Never lie to yourself. That's the only way to survive."

She smirked at my apparent hypocrisy, but she was too pleased with her luck to turn nasty. "I hear what you're saying. It's a bad planet out there." She forced the money into my hand, adding, with wide-eyed mock-sincerity, "And this is the last time I do Mother, I promise."

I gave her the lethal virus, and watched her walk away across the grass and vanish into the shadows.

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The Colombian air force pilot who flew me down from Bogota didn't seem too thrilled to be risking his life for a DEA bureaucrat. It was seven hundred kilometers to the border, and five different guerilla organizations held territory along the way: not a lot of towns, but several hundred possible sites for rocket launchers.

"My great-grandfather," he said sourly, "died in fucking Korea fighting for General Douglas fucking MacArthur." I wasn't sure if that was meant to be a declaration of pride, or an intimation of an outstanding debt. Both, probably.

The helicopter was eerily silent, fitted out with phased sound absorbers, which looked like giant loudspeakers but swallowed most of the noise of the blades. The carbon-fiber fuselage was coated with an expensive network of chameleon polymers -- although it might have been just as effective to paint the whole thing sky blue. An endothermic chemical mixture accumulated waste heat from the motor, and then discharged it through a parabolic radiator as a tightly focused skywards burst, every hour or so. The guerillas had no access to satellite images, and no radar they dared use; I decided that we had less chance of dying than the average Bogota commuter. Back in the capital, buses had been exploding without warning, two or three times a week.

Colombia was tearing itself apart; La Violencia of the 1950s, all over again. Although all of the spectacular terrorist sabotage was being carried out by organized guerilla groups, most of the deaths so far had been caused by factions within the two mainstream political parties butchering each other's supporters, avenging a litany of past atrocities which stretched back for generations. The group who'd actually started the current wave of

bloodshed had negligible support; _Ejercito de Simon Bolivar_ were lunatic right-wing extremists who wanted to "reunite" with Panama, Venezuela, and Ecuador -- after two centuries of separation -- and drag in Peru and Bolivia, to realize Bolivar's dream of _Gran Colombia_. By assassinating President Marin, though, they'd triggered a cascade of events that had nothing to do with their ludicrous cause. Strikes and protests, street battles, curfews, martial law. The repatriation of foreign capital by nervous investors, followed by hyperinflation, and the collapse of the local financial system. Then a spiral of opportunistic violence. Everyone, from the paramilitary death squads to the Maoist splinter groups, seemed to believe that their hour had finally come.

I hadn't seen so much as a bullet fired -- but from the moment I'd entered the country, there'd been acid churning in my guts, and a heady, ceaseless adrenaline rush coursing through my veins. I felt wired, feverish ... alive. Hypersensitive as a pregnant woman: I could smell blood, everywhere. When the hidden struggle for power which rules all human affairs finally breaks through to the surface, finally ruptures the skin, it's like witnessing some giant primordial creature rise up out of the ocean. Mesmerizing, and appalling. Nauseating -- and exhilarating.

Coming face to face with the truth is always exhilarating.

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From the air, there was no obvious sign that we'd arrived; for the last two hundred kilometers, we'd been passing over rain forest -- cleared in patches for plantations and mines, ranches and timber mills, shot through with rivers like metallic threads -- but most of it resembling nothing so much as an endless expanse of broccoli. El Nido permitted natural vegetation to flourish all around it -- and then imitated it ... which made sampling at the edges an inefficient way to gather the true genetic stock for analysis. Deep penetration was difficult, though, even with purpose-built robots -- dozens of which had been lost -- so edge samples had to suffice, at least until a few more members of Congress could be photographed committing statutory rape and persuaded to vote for better funding. Most of the engineered plant tissues self-destructed in the absence of regular chemical and viral messages drifting out from the core, reassuring them that they were still _in situ_ -- so the main DEA research facility was on the outskirts of El Nido itself, a collection of pressurized buildings and experimental plots in a clearing blasted out of the jungle on the Colombian side of the border. The electrified fences weren't topped with razor wire; they turned ninety degrees into an electrified roof, completing a chain-link cage. The heliport was in the center of the compound, where a cage within the cage could, temporarily, open itself to the sky.

Madelaine Smith, the research director, showed me around. In the open, we both wore hermetic biohazard suits -- although if the modifications I'd received in Washington were working as promised, mine was redundant. El Nido's short-lived defensive viruses occasionally percolated out this far; they were never fatal, but they could be severely disabling to anyone who hadn't been inoculated. The forest's designers had walked a fine line between biological "self-defense" and unambiguously military applications. Guerillas had always hidden in the engineered jungle -- and raised funds by

collaborating in the export of Mother -- but El Nido's technology had never been explicitly directed toward the creation of lethal pathogens.

So far.

"Here, we're raising seedlings of what we hope will be a stable El Nido phenotype, something we call beta seventeen." They were unremarkable bushes with deep green foliage and dark red berries; Smith pointed to an array of camera-like instruments beside them. "Real-time infrared microspectroscopy. It can resolve a medium-sized RNA transcript, if there's a sharp surge in production in a sufficient number of cells, simultaneously. We match up the data from these with our gas chromatography records, which show the range of molecules drifting out from the core. If we can catch these plants in the act of sensing a cue from El Nido -- and if their response involves switching on a gene and synthesizing a protein -- we may be able to elucidate the mechanism, and eventually short-circuit it."

"You can't just ... sequence all the DNA, and work it out from first principles?" I was meant to be passing as a newly-appointed administrator, dropping in at short notice to check for gold-plated paper clips -- but it was hard to decide exactly how naive to sound.

Smith smiled politely. "El Nido DNA is guarded by enzymes which tear it apart at the slightest hint of cellular disruption. Right now, we'd have about as much of a chance of _sequencing it_ as I'd have of ... reading your mind by autopsy. And we still don't know how those enzymes work; we have a lot of catching up to do. When the drug cartels started investing in biotechnology, forty years ago, _copy protection_ was their first priority. And they lured the best people away from legitimate labs around the world -- not just by paying more, but by offering more creative freedom, and more challenging goals. El Nido probably contains as many patentable inventions as the entire agrotechnology industry produced in the same period. And all of them a lot more exciting."

Was that what had brought Largo here? _More challenging goals?_ But El Nido was complete, the challenge was over; any further work was mere refinement. And at fifty-five, surely he knew that his most creative years were long gone.

I said, "I imagine the cartels got more than they bargained for; the technology transformed their business beyond recognition. All the old addictive substances became too easy to synthesize biologically -- too cheap, too pure, and too readily available to be profitable. And addiction itself became bad business. The only thing that really sells now is novelty."

Smith motioned with bulky arms toward the towering forest outside the cage -- turning to face south-east, although it all looked the same. "_El Nido_" was more than they bargained for. All they really wanted was coca plants that did better at lower altitudes, and some gene-tailored vegetation to make it easier to camouflage their labs and plantations. They ended up with a small _de facto_ nation full of gene hackers, anarchists, and refugees. The cartels are only in control of certain regions; half the original geneticists have split off and founded their own little jungle utopias. There are at least a dozen people who know how to program the

plants -- how to switch on new patterns of gene expression, how to tap into the communications networks -- and with that, you can stake out your own territory."

"Like having some secret, shamanistic power to command the spirits of the forest?"

"Exactly. Except for the fact that it actually works."

I laughed. "Do you know what cheers me up the most? Whatever else happens ... the real Amazon, the real jungle, will swallow them all in the end. It's lasted -- what? Two million years? Their own little utopias! In fifty years' time, or a hundred, it will be as if El Nido had never existed."

Less than chaff in a breeze.

Smith didn't reply. In the silence, I could hear the monotonous click of beetles, from all directions. Bogota, high on a plateau, had been almost chilly. Here, it was as sweltering as Washington itself.

I glanced at Smith; she said, "You're right, of course." But she didn't sound convinced at all.

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In the morning, over breakfast, I reassured Smith that I'd found everything to be in order. She smiled warily. I think she suspected that I wasn't what I claimed to be, but that didn't really matter. I'd listened carefully to the gossip of the scientists, technicians and soldiers; the name Guillermo Largo hadn't been mentioned once. If they didn't even know about Largo, they could hardly have guessed my real purpose.

It was just after nine when I departed. On the ground, sheets of light, delicate as auroral displays, sliced through the trees around the compound. When we emerged above the canopy, it was like stepping from a mist-shrouded dawn into the brilliance of noon.

The pilot, begrudgingly, took a detour over the center of El Nido. "We're in Peruvian air space, now," he boasted. "You want to spark a diplomatic incident?" He seemed to find the possibility attractive.

"No. But fly lower."

"There's nothing to see. You can't even see the river."

"Lower." The broccoli grew larger, then suddenly snapped into focus; all that undifferentiated green turned into individual branches, solid and specific. It was curiously shocking, like looking at some dull familiar object through a microscope, and seeing its strange particularity revealed.

I reached over and broke the pilot's neck. He hissed through his teeth, surprised. A shudder passed through me, a mixture of fear and a twinge of remorse. The autopilot kicked in and kept us hovering; it took me two minutes to unstrap the man's body, drag him into the cargo hold, and take his seat.

I unscrewed the instrument panel and patched in a new chip. The digital log being beamed via satellite to an air force base to the north would show that we'd descended rapidly, out of control.

The truth wasn't much different. At a hundred meters, I hit a branch and snapped a blade on the front rotor; the computers compensated valiantly, modeling and remodelling the situation, trimming the active surfaces of the surviving blades -- and no doubt doing fine for each five-second interval between bone-shaking impacts and further damage. The sound absorbers went berserk, slipping in and out of phase with the motors, blasting the jungle with pulses of intensified noise.

Fifty meters up, I went into a slow spin, weirdly smooth, showing me the thickening canopy as if in a leisurely cinematic pan. At twenty meters, free fall. Air bags inflated around me, blocking off the view. I closed my eyes, redundantly, and gritted my teeth. Fragments of prayers spun in my head -- the detritus of childhood, afterimages burned into my brain, meaningless but unerasable. I thought: *_If I die, the jungle will claim me. I am flesh, I am chaff. Nothing will remain to be judged._* By the time I recalled that this wasn't true jungle at all, I was no longer falling.

The air bags promptly deflated. I opened my eyes. There was water all around, flooded forest. A panel of the roof between the rotors blew off gently with a hiss like the dying pilot's last breath, and then drifted down like a slowly crashing kite, turning muddy silver, green, and brown as it snatched at the colors around it.

The life raft had oars, provisions, flares -- and a radio beacon. I cut the beacon loose and left it in the wreckage. I moved the pilot back into his seat, just as the water started flooding in to bury him.

Then I set off down the river.

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El Nido had divided a once-navigable stretch of the Rio Putumayo into a bewildering maze. Sluggish channels of brown water snaked between freshly raised islands of soil, covered in palms and rubber plants, and the inundated banks where the oldest trees -- chocolate-colored hardwood species (predating the geneticists, but not necessarily unmodified) -- soared above the undergrowth and out of sight.

The lymph nodes in my neck and groin pulsed with heat, savage but reassuring; my modified immune system was dealing with El Nido's viral onslaught by generating thousands of new killer T-cell clones *_en masse_*, rather than waiting for a cautious antigen-mediated response. A few weeks in this state, and the chances were that a self-directed clone would slip through the elimination process and burn me up with a novel autoimmune disease -- but I didn't plan on staying that long.

Fish disturbed the murky water, rising up to snatch surface-dwelling insects or floating seed pods. In the distance, the thick coils of an anaconda slid from an overhanging branch and slipped languidly into the water. Between the rubber plants, hummingbirds hovered in the maws of violet orchids. So far as I knew, none of these creatures had been tampered with; they had

gone on inhabiting the prosthetic forest as if nothing had changed.

I took a stick of chewing gum from my pocket, rich in cyclamates, and slowly roused one of my own sets of White Knights. The stink of heat and decaying vegetation seemed to fade, as certain olfactory pathways in my brain were numbed, and others sensitized -- a kind of inner filter coming into play, enabling any signal from the newly acquired receptors in my nasal membranes to rise above all the other, distracting odors of the jungle.

Suddenly, I could smell the dead pilot on my hands and clothes, the lingering taint of his sweat and faeces -- and the pheromones of spider monkeys in the branches around me, pungent and distinctive as urine. As a rehearsal, I followed the trail for fifteen minutes, paddling the raft in the direction of the freshest scent, until I was finally rewarded with chirps of alarm and a glimpse of two skinny gray-brown shapes vanishing into the foliage ahead.

My own scent was camouflaged; symbionts in my sweat glands were digesting all the characteristic molecules. There were long-term side-effects from the bacteria, though, and the most recent intelligence suggested that El Nido's inhabitants didn't bother with them. There was a chance, of course, that Largo had been paranoid enough to bring his own.

I stared after the retreating monkeys, and wondered when I'd catch my first whiff of another living human. Even an illiterate peasant who'd fled the violence to the north would have valuable knowledge of the state of play between the factions in here, and some kind of crude mental map of the landscape.

The raft began to whistle gently, air escaping from one sealed compartment. I rolled into the water and submerged completely. A meter down, I couldn't see my own hands. I waited and listened, but all I could hear was the soft plop of fish breaking the surface. No rock could have holed the plastic of the raft; it had to have been a bullet.

I floated in the cool milky silence. The water would conceal my body heat, and I'd have no need to exhale for ten minutes. The question was whether to risk raising a wake by swimming away from the raft, or to wait it out.

Something brushed my cheek, sharp and thin. I ignored it. It happened again. It didn't feel like a fish, or anything living. A third time, and I seized the object as it fluttered past. It was a piece of plastic a few centimeters wide. I felt around the rim; the edge was sharp in places, soft and yielding in others. Then the fragment broke in two in my hand.

I swam a few meters away, then surfaced cautiously. The life raft was decaying, the plastic peeling away into the water like skin in acid. The polymer was meant to be cross-linked beyond any chance of biodegradation -- but obviously some strain of El Nido bacteria had found a way.

I floated on my back, breathing deeply to purge myself of carbon dioxide, contemplating the prospect of completing the mission on foot. The canopy above seemed to waver, as if in a heat haze, which made no sense. My limbs grew curiously warm and heavy. It occurred to me to wonder exactly what I might be smelling, if I hadn't shut down ninety per cent of my

olfactory range. I thought: _If I'd bred bacteria able to digest a substance foreign to El Nido, what else would I want them to do when they chanced upon such a meal? Incapacitate whoever had brought it in? Broadcast news of the event with a biochemical signal?_

I could smell the sharp odors of half a dozen sweat-drenched people when they arrived, but all I could do was lie in the water and let them fish me out.

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After we left the river, I was carried on a stretcher, blindfolded and bound. No one talked within earshot. I might have judged the pace we set by the rhythm of my bearers' footsteps, or guessed the direction in which we traveled by hints of sunlight on the side of my face ... but in the waking dream induced by the bacterial toxins, the harder I struggled to interpret those cues, the more lost and confused I became.

At one point, when the party rested, someone squatted beside me -- and waved a scanning device over my body? That guess was confirmed by the pinpricks of heat where the polymer transponders had been implanted. Passive devices -- but their resonant echo in a satellite microwave burst would have been distinctive. The scanner found, and fried, them all.

Late in the afternoon, they removed the blindfold. Certain that I was totally disoriented? Certain that I'd never escape? Or maybe just to flaunt El Nido's triumphant architecture.

The approach was a hidden path through swampland; I kept looking down to see my captors' boots not quite vanishing into the mud, while a dry, apparently secure stretch of high ground nearby was avoided.

Closer in, the dense thorned bushes blocking the way seemed to yield for us; the chewing gum had worn off enough for me to tell that we moved in a cloud of a sweet, ester-like compound. I couldn't see whether it was being sprayed into the air from a cylinder -- or emitted bodily by a member of the party with symbionts in his skin, or lungs, or intestines.

The village emerged almost imperceptibly out of the impostor jungle. The ground -- I could feel it -- became, step by step, unnaturally firm and level. The arrangement of trees grew subtly ordered -- defining no linear avenues, but increasingly _wrong_ nonetheless. Then I started glimpsing "fortuitous" clearings to the left and right, containing "natural" wooden buildings, or shiny biopolymer sheds.

I was lowered to the ground outside one of the sheds. A man I hadn't seen before leaned over me, wiry and unshaven, holding up a gleaming hunting knife. He looked to me like the archetype of human as animal, human as predator, human as unselfconscious killer.

He said, "Friend, this is where we drain out all of your blood." He grinned and squatted down. I almost passed out from the stench of my own fear, as the glut overwhelmed the symbionts. He cut my hands free, adding, "And then put it all back in again." He slid one arm under me, around my ribs, raised me up from the stretcher, and carried me into the building.

* * * *

Guillermo Largo said, "Forgive me if I don't shake your hand. I think we've almost cleaned you out, but I don't want to risk physical contact in case there's enough of a residue of the virus to make your own hyped-up immune system turn on you."

He was an unprepossessing, sad-eyed man; thin, short, slightly balding. I stepped up to the wooden bars between us and stretched my hand out toward him. "Make contact any time you like. I never carried a virus. Do you think I believe your _propaganda?_"

He shrugged, unconcerned. "It would have killed you, not me -- although I'm sure it was meant for both of us. It may have been keyed to my genotype, but you carried far too much of it not to have been caught up in the response to my presence. That's history, though, not worth arguing about."

I didn't actually believe that he was lying; a virus to dispose of both of us made perfect sense. I even felt a begrudging respect for the Company, for the way I'd been used -- there was a savage, unsentimental honesty to it -- but it didn't seem politic to reveal that to Largo.

I said, "If you believe that I pose no risk to you now, though, why don't you come back with me? You're still considered valuable. One moment of weakness, one bad decision, doesn't have to mean the end of your career. Your employers are very pragmatic people; they won't want to punish you. They'll just need to watch you a little more closely in future. Their problem, not yours; you won't even notice the difference."

Largo didn't seem to be listening, but then he looked straight at me and smiled. "Do you know what Victor Hugo said about Colombia's first constitution? He said it was written for a country of angels. It only lasted twenty-three years -- and on the next attempt, the politicians lowered their sights. Considerably." He turned away, and started pacing back and forth in front of the bars. Two Mestizo peasants with automatic weapons stood by the door, looking on impassively. Both incessantly chewed what looked to me like ordinary coca leaves; there was something almost reassuring about their loyalty to tradition.

My cell was clean and well furnished, right down to the kind of bioreactor toilet that was all the rage in Beverly Hills. My captors had treated me impeccably, so far, but I had a feeling that Largo was planning something unpleasant. Handing me over to the Mother barons? I still didn't know what deal he'd done, what he'd sold them in exchange for a piece of El Nido and a few dozen bodyguards. Let alone why he thought this was better than an apartment in Bethesda and a hundred grand a year.

I said, "What do you think you're going to do, if you stay here? Build your own _country for angels?_ Grow your own bioengineered utopia?"

"Utopia?" Largo stopped pacing, and flashed his crooked smile again. "No. How can there ever be a _utopia?_ There is no _right way to live_, which we've simply failed to stumble upon. There is no set of rules, there is no system, there is no formula. Why should there be? Short of the existence of

a creator -- and a perverse one, at that -- why should there be some blueprint for perfection, just waiting to be discovered?"

I said, "You're right. In the end, all we can do is be true to our nature. See through the veneer of civilization and hypocritical morality, and accept the real forces that shape us."

Largo burst out laughing. I actually felt my face burn at his response -- if only because I'd misread him, and failed to get him on side; not because he was laughing at the one thing I believed in.

He said, "Do you know what I was working on, back in the States?"

"No. Does it matter?" The less I knew, the better my chances of living.

Largo told me anyway. "I was looking for a way to render mature neurons _embryonic_. To switch them back into a less differentiated state, enabling them to behave the way they do in the fetal brain: migrating from site to site, forming new connections. Supposedly as a treatment for dementia and stroke ... although the work was being funded by people who saw it as the first step toward viral weapons able to rewire parts of the brain. I doubt that the results could ever have been very sophisticated -- no viruses for imposing political ideologies -- but all kinds of disabling or docile behavior might have been coded into a relatively small package."

"And you sold that to the cartels? So they can hold whole cities to ransom with it, next time one of their leaders is arrested? To save them the trouble of assassinating judges and politicians?"

Largo said mildly, "I sold it to the cartels, but not as a weapon. No infectious military version exists. Even the prototypes -- which merely regress selected neurons, but make no programmed changes -- are far too cumbersome and fragile to survive at large. And there are other technical problems. There's not much reproductive advantage for a virus in carrying out elaborate, highly specific modifications to its host's brain; unleashed on a real human population, mutants that simply ditched all of that irrelevant shit would soon predominate."

"Then ... ?"

"I sold it to the cartels as _a product_. Or rather, I combined it with their own biggest seller, and handed over the finished hybrid. A new kind of Mother."

"Which does what?" He had me hooked, even if I was digging my own grave.

"Which turns a subset of the neurons in the brain into something like White Knights. Just as mobile, just as flexible. Far better at establishing tight new synapses, though, rather than just flooding the interneural space with a chosen substance. And not controlled by dietary additives; controlled by molecules they secrete themselves. Controlled by each other."

That made no sense to me. "_Existing neurons_ become mobile? Existing brain structures ... melt? You've made a version of Mother that turns

people's brains to mush -- and you expect them to pay for that?"

"Not mush. Everything's part of a tight feedback loop: the firing of these altered neurons influences the range of molecules they secrete -- which in turn controls the rewiring of nearby synapses. Vital regulatory centers and motor neurons are left untouched, of course. And it takes a strong signal to shift the Gray Knights; they don't respond to every random whim. You need at least an hour or two without distractions before you can have a significant effect on any brain structure.

"It's not altogether different from the way ordinary neurons end up encoding learned behavior and memories -- only faster, more flexible ... and much more widespread. There are parts of the brain that haven't changed in a hundred thousand years, which can be remodelled completely in half a day."

He paused, and regarded me amiably. The sweat on the back of my neck went cold.

"You've used the virus -- ?"

"Of course. That's why I created it. For myself. That's why I came here in the first place."

"For do-it-yourself neurosurgery? Why not just slip a screwdriver under one eyeball and poke it around until the urge went away?" I felt physically sick. "At least ... cocaine and heroine -- and even White Knights -- exploited _natural_ receptors, _natural_ pathways. You've taken a structure that evolution has honed over millions of years, and -- "

Largo was greatly amused, but this time he refrained from laughing in my face. He said gently, "For most people, navigating their own psyche is like wandering in circles through a maze. That's what _evolution_ has bequeathed us: a miserable, confusing prison. And the only thing crude drugs like cocaine or heroine or alcohol ever did was build short cuts to a few dead ends -- or, like LSD, coat the walls of the maze with mirrors. And all that White Knights ever did was package the same effects differently.

"_Gray Knights_ allow you to reshape the entire maze, at will. They don't confine you to some shrunken emotional repertoire; they empower you completely. They let you control _exactly who you are_."

I had to struggle to put aside the overwhelming sense of revulsion I felt. Largo had decided to fuck himself in the head; that was his problem. A few users of Mother would do the same -- but one more batch of poisonous shit to compete with all the garbage from the basement labs wasn't exactly a national tragedy.

Largo said affably, "I spent thirty years as someone I despised. I was too weak to change -- but I never quite lost sight of what I wanted to become. I used to wonder if it would have been less contemptible, less hypocritical, to resign myself to the fact of my weakness, the fact of my corruption. But I never did."

"And you think you've erased your old personality, as easily as you erased

your computer files? What are you now, then? A saint? _An angel?_"

"No. But I'm exactly what I want to be. With Gray Knights, you can't really be anything else."

I felt giddy for a moment, light-headed with rage; I steadied myself against the bars of my cage.

I said, "So you've scrambled your brain, and you feel better. And you're going to live in this fake jungle for the rest of your life, collaborating with drug pushers, kidding yourself that you've achieved redemption?"

"The rest of my life? Perhaps. But I'll be watching the world. And hoping."

I almost choked. "Hoping for _what?_ You think your habit will ever spread beyond a few brain-damaged junkies? You think Gray Knights are going to sweep across the planet and transform it beyond recognition? Or were you lying -- is the virus really infectious, after all?"

"No. But it gives people what they want. They'll seek it out, once they understand that."

I gazed at him, pityingly. "What people _want_ is food, sex, and power. That will never change. Remember the passage you marked in 'Heart of Darkness'? What do you think that _meant?_ Deep down, we're just animals with a few simple drives. Everything else is _less than chaff in a breeze_."

Largo frowned, as if trying to recall the quote, then nodded slowly. He said, "Do you know how many different ways an ordinary human brain can be wired? Not an arbitrary neural network of the same size -- but an actual, working _Homo sapiens_ brain, shaped by real embryology and real experience? There are about ten-to-the-power-of-ten-million possibilities. A huge number: a lot of room for variation in personality and talents, a lot of space to encode the traces of different lives.

"But do you know what Gray Knights do to that number? They multiply it by the same again. They grant the part of us that was fixed, that was tied to 'human nature', the chance to be as different from person to person as a lifetime's worth of memories.

"Of course Conrad was right. Every word of that passage was true -- when it was written. But now it doesn't go far enough. Because now, all of human nature is _less than chaff in a breeze_. 'The horror', the heart of darkness, is _less than chaff in a breeze_. All the 'eternal verities' -- all the sad and beautiful insights of all the great writers from Sophocles to Shakespeare -- are _less than chaff in a breeze_."

* * * *

I lay awake on my bunk, listening to the cicadas and frogs, wondering what Largo would do with me. If he didn't see himself as capable of murder, he wouldn't kill me -- if only to reinforce his delusions of self-mastery. Perhaps he'd just dump me outside the research station -- where I could explain to Madelaine Smith how the Colombian air force pilot had come down with an

El Nido virus in midair, and I'd valiantly tried to take control.

I thought back over the incident, trying to get my story straight. The pilot's body would never be recovered; the forensic details didn't have to add up.

I closed my eyes and saw myself breaking his neck. The same twinge of remorse passed over me. I brushed it aside irritably. So I'd killed him -- and the girl, a few days earlier -- and a dozen others before that. The Company had very nearly disposed of me. Because it was expedient -- and because it was possible. That was the way of the world: power would always be used, nation would subjugate nation, the weak would always be slaughtered. Everything else was pious self-delusion. A hundred kilometers away, Colombia's warring factions were proving the truth of that, one more time.

But if Largo had infected me with his own special brand of Mother? And if everything he'd told me about it was true?

Gray Knights only moved if you willed them to move. All I had to do in order to remain unscathed was to choose that fate. To wish only to be exactly who I was: a killer who'd always understood that he was facing the deepest of truths. Embracing savagery and corruption because, in the end, there was no other way.

I kept seeing them before me: the pilot, the girl.

I had to feel nothing -- and wish to feel nothing -- and keep on making that choice, again and again.

Or everything I was would disintegrate like a house of sand, and blow away.

One of the guards belched in the darkness, then spat.

The night stretched out ahead of me, like a river that had lost its way.