

IMMERSION

Gregory Benford

Gregory Benford is one of the modern giants of the field. His 1980 novel Timescape won the Nebula Award, the John W. Campbell Memorial Award, the British Science Fiction Association Award, and the Australian Ditmar Award, and is widely considered one of the classic novels of the last two decades. His other novels include The Stars in Shroud, In the Ocean of Night, Against Infinity, Artifact, Across the Sea of Suns, Great Sky River, and Tides of Light. His most recent books are the two concluding volumes of his Galactic Cluster series, Furious Gulf and Sailing Bright Eternity, a new novel in Isaac Asimov's Foundation series, Foundation's Fear, and a collection of stories, Matter's End. He has recently become one of the regular science columnists for The Magazine of Fantasy & Science Fiction. His short fiction has appeared in our Seventh and

Ninth Annual Collections. Benford is a professor of physics at the University of California, Irvine.

Here he takes us to Africa for a suspenseful and unsettling look at what it really means to be human—and how it came to be that way.

Africa came to them in air thick with smells. In the dry, prickly heat was a promise of the primitive, of ancient themes beyond knowing.

Warily Kelly gazed out at the view beyond the formidable walls. “We’re safe here from the animals?”

“I imagine so. Those walls are high and there are guard canines. Wirehounds, I believe.”

“Good.” She smiled in a way that he knew implied a secret was about to emerge. “I really urged you to come here to get you away from Helsinki.”

“Not to study chimpanzees?”

“Oh, that might be useful—or better still, fun,” she said with wifely nonchalance. “My main consideration was that if you had stayed in Helsinki you might be dead.”

He stopped looking at the striking scenery. She was serious. “You think they would... ?”

“They *could*, which is a better guide to action than trying to

guess *woulds*.”

“I see.” He didn’t, but he had learned to trust her judgment in matters of the world. “You think Imperial Industrie would... ?”

“Knock you off for undermining their case? Sure. But they’d be careful.”

“But the case is over. Settled.”

He had made a successful sociometric prediction of political and economic trends in central Europe. His reputation was powerful enough to cause a fall in certain product markets. Economics increasingly resembled fashion: Commodities rached like hemlines.

Imperial Industrie had lost considerably—a fortune, even for a world-wrapping corporation. They had accused him of manipulating the markets, but he had in all honesty merely tried to test his new model of sociohistory. His reputation among econometric circles was enough to circulate the predictions. Imperial Industrie, he thought, was simply being childish. Reason would prevail there soon enough.

“You intend to make more predictions, don’t you?” she asked.

“Well, once I get some better parameter fixes—”

“There. Then they can lose again. Imperial doesn’t like losing.”

“You exaggerate.” He dismissed the subject with a wave of his hand.

Then too, he thought, perhaps he did need a vacation. To be on a rough, natural world—he had forgotten, in the years buried in Helsinki, how vivid wild things could be. Greens and yellows leaped out, after decades amid steel and glitter.

Here the sky yawned impossibly deep, unmarked by the

graffiti of aircraft, wholly alive to the flapping wonder of birds. Bluffs and ridges looked like they had been shaped hastily with a putty knife. Beyond the station walls he could see a sole tree thrashed by an angry wind. Its topknot finally blew off in a pocket of wind, fluttering and fraying over somber flats like a fragmenting bird. Distant, eroded mesas had yellow streaks down their shanks which, as they met the forest, turned a burnt orange tinge that suggested the rot of rust. Across the valley, where the chimps ranged, lay a dusky canopy hidden behind low gray clouds and raked by winds. A thin, cold rain fell there and Leon wondered what it was like to cower beneath the sheets of moisture, without hope of shelter or warmth. Perhaps Helsinki's utter predictability was better, but he wondered, breathing in the tangy air.

He pointed to the distant forest. "We're going there?" He liked this fresh place, though the jungle was foreboding. It had been a long time since he had even worked with his hands, alongside his father, back on the farm.

"Don't start judging."

"I'm anticipating."

She grinned. "You always have a longer word for it, no matter what I say."

"The treks look a little, well—touristy."

"Of course. We're tourists."

The land here rose up into peaks as sharp as torn tin. In the thick trees beyond, mist broke on gray, smooth rocks. Even here, high up the slope of an imposing ridge, the Excursion Station was hemmed in by slimy, thick-barked trees standing in deep drifts of dead, dark leaves. With rotting logs half buried in the wet layers, the air swarmed so close it was like breathing damp opium.

Kelly stood, her drink finished. "Let's go in, socialize."

He followed dutifully and right away knew it was a mistake.

Most of the indoor stim-party crowd was dressed in rugged safari-style gear. They were ruddy folk, faces flushed with excitement or perhaps just enhancers. Leon waved away the bubbleglass-bearing waiter; he disliked the way it dulled his wits. Still, he smiled and tried to make small talk.

This turned out to be not merely small, but microscopic. “Where are you from? Oh, *Helsinki*—what’s it like? We’re from (fill in the city)—have you ever heard of it?” Of course he had not.

Most were Primitivists, drawn by the unique experience available here. It seemed to him that every third word in their conversation was *natural* or *vital*, delivered like a mantra.

“What a *relief*, to be away from straight lines,” a thin man said.

“Um, how so?” Leon said, trying to seem interested.

“Well, of course straight lines don’t exist in nature. They have to be put there by humans.” He sighed. “I love to be free of straightness!”

Leon instantly thought of pine needles; strata of metamorphic rock; the inside edge of a half-moon; spider-woven silk strands; the line along the top of a breaking ocean wave; crystal patterns; white quartz lines on granite slabs; the far horizon of a vast calm lake; the legs of birds; spikes of cactus; the arrow dive of a raptor; trunks of young, fast-growing trees; wisps of high windblown clouds; ice cracks; the two sides of the V of migrating birds; icicles.

“Not so,” he said, but no more.

His habit of laconic implication was trampled in the headlong talk, of course; the enhancers were taking hold. They all chattered on, excited by the prospect of immersing themselves in the lives of the creatures roaming the valleys below. He listened, not commenting, intrigued. Some wanted to share the world view of herd animals, others of hunters, some of birds. They spoke as

though they were entering some athletic event, and that was not his view at all. Still, he stayed silent.

He finally escaped with Kelly into the small park beside the Excursion Station, designed to make guests familiar with local conditions before their treks or immersions. There were whole kraals of domestic stock. The unique assets, the genetically altered and enhanced animals, were nowhere near, of course.

He stopped and stared at the kraals and thought again about sociohistory. His mind kept diving at it from many angles. He had learned to just stand aside and let his thoughts run.

Animals. Was there a clue here? Despite millennia of trying, humans had domesticated few animals. To be domesticated, wild beasts had to have an entire suite of traits. Most had to be herd animals, with instinctive submission patterns which humans could co-opt. They had to be placid; herds that bolt at a strange sound and can't tolerate intruders are hard to keep. Finally, they had to be willing to breed in captivity. Most humans didn't want to court and copulate under the watchful gaze of others, and neither did most animals.

So here there were sheep and goats and cows, slightly adapted by biotechnology but otherwise unremarkable. Except for the chimps. They were unique artifacts of this preservation deep in the rugged laboratory of central Africa. A wirehound came sniffing, checking them out, muttering an unintelligible apology. "Interesting," he remarked to Kelly, "that Primitivists still want to be protected from the wild, by the domesticated."

"Well, of course. This fellow is *big*."

"Not sentimental about the natural state? We were once just another type of large mammal."

"The natural state might be a pleasant place to visit, but..."

“Right, wouldn’t want to live there. Still, I want to try the chimps.”

“What? An immersion?” Her eyebrows lifted in mild alarm.

“As long as we’re here, why not?”

“I don’t... well, I’ll think about it.”

“You can bail out at any time, they say.”

She nodded, pursed her lips. “Um.”

“We’ll *feel* at home—the way chimps do.”

“You believe everything you read in a brochure?”

“I did some research. It’s a well-developed tech.”

Her lips had a skeptical tilt. “Um.”

He knew by now better than to press her. Let time do his work.

The canine, quite large and alert, snuffled at his hand and slurred, “Goood naaaght, suuur.” He stroked it. In its eyes he saw a kinship, an instant rapport that he did not need to think about. For one who dwelled in his head so much, this was a welcome rub of reality.

Significant evidence, he thought. *We have a deep past together.* Perhaps that was why he wanted to immerse in a chimp. To go far back, peering beyond the vexing state of being human.

“We’re certainly closely related, yes,” Expert Specialist Ruben said. He was a big man, tanned and muscular and casually confident. He was both a safari guide and immersion specialist, with a biology background. He did research using immersion techniques, but keeping the Station going soaked up most of his time, he said. “Chimp-riding is the best immersion available.”

Leon looked skeptical. *Pan troglodytes* had hands with thumbs, the same number of teeth as humans, no tails, but he had never felt great empathy for them, seen behind bars in a zoo.

Ruben waved a big hand at the landscape below the Station. “We hope to make them more useful. We haven’t tried training them much, beyond research purposes. Remember, they’re supposed to be kept wild. The original UN grant stipulated that.”

“Tell me about your research,” Leon said. In his experience, no scientist ever passed up a chance to sing his own song. He was right.

They had taken human DNA and chimp DNA—Ruben said, waxing enthusiastically on—then unzipped the double-helix strands in both. Linking one human strand with a chimp strand made a hybrid.

Where the strands complemented, the two then tightly bound in a partial, new double helix. Where they differed, bonding between the strands was weak, intermittent, with whole sections flapping free.

Then they spun the watery solutions in a centrifuge, so the weak sections ripped apart. Closely linked DNA was 98.2 percent of the total. Chimps were startlingly like humans. Less than 2 percent different—yet they lived in forests and invented nothing.

The typical difference between individual people’s DNA was a tenth of a percentage point, Ruben said. Roughly, then, chimps were twenty times more different from humans than particular people differed among themselves—genetically. But genes were like levers, supporting vast weights by pivoting about a small fulcrum.

“But we don’t *come* from them. We parted company, genetically, six million years ago.”

“Do they think like us?” Leon asked.

“Best way to tell is an immersion,” Ruben said. “Very best way.”

He smiled invitingly, and Leon wondered if Ruben got a commission on immersions. His sales pitch was subtle, shaped for an academic’s interest—but still a sales pitch.

Ruben had already made the vast stores of data on chimp movements, population dynamics, and behaviors available to Leon. It was a rich source and with some math modeling might be fertile ground for a simple description, using a truncated version of sociohistory.

“Describing the life history of a species mathematically is one thing,” Kelly said. “But *living in* it...”

“Come now,” Leon said. Even though he knew the entire Excursion Station was geared to sell the guests safaris and immersions, he was intrigued. “‘I need a change,’ you said. ‘Get out of stuffy old Helsinki,’ you said.”

Ruben said warmly, “It’s completely safe.”

Kelly smiled at Leon tolerantly. “Oh, all right.”

He spent morning studying the chimp data banks. The mathematician in him pondered how to represent their dynamics with a trimmed-down sociohistory. The marble of fate rattling down a cracked slope. So many paths, variables...

In the afternoons they took several treks. Kelly did not like the dust and heat and they saw few animals. “What self-respecting beast would want to be seen with these overdressed Primitivists?” she said. The others could never stop talking; that kept the animals away.

He liked the atmosphere and relaxed into it as his mind kept on working. He thought about this as he stood on the sweeping veranda, drinking pungent fruit juice as he watched a sunset. Kelly

stood beside him silently. Raw Africa made it clear that the Earth was an energy funnel, he thought. At the bottom of the gravitational well, Earth captured for use barely a tenth of a percent of the sunlight that fell. Nature built organic molecules with a star's energy. In turn, plants were prey for animals, who could harvest roughly a tenth of the plant's stored energy. Grazers were themselves prey to meat-eaters, who could use about a tenth of the flesh-stored energy. So, he estimated, only about one part in a hundred thousand of a star's lancing energy wound up in the predators.

Wasteful! Yet nowhere had a more efficient engine evolved. Why not? Predators were invariably more intelligent than their prey, and they sat atop a pyramid of very steep slopes. Omnivores had a similar balancing act. Out of that rugged landscape had come humanity.

That fact *had* to matter greatly in any sociohistory. The chimps, then, were essential to finding the ancient keys to the human psyche.

Kelly said, "I hope immersion isn't, well, so hot and sticky."

"Remember, you'll see the world through different eyes."

She snorted. "Just so I can come back whenever I want and have a nice hot bath."

"Compartments"? Kelly shied back. "They look more like caskets."

"They have to be snug, Madam."

ExSpec Ruben smiled amiably—which, Leon sensed, probably meant he wasn't feeling amiable at all. Their conversation had been friendly, the staff here was respectful of the noted Dr. Mattick, but, after all, basically he and Kelly were just more tourists. Paying for a bit of primitive fun, all couched in proper

scholarly terms, but—tourists.

“You’re kept in fixed status, all body systems running slow but normal,” the ExSpec said, popping out the padded networks for inspection. He ran through the controls, emergency procedures, safeguards.

“Looks comfortable enough,” Kelly observed begrudgingly.

“Come on,” Leon chided. “You promised we would do it.”

“You’ll be meshed into our systems at all times,” Ruben said.

“Even your data library?” Leon asked.

“Sure thing.”

The team of ExSpecs booted them into the stasis compartments with deft, sure efficiency. Tabs, pressors, magnetic pickups plated onto his skull to pick up thoughts directly. The very latest tech.

“Ready? Feeling good?” Ruben asked with his professional smile.

Leon was not feeling good (as opposed to feeling well) and he realized part of it was this ExSpec. He had always distrusted bland, assured people. Something about this one bothered him, but he could not say why. Oh well; Kelly was probably right. He needed a vacation. What better way to get out of yourself?

“Good, yes. Ready, yes.”

The suspension tech suppressed neuromuscular responses. The customer lay dormant, only his mind engaged with the chimp.

Magnetic webs capped over his cerebrum. Through electromagnetic inductance they interwove into layers of the brain. They routed signals along tiny thread-paths, suppressing many brain functions and blocking physiological processes. All this, so

that the massively parallel circuitry of the brain could be inductively linked out, thought by thought. Then it was transmitted to chips embedded in the chimp subject. Immersion.

The technology had ramified throughout the world, quite famously. The ability to distantly manage minds had myriad uses. The suspension tech, however, found its own odd applications.

In certain European classes, women were wedded, then suspended for all but a few hours of the day. Their wealthy husbands awoke them from freeze-frame states only for social and sexual purposes. For more than a half century, the wives experienced a heady whirlwind of places, friends, parties, vacations, passionate hours—but their total accumulated time was only a few years. Their husbands died in what seemed to the wives like short order indeed. They left a wealthy widow of perhaps thirty. Such women were highly sought, and not only for their money. They were uniquely sophisticated, seasoned by a long “marriage.” Often, these widows returned the favor, wedding freeze-frame husbands whom they revived for similar uses.

All this Leon had taken with the sophisticated veneer he had cultivated in Helsinki. So he thought his immersion would be comfortable, interesting, the stuff of stim-party talk.

He had thought that he would in some sense *visit* another, simpler, mind.

He did not expect to be swallowed whole.

A good day. Plenty of grubs to eat in a big moist log. Dig them out with my nails, fresh tangy sharp crunchy.

Biggest, he shoves me aside. Scoops out plenty rich grubs. Grunts. Glowers.

My belly rumbles. I back off and eye Biggest. He’s got pinched-up face, so I know not to fool with him.

I walk away, I squat down. Get some picking from a fem. She finds some fleas, cracks them in her teeth.

Biggest rolls the log around some to knock a few grubs loose, finishes up. He's strong. Fems watch him. Over by the trees a bunch of fems chatter, suck their teeth. Everybody's sleepy now in early afternoon, lying in the shade. Biggest, though, he waves at me and Hunker and off we go.

Patrol. Strut tall, step out proud. I like it fine. Better than humping even.

Down past the creek and along to where the hoof smells are. That's the shallow spot. We cross and go into the trees sniff-sniffing and there are two Strangers.

They don't see us yet. We move smooth, quiet. Biggest picks up a branch and we do too. Hunker is sniffing to see who these Strangers are and he points off to the hill. Just like I thought, they're Hillies. The worst. Smell bad.

Hillies come onto our turf. Make trouble. We make it back.

We spread out. Biggest, he grunts and they hear him. I'm already moving, branch held up. I can run pretty far without going all-four. The Strangers cry out, big-eyed. We go fast and then we're on them.

They have no branches. We hit them and kick and they grab at us. They are tall and quick. Biggest slams one to the ground. I hit that one so Biggest knows real well I'm with him. Hammer hard, I do. Then I go quick to help Hunker.

His Stranger has taken his branch away. I club the Stranger. He sprawls. I whack him good and Hunker jumps on him and it is wonderful.

The Stranger tries to get up and I kick him solid. Hunker grabs back his branch and hits again and again with me helping hard.

Biggest, his Stranger gets up and starts to run. Biggest whacks his ass with the branch, roaring and laughing.

Me, I got my skill. Special. I pick up rocks. I'm the best thrower, better than Biggest even.

Rocks are for Strangers. My buddies, them I'll scrap with, but never use rocks. Strangers, though, they deserve to get rocks in the face. I love to bust a Stranger that way.

I throw one clean and smooth and catch the Stranger on the leg. He stumbles and I smack him good with a sharp-edged rock, in the back. He runs fast then and I can see he's bleeding. Stranger leaves drops in the dust.

Biggest laughs and slaps me and I know I'm in good with him.

Hunker is clubbing his Stranger. Biggest takes my club and joins in. The blood all over the Stranger sings warm in my nose and I jump up and down on him. We keep at it like that a long time. Not worried about the other Stranger coming back. Strangers are brave sometime but they know when they have lost.

The Stranger stops moving. I give him one more kick.

No reaction. Dead maybe.

We scream and dance and holler out our joy.

Leon shook his head to clear it. That helped a little.

"You were that big one?" Kelly asked. "I was the female, over by the trees."

"Sorry, I couldn't tell."

"It was... different, wasn't it?"

He laughed dryly. "Murder usually is."

“When you went off with the, well, leader—”

“My chimp thinks of him as ‘Biggest.’ We killed another chimp.”

They were in the plush reception room of the immersion facility. Leon stood and felt the world tilt a little and then right itself. “I think I’ll stick to historical research for a while.”

Kelly smiled sheepishly. “I... I rather liked it.” He thought a moment, blinked. “So did I,” he said, surprisingly himself.

“Not the murder—”

“No, of course not. But... the *feel*.”

She grinned. “Can’t get that in Helsinki, Professor.”

He spent two days coasting through cool lattices of data in the formidable Station library. It was well-equipped and allowed interfaces with several senses. He patrolled through cool, digital labyrinths.

In the vector spaces portrayed on huge screens, the research data was covered with thick, bulky protocols and scabs of security precautions. All were easily broken or averted, of course, but the chunky abstracts, reports, summaries, and crudely processed statistics still resisted easy interpretation. Occasionally some facets of chimp behavior were carefully hidden away in appendices and sidebar notes, as though the biologists in the lonely outpost were embarrassed by it. Some *was* embarrassing: mating behavior, especially. How could he use this?

He navigated through the 3-D maze and cobbled together his ideas. Could he follow a strategy of analogy?

Chimps shared nearly all their genes with humans, so chimp dynamics should be a simpler version of human dynamics. Could he then analyze chimp troop interactions as a reduced case of

sociohistory?

At sunset of the next day he sat with Kelly watching blood-red shafts spike through orange-tinged clouds. Africa was gaudy beyond good taste and he liked it. The food was tangy, too. His stomach rumbled in anticipation of dinner.

He remarked to Kelly, “It’s tempting, using chimps to build a sort of toy model of sociohistory.”

“But you have doubts.”

“They’re like us in... only they have, well, uh...”

“Base, animalistic ways?” She smirked, then kissed him. “My prudish Leon.”

“We have our share of beastly behaviors, I know. But we’re a lot smarter too.”

Her eyelids dipped in a manner he knew by now suggested polite doubt. “They live intensely, you’ll have to give them that.”

“Maybe we’re smarter than we need to be anyway.”

“What?” This surprised her.

“I’ve been reading up on evolution. Plainly, the human brain was an evolutionary overshoot—far more capable than a competent hunter-gatherer needed. To get the better of animals, it would have been enough to master fire and simple stone tools. Such talents alone would have made people the lords of creation, removing selection pressure to change. Instead, all evidence from the brain itself said that change accelerated. The human cerebral cortex added mass, stacking new circuitry atop older wiring. That mass spread over the lesser areas like a thick new skin.”

“Considering the state of the world, I’d say we need all the brains we can get,” she said skeptically.

“From that layer came musicians and engineers, saints and savants,” he finished with a flourish. One of Kelly’s best points

was her willingness to sit still while he waxed professorially long-winded, even on vacation. “And all this evolutionary selection happened in just a few million years.”

Kelly snorted prettily. “Look at it from the woman’s point of view. It happened, despite putting mothers in desperate danger in childbirth.”

“Uh, how?”

“From those huge baby heads. They’re hard to get out. We women are still paying the price for your brains—and for ours.”

He chuckled. She always had a special spin on a subject that made him see it fresh. “Then why was it selected for, back then?”

Kelly smiled enigmatically. “Maybe men and women alike found intelligence sexy in each other.”

“Really?”

Her sly smile. “How about us?”

“Have you ever watched very many 3-D stars? They don’t feature brains, my dear.”

“Remember the animals we saw in the Madrid Senso-Zoo? The mating exhibit? It could be that for early humans, brains were like peacock tails, or moose horns—display items, to attract the females. Runaway sexual selection.”

“I see, an overplayed hand of otherwise perfectly good cards.” He laughed. “So being smart is just a bright ornament.”

“Works for me,” she said, giving him a wink.

He watched the sunset turn to glowering, ominous crimson, oddly happy. Sheets of light worked across the sky among curious, layered clouds. “Ummm...,” Kelly murmured.

“Yes?”

“Maybe this is a way to use the research the ExSpecs are

doing too. Learn who we were—and therefore who we are.”

“Intellectually, it’s a jump. In social ways, though, the gap could be less.”

Kelly looked skeptical. “You think chimps are only a bit further back in a social sense?”

“Ummm. I wonder if in logarithmic time we might scale from chimps to us, now?”

“A big leap. To do anything you’ll need more experience with them.” She eyed him. “You like immersion, don’t you?”

“Well, yes. It’s just...”

“What?”

“That ExSpec Ruben, he keeps pushing immersions—”

“That’s his job.”

“—and he knew who I was.”

“So?” She spread her hands and shrugged.

“You’re normally the suspicious one. Why should an ExSpec know an obscure mathematician?”

“He looked you up. Data dumps on incoming guests are standard. And in some circles you’re hardly obscure. Plenty of people back in Helsinki line up to see you.”

“And some would like to see me dead. Say, you’re supposed to be the ever-vigilant one.” He grinned. “Shouldn’t you be encouraging my caution?”

“Paranoia isn’t caution. Time spent on nonthreats subtracts from vigilance.”

By the time they went in for dinner she had talked him into more immersions.

Hot day in the sun. Dust makes me snort.

That Biggest, he walks by, gets respect right away. Fems and guys alike, they stick out their hands.

Biggest touches them, taking time with each, letting them know he is there. The world is all right.

I reach out to him too. Makes me feel good. I want to be like Biggest, to be big, be as big as him, be *him*.

Fems don't give him any trouble. He wants one, she goes. Hump right away. He's Biggest.

Most males, they don't get much respect. Fems don't want to do with them as much as they do with Biggest. The little males, they huff and throw sand and all that but everybody knows they're not going to be much. No chance they could ever be like Biggest. They don't like that but they are stuck with it.

Me, I'm pretty big. I get respect. Some, anyway.

All the guys like stroking. Petting. Grooming. Fems give it to them and they give it back.

Guys get more though. After it, they're not so gruff.

I'm sitting getting groomed and all of a sudden I smell something. I don't like it. I jump up, cry out. Biggest, he takes notice. Smells it too.

Strangers. Everybody starts hugging each other. Strong smell, plenty of it. Lots of Strangers. The wind says they are near, getting nearer.

They come running down on us from the ridge. Looking for fems, looking for trouble.

I run for my rocks. I always have some handy. I fling one at them, miss. Then they are in among us. It's hard to hit them, they go so fast.

Four Strangers, they grab two fems. Drag them away.

Everybody howling, crying. Dust everywhere.

I throw rocks. Biggest leads the guys against the Strangers.

They turn and run off. Just like that. Got the two fems though and that's bad.

Biggest mad. He pushes around some of the guys, makes noise. He not looking so good now, he let the Strangers in.

Those Strangers bad. We all hunker down, groom each other, pet, make nice sounds.

Biggest, he come by, slap some of the fems. Hump some. Make sure everybody know he's still Biggest.

He don't slap me. He know better than to try. I growl at him when he come close and he pretend not to hear.

Maybe he not so Big any more, I'm thinking.

He stayed with it this time. After the first crisis, when the Stranger chimps came running through, he sat and let himself get groomed for a long time. It really did calm him.

Him? Who was he?

This time he could fully sense the chimp mind. Not below him—that was an evolutionary metaphor—*but around* him. A swarming scattershot of senses, thoughts, fragments like leaves blowing by him in a wind.

And the wind was *emotion*. Blustering gales, howling and whipping in gusts, raining thoughts like soft hammer blows.

These chimps thought poorly, in the sense that he could get only shards, like human musings chopped by a nervous editor. But chimps *felt* intensely.

Of course, he thought—and he could think, nestled in the hard kernel of himself, wrapped in the chimp mind. Emotions told it what to do, without thinking. Quick reactions demanded that. Strong feeling amplified subtle clues into strong imperatives. Blunt orders from Mother Evolution.

He saw now that the belief that high order mental experiences like emotion were unique to people was... simply conceited. These chimps shared much of the human world view. A theory of chimp sociohistory could be valuable.

He gingerly separated himself from the dense, pressing chimp mind. He wondered if the chimp knew he was here. Yes, it did—dimly. But somehow this did not bother the chimp. He integrated it into his blurred, blunt world. Leon was somewhat like an emotion, just one of many fluttering by and staying a while, then wafting away.

Could he be more than that? He tried getting the chimp to lift its right arm—and it was like lead. He struggled for a while that way with no success. Then he realized his error. He could not overpower this chimp, not as a kernel in a much larger mind.

He thought about this as the chimp groomed a female, picking carefully through coarse hair. The strands smelled good, the air was sweet, the sun stroked him with blades of generous warmth...

Emotion. Chimps didn't follow instructions because that simply lay beyond them. They could not understand directions in the human sense. Emotions—those they knew. He had to be an emotion, not a little general giving orders.

He sat for a while simply *being* this chimp. He learned—or rather, he felt. The troop groomed and scavenged food, males eyeing the perimeter, females keeping close to the young. A lazy calm descended over him, carrying him effortlessly through warm moments of the day. Not since he was a boy had he felt anything

like this. A slow, graceful easing, as though there were no time at all, only slices of eternity.

In this mood, he could concentrate on a simple movement—raising an arm, scratching—and create the desire to do it. His chimp responded. To make it happen, he had to *feel* his way toward a goal. Sail before the emotion wind.

Catching a sweet scent on the air, Leon thought about what food that might signal. His chimp meandered upwind, sniffed, discarded the clue as uninteresting. Leon could now smell the reason why: fruit, true, sweet, yes—but inedible for a chimp.

Good. He was learning. And he was integrating himself into the deep recesses of this chimp-mind.

Watching the troop, he decided to name the prominent chimps, to keep them straight: Agile the quick one, Sheelah the sexy one, Grubber the hungry one... But what was his own name? His he dubbed Ipan. Not very original, but that was its main characteristic, *I as Pan troglodytes*.

Grubber found some bulb-shaped fruit and the others drifted over to scavenge. The hard fruit smelled a little too young (how did he know that?) but some ate it anyway.

And which of these was Kelly? They had asked to be immersed in the same troop, so one of these—he forced himself to count, though somehow the exercise was like moving heavy weights in his mind—these twenty-two was her. How could he tell? He ambled over to several females who were using sharp-edged stones to cut leaves from branches. They tied the strands together so they could carry food.

Leon peered into their faces. Mild interest, a few hands held out for stroking, an invitation to groom. No glint of recognition in their eyes.

He watched a big fem, Sheelah, carefully wash sand-covered

fruit in a creek. The troop followed suit; Sheelah was a leader of sorts, a female lieutenant to Biggest.

She ate with relish, looked around. There was grain growing nearby, past maturity, ripe tan kernels already scattered in the sandy soil. Concentrating, Leon could tell from the faint bouquet that this was a delicacy. A few chimps squatted and picked grains from the sand, slow work. Sheelah did the same, and then stopped, gazing off at the creek. Time passed, insects buzzed. After a while she scooped up sand and kernels and walked to the brook's edge. She tossed it all in. The sand sank, the kernels floated. She skimmed them off and gulped them down, grinning widely.

An impressive trick. The other chimps did not pick up on her kernel-skimming method. Fruit washing was conceptually easier, he supposed, since the chimp could keep the fruit the whole time. Kernel-skimming demanded throwing away the food first, then rescuing it—a harder mental jump.

He thought about her and in response Ipan sauntered over her way. He peered into Sheelah's eyes—and she winked at him. Kelly! He wrapped hairy arms around her in a burst of sweaty love.

“Pure animal love,” she said over Dinner. “Refreshing.”

Leon nodded. “I like being there, living that way.”

“I can *smell* so much more.”

“Fruit tastes differently when they bite into it.” He held up a purple bulb, sliced into it, forked it into his mouth. “To me, this is almost unbearably sweet. To Ipan, it's pleasant, a little peppery. I suppose chimps have been selected for a sweet tooth. It gets them more fast calories.”

“I can't think of a more thorough vacation. Not just getting away from home, but getting away from your species.”

He eyed the fruit. “And they're so, so...”

“Horny?”

“Insatiable.”

“You didn’t seem to mind.”

“My chimp, Ipan? I bail out when he gets into his hump-them-all mood.”

She eyed him. “Really?”

“Don’t you bail out?”

“Yes, but I don’t expect men to be like women.”

“Oh?” he said stiffly.

“I’ve been reading in the ExSpec’s research library, while you toy with chimp social movements. Women invest heavily in their children. Men can use two strategies—parental investment, plus ‘sow the oats.’” She lifted an eyebrow. “Both must have been selected for in our evolution, because they’re both common.”

“Not with *me*.”

To his surprise, she laughed. “I’m talking in general. My point is: The chimps are much more promiscuous than we are. The males run everything. They help out the females who are carrying their children, I gather, but then they shop around elsewhere *all* the time.”

Leon switched into his professional mode; it was decidedly more comfortable, when dealing with such issues. “As the specialists say, they are pursuing a mixed reproductive strategy.”

“How polite.”

“Polite plus precise.”

Of course, he couldn’t really be sure Kelly bailed out of Sheelah when a male came by for a quick one. (They were always quick too—thirty seconds or less.) *Could* she exit the chimp mind that quickly? He required a few moments to extricate himself. Of

course, if she saw the male coming, guessed his intentions...

He was surprised at himself. What role did jealousy have when they were inhabiting other bodies? Did the usual moral code make any sense? Yet to talk this over with her was... embarrassing.

He was still the country boy, like it or not.

Ruefully he concentrated on his meal of local "roamer-fleisch," which turned out to be an earthy, dark meat in a stew of tangy vegetables. He ate heartily and in response to Kelly's rather obviously amused silence said, "I'd point out that chimps understood commerce too. Food for sex, betrayal of the leader for sex, spare my child for sex, grooming for sex, just about anything for sex."

"It does seem to be their social currency. Short and decidedly not sweet. Just quick lunges, strong sensations, then boom—it's over."

He nodded. "The males need it, the females use it."

"Ummm, you've been taking notes."

"If I'm going to model chimps as a sort of simplified people, then I must."

"Model chimps?" came the assured tones of ExSpec Ruben. "They're not model citizens, if that's what you mean." He gave them a sunny smile and Leon guessed this was more of the obligatory friendliness of this place.

Leon smiled mechanically. "I'm trying to find the variables that could describe chimp behavior."

"You should spend a lot of time with them," Ruben said, sitting at the table and holding up a finger to a waiter for a drink. "They're subtle creatures."

"I agree," said Kelly. "Do you ride them very much?"

“Some, but most of our research is done differently now.” Ruben’s mouth twisted ruefully. “Statistical models, that sort of thing. I got this touring idea started, using the immersion tech we had developed earlier, to make money for the project. Otherwise, we’d have had to close.”

“I’m happy to contribute,” Leon said.

“Admit it—you like it,” Kelly said, amused.

“Well, yes. It’s... different.”

“And good for the staid Professor Mattick to get out of his shell,” she said.

Ruben beamed. “Be sure you don’t take chances out there. Some of our customers think they’re superchimps or something.”

Kelly’s eyes flickered. “What danger is there? Our bodies are in slowtime, back here.”

Ruben said, “You’re strongly linked. A big shock to a chimp can drive a back-shock in your own neurological systems.”

“What sort of shock?” Leon asked.

“Death, major injury.”

“In that case,” Kelly said to Leon, “I really do not think you should immerse.”

Leon felt irked. “Come on! I’m on vacation, not in prison.”

“Any threat to you—”

“Just a minute ago you were rhapsodizing about how good for me it was.”

“You’re too important to—”

“There’s really very little danger,” Ruben came in smoothly. “Chimps don’t die suddenly, usually.”

“And I can bail out when I see danger coining,” Leon added.

“But *will* you? I think you’re getting a taste for adventure.”

She was right, but he wasn’t going to concede the point. If he wanted a little escape from his humdrum mathematician’s routine, so much the better. “I like being out of Helsinki’s endless corridors.”

Ruben gave Kelly a confident smile. “And we haven’t lost a tourist yet.”

“How about research staff?” she shot back.

“Well, that was a most unusual—”

“What happened?”

“A chimp fell off a ledge. The human operator couldn’t bail out in time and she came out of it paralyzed. The shock of experiencing death through immersion is known from other incidents to prove fatal. But we have systems in place to short-circuit—”

“What else?” she persisted.

“Well, there was one difficult episode. In the early days, when we had simple wire fences.” The ExSpec shifted uneasily. “Some predators got in.”

“What sort of predators?”

“A primate-pack hunter, *Carnopapio grandis*. We call them raboons, genetically derived in an experiment two decades ago. They took baboon DNA—”

“How did they get in?” Kelly insisted.

“They’re somewhat like a wild hog, with hooves that double as diggers. Carnivores, though. They smelled game—our corralled animals. Dug under the fences.”

Kelly eyed the high, solid walls. “These are adequate?”

“Certainly. They’re from a genetic experiment. Someone tried

to make a predator by raising the earlier baboon stock up onto two legs.”

Kelly said dryly, “Evolutionary gambling.”

Ruben didn’t catch the edge in her voice. “Like most bipedal predators, the forelimbs are shortened and the head carries forward, balanced by a thick tail they use for signaling to each other. They prey on the biggest herd animals, the gigantelope—another experiment—and eat only the richest meat.”

“Why attack humans, then?” she asked.

“They take targets of opportunity too. Chimps, even. When they got into the compound, they went for adult humans, not children—a very selective strategy.”

Kelly shivered. “You look at this very... objectively.”

“I’m a biologist.”

“I never knew it could be so interesting,” Leon said to defuse her apprehension.

Ruben beamed. “Not as involving as higher mathematics, I’m sure.”

Kelly’s mouth twisted with wry skepticism. “Do you mind if guests carry weapons inside the compound?”

He had a glimmering of an idea about the chimps, a way to use their behaviors in building a simple toy model of sociohistory. He might be able to use the statistics of chimp troop movements, the ups and downs of their shifting fortunes.

He talked it over with Kelly and she nodded, but beneath it she seemed worried. Since Ruben’s remark she was always tut-tutting about safety. He reminded her that she had earlier urged him to do more immersions. “This is a vacation, remember?” he said more than once.

Her amused sidewise glances told him that she also didn't buy his talk about the toy modeling. She thought he just liked romping in the woods. "A country boy at heart," she chuckled.

So the next morning he skipped a planned trek to view the vast gigantelope herds. He immediately went to the immersion chambers and slipped under. To get some solid work done, he told himself.

The chimps slept in trees and spent plenty of time grooming each other. For the lucky groomer a tick or louse was a treat. With enough, they could get high on some peppery-tasting alkaloid. He suspected the careful stroking and combing of his hair by Kelly was a behavior selected because it improved chimp hygiene. It certainly calmed Ipan, also.

Then it struck him: Chimps groomed rather than vocalizing. Only in crises and when agitated did they call and cry, mostly about breeding, feeding, or self-defense. They were like people who could not release themselves through the comfort of talk.

And they needed comfort. The core of their social life resembled human societies under stress—in tyrannies, in prisons, in city gangs. Nature red in tooth and claw, yet strikingly like troubled people.

But there were "civilized" behaviors here too. Friendships, grief, sharing, buddies-in-arms who hunted and guarded turf together. Their old got wrinkled, bald, and toothless, yet were still cared for.

Their instinctive knowledge was prodigious. They knew how to make a bed of leaves as dusk fell, high up in trees. They could climb with grasping feet. They felt, cried, mourned—without being able to parse these into neat grammatical packages, so the emotions could be managed, subdued. Instead, emotions drove them.

Hunger was the strongest. They found and ate leaves, fruit, insects, even fair-sized animals. They loved caterpillars.

Each moment, each small enlightenment, sank him deeper into Ipan. He began to sense the subtle nooks and crannies of the chimp mind. Slowly, he gained more cooperative control.

That morning a female found a big tree and began banging it. The hollow trunk boomed like a drum and all the foraging party rushed forward to beat it too, grinning wildly at the noise. Ipan joined in and Leon felt the burst of joy, seethed in it.

Later, coming on a waterfall after a heavy rain, they seized vines and swung among trees—out over the foaming water, screeching with joy as they performed twists and leaps from vine to vine. Like children in a new playground. Leon got Ipan to make impossible moves, wild tumbles and dives, propelling him forward with abandon—to the astonishment of the other chimps.

They were violent in their sudden, peevish moments—in hustling available females, in working out their perpetual dominance hierarchy, and especially in hunting. A successful hunt brought enormous excitement—hugging, kissing, pats. As the troop descended to feed the forest rang with barks, screeches, hoots, and pants. Leon joined the tumult, sang, danced with Sheelah/Kelly.

In some matters he had to restrain his feelings. Rats they ate head first. Larger game they smashed against rocks. They devoured the brains first, a steaming delicacy. Leon gulped—metaphorically, but with Ipan echoing the impulse—and watched, screening his reluctance. Ipan had to eat, after all.

At the scent of predators, he felt Ipan's hair stand on end. Another tangy bouquet made Ipan's mouth water. He gave no mercy to food, even if it was still walking. Evolution in action; those chimps who had showed mercy in the past ate less and left fewer descendants. Those weren't represented here anymore.

For all its excesses, he found the chimps' behavior hauntingly familiar. Males gathered often for combat, for pitching rocks, for blood sports, to work out their hierarchy. Females networked and formed alliances. There were trades of favors for loyalty, alliances, kinship bonds, turf wars, threats and displays, protection rackets, a hunger for "respect," scheming subordinates, revenge—a social world enjoyed by many people that history had judged "great." Much like an emperor's court, in fact.

Did people long to strip away their clothing and conventions, bursting forth as chimps?

Leon felt a flush of revulsion, so strong Ipan shook and fidgeted. Humanity's lot *had* to be different, not this primitive horror.

He could use this, certainly, as a test bed for a full theory. Learn from our nearest genetic neighbors. *Then* humankind would be self-knowing, captains of themselves. He would build in the imperatives of the chimps, but go far beyond—to true, deep sociohistory.

"I don't see it," Kelly said at dinner.

"But they're so much like us!" He put down his spoon. "We're a brainy chimp—that's a valuable insight. We can probably train them to work for us, do housekeeping."

"I wouldn't have them messing up *my* house."

Adult humans weighed little more than chimps, but were far weaker. A chimp could lift five times more than a well-conditioned man. Human brains were three or four times more massive than a chimp's. A human baby a few months old already had a brain larger than a grown chimp. People had different brain architecture, as well.

But was that the whole story? Give chimps bigger brains and

speech, ease off on the testosterone, saddle them with more inhibitions, spruce them up with a shave and a haircut, teach them to stand securely on hind legs—and you had deluxe-model chimps that would look and act rather human. They might pass in a crowd without attracting notice.

Leon said curtly, “Look, my point is that they’re close enough to us to make a sociohistory model work.”

“To make anybody believe that, you’ll have to show that they’re intelligent enough to have intricate interactions.”

“What about their foraging, their hunting?” he persisted.

“Ruben says they couldn’t even be trained to do work around this Excursion Station.”

“I’ll show you what I mean. Let’s master their methods together.”

“What method?”

“The basic one. Getting enough to eat.”

She bit into a steak of a meaty local grazer, suitably processed and “fat-flensed for the fastidious urban palate,” as the brochure had it. Chewing with unusual ferocity, she eyed him. “You’re on. Anything a *chimp can do*, I can do better.”

Kelly waved at him from within Sheelah. *Let the contest begin.*

The troop was foraging. He let Ipan meander and did not try to harness the emotional ripples that lapped through the chimp mind. He had gotten better at it, but at a sudden smell or sound he could lose his grip. And guiding the blunt chimp mind through anything complicated was like moving a puppet with rubber strings.

Sheelah/Kelly waved and signed to him. *This way.*

They had worked out a code of a few hundred words, using finger and facial gestures, and their chimps seemed to go along with these fairly well. Chimps had a rough language, mixing grunts and shrugs and finger displays. These conveyed immediate meanings, but not in the usual sense of sentences. Mostly they just set up associations.

Tree, fruit, go, Kelly sent. They ambled their chimps over to a clump of promising spindly trunks, but the bark was too slick to climb.

The rest of the troop had not even bothered. *They have forest smarts we lack*, Leon thought ruefully.

What there? he signed to Sheelah/Kelly.

Chimps ambled up to mounds, gave them the once-over, and reached out to brush aside some mud, revealing a tiny tunnel. *Termites*, Kelly signed.

Leon analyzed the situation as chimps drifted in. Nobody seemed in much of a hurry. Sheelah winked at him and waddled over to a distant mound.

Apparently termites worked outside at night, then blocked the entrances at dawn. Leon let his chimp shuffle over to a large tan mound, but he was riding it so well now that the chimp's responses were weak. Leon/Ipan looked for cracks, knobs, slight hollows—and yet when he brushed away some mud, found nothing. Other chimps readily unmasked tunnels. Had they memorized the hundred or more tunnels in each mound?

He finally uncovered one. Ipan was no help. Leon could control, but that blocked up the wellsprings of deep knowledge within the chimp.

The chimps deftly tore off twigs or grass stalks near their mounds. Leon carefully followed their lead. His twigs and grass didn't work. The first lot was too pliant, and when he tried to work

them into a twisting tunnel, they collapsed and buckled. He switched to stiffer ones, but those caught on the tunnel walls, or snapped off. From Ipan came little help. Leon had managed him a bit too well.

He was getting embarrassed. Even the younger chimps had no trouble picking just the right stems or sticks. Leon watched a chimp nearby drop a stick that seemed to work. He then picked it up when the chimp moved on. He felt welling up from Ipan a blunt anxiety, mixing frustration and hunger. He could *taste* the anticipation of luscious, juicy termites.

He set to work, plucking the emotional strings of Ipan. This job went even worse. Vague thoughts drifted up from Ipan, but Leon was in control of the muscles now, and that was the bad part.

He quickly found that the stick had to be stuck in about ten centimeters, turning his wrist to navigate it down the twisty channel. Then he had to gently vibrate it. Through Ipan he sensed that this was to attract termites to bite into the stick.

At first he did it too long and when he drew the stick out it was half gone. Termites had bitten cleanly through it. So he had to search out another stick and that made Ipan's stomach growl.

The other chimps were through termite-snacking while Leon was still fumbling for his first taste. The nuances irked him. He pulled the stick out too fast, not turning it enough to ease it past the tunnel's curves. Time and again he fetched forth the stick, only to find that he had scraped the luscious termites off on the walls. Their bites punctured his stick, until it was so shredded he had to get another. The termites were dining better than he.

He finally caught the knack, a fluid slow twist of the wrist, gracefully extracting termites, clinging like bumps. Ipan licked them off eagerly. Leon liked the morsels, filtered through chimp taste buds.

Not many, though. Others of the troop were watching his

skimpy harvest, heads tilted in curiosity, and he felt humiliated.

The hell with this, he thought.

He made Ipan turn and walk into the woods. Ipan resisted, dragging his feet. Leon found a thick limb, snapped it off to carrying size, and went back to the mound.

No more fooling with sticks. He whacked the mound solidly. Five more and he had punched a big hole. Escaping termites he scooped up by the delicious handful.

So much for subtlety! he wanted to shout. He tried writing a note for her in the dust but it was hard, forcing the letters out through his suddenly awkward hands. Chimps could handle a stick to fetch forth grubs, but marking a surface was somehow not a ready talent. He gave up.

Sheelah/Kelly came into view, proudly carrying a reed swarming with white-bellied termites. These were the best, a chimp gourmet delicacy. *I better*, she signed.

He made Ipan shrug and signed, *I got more*.

So it was a draw.

Later Kelly reported to him that among the troop he was known now as Big Stick. The name pleased him immensely.

At dinner he felt elated, exhausted, and not in the mood for conversation. Being a chimp seemed to suppress his speech centers. It took some effort to ask ExSpec Ruben about immersion technology. Usually he accepted the routine technomiracles, but understanding chimps meant understanding how he experienced them.

“The immersion hardware puts you in the middle of a chimp’s posterior cingulate gyrus,” Ruben said over dessert. “Just ‘gyrus’ for short. That’s the brain’s center for mediating emotions

and expressing them through action.”

“*The brain?*” Kelly asked. “What about ours.”

Ruben shrugged. “Same general layout. Chimps’ are smaller, without a big cerebrum.”

Leon leaned forward, ignoring his steaming cup of Kaf. “This ‘gyrus,’ it doesn’t give direct motor control?”

“No, we tried that. It disorients the chimp so much, when you leave, it can’t get itself back together.”

“So we’re more subtle,” Kelly said.

“We have to be. In chimp males, the pilot light is always on in neurons that control action and aggression—”

“That’s why they’re more violence-prone?” she asked.

“We think so. It parallels structures in our own brains.”

“Really? Men’s neurons?” Kelly looked doubtful.

“Human males have higher activity levels in their temporal limbic systems, deeper down in the brain—evolutionarily older structures.”

“So why not put me into that level?” Leon asked.

“We place the immersion chips into the gyrus area because we can reach it from the top, surgically. The temporal limbic is way far down, impossible to implant a chip and net.”

Kelly frowned. “So chimp males—”

“Are harder to control. Professor Mattick here is running his chimp from the backseat, so to speak.”

“Whereas Kelly is running hers from a control center that, for female chimps, is more central?” Leon peered into the distance. “I was handicapped!”

Kelly grinned. “You have to play the hand you’re dealt.”

“It’s not fair.”

“Big Stick, biology is destiny.”

The troop came upon rotting fruit. Fevered excitement ran through them.

The smell was repugnant and enticing at the same time and at first he did not understand why. The chimps rushed to the overripe bulbs of blue and sickly green, popping open the skins, sucking out the juice.

Tentatively, Leon tried one. The hit was immediate. A warm feeling of well-being kindled up in him. Of course—the fruity esters had converted into—alcohol! The chimps were quite deliberately setting about getting drunk.

He “let” his chimp follow suit. He hadn’t much choice in the matter.

Ipan grunted and thrashed his arms whenever Leon tried to turn him away from the teardrop fruit. And after a while, Leon didn’t want to turn away either. He gave himself up to a good, solid drunk. He had been worrying a lot lately, agitated in his chimp, and... this was completely natural, wasn’t it?

Then a pack of raboons appeared, and he lost control of Ipan.

They come fast. Running two-legs, no sound. Their tails twitch, talking to each other.

Five circle left. They cut off Esa.

Biggest thunder at them. Hunker runs to nearest and it spikes him with its forepuncher.

I throw rocks. Hit one. It yelps and scurries back. But others

take its place. I throw again and they come and the dust and yowling are thick and the others of them have Esa. They cut her with their punch-claws. Kick her with sharp hooves.

Three of them carry her off.

Our fems run, afraid. We warriors stay.

We fight them. Shrieking, throwing, biting when they get close. But we cannot reach Esa.

Then they go. Fast, running on their two hoofed legs. Furling their tails in victory. Taunting us.

We feel bad. Esa was old and we loved her.

Fems come back, nervous. We groom ourselves and know that the two-legs are eating Esa somewhere.

Biggest come by, try to pat me. I snarl.

He Biggest! This thing he should have stopped.

His eyes get big and he slap me. I slap back at him. He slam into me. We roll around in dust. Biting, yowling. Biggest strong, strong and pound my head on ground.

Other warriors, they watch us, not join in.

He beat me. I hurt. I go away.

Biggest starts calming down the warriors. Fems come by and pay their respects to Biggest. Touch him, groom him, feel him the way he likes. He mounts three of them real quick. He feeling Biggest all right.

Me, I lick myself. Sheelah come groom me. After a while I feel better. Already forgotten Esa.

I not forget Biggest beat me though. In front of everybody. Now I hurt, Biggest get grooming.

He let them come and take Esa. He Biggest, he should stop

them.

Someday I be all over him. On his back.

Someday I be Bigger.

“When did you bail out?” Kelly asked.

“After Biggest stopped pounding on me... uh, on Ipan.”

They were relaxing in brilliant sun beside a swimming pool. The heady smells of the forest seemed to awaken in Leon the urge to be down there again, in the valleys of dust and blood. He trembled, took a deep breath. The fighting had been so involving he hadn't wanted to leave, despite the pain. Immersion had a hypnotic quality.

“I know how you feel,” she said. “It's easy to totally identify with them. I left Sheelah when those raboons came close. Pretty scary.”

“Why did anybody develop them?”

“Plans for using raboons as game, to hunt, Ruben said. Something new and challenging.”

“*Hunting?* Business will exploit any throwback primitivism to—” He had been about to launch into a little lecture on how far humanity had come, when he realized that he didn't believe it anymore. “Um.”

“You've always thought of people as cerebral. No sociohistory could work if it didn't take into account our animal selves.”

“Our worst sins are all our own, I fear.” He had not expected that his experiences here would shake him so. This was sobering.

“Not at all.” Kelly gave him a lofty look. “I've been reading some of the Station background data on our room computer.

Genocide occurs in wolves and chimps alike. Murder is widespread. Ducks and orangutans rape. Even *ants* have organized warfare and slave raids. Chimps have at least as good a chance of being murdered as do humans, Ruben says. Of all the hallowed hallmarks—speech, art, technology, and the rest—the one which comes most obviously from animal ancestors was genocide.”

“You’ve been learning from Ruben.”

“It was a good way to keep an eye on him.”

“Better to be suspicious than sorry?”

“Of course,” she said blandly. “Can’t let Africa soften our brains.”

“Well, luckily, even if we are superchimps, throughout human society, communication blurs distinctions between Us and Them.”

“So?”

“That blunts the deep impulse to genocide.”

She laughed again, this time rather to his annoyance. “You haven’t understood history very well. Smaller groups still kill each other off with great relish. In Bosnia, during the reign of Omar the Impaler—”

“I concede, there are small-scale tragedies by the dozens. But on the scale where sociohistory might work, averaging over populations of many millions—”

“What makes you so sure numbers are any protection?” she asked pointedly.

“Well—without further work, I have nothing to say.”

She smiled. “How uncharacteristic.”

“Until I have a real, working theory.”

“One that can allow for widespread genocide?”

He saw her point then. “You’re saying I really need this ‘animal nature’ part of humans.”

“I’m afraid so. ‘Civilized man’ is a contradiction in terms. Scheming, plots, Sheelah grabbing more meat for her young, Ipan wanting to do in Biggest—those things happen in fancy urban nations. They’re just better disguised.”

“I don’t follow.”

“People use their intelligence to hide motives. Consider ExSpec Ruben. He made a comment about your working on a ‘theory of history’ the other evening.”

“So?”

“Who told him you were?”

“I don’t think I—ah, you think he’s checking up on us?”

“He already knows.”

“We’re just tourists here.”

She graced him with an unreadable smile. “I do love your endless, naive way of seeing the world.”

Later, he couldn’t decide whether she had meant that as a compliment.

Ruben invited him to try a combat sport the Station offered, and Leon accepted. It was an enhanced swordplay using levitation through electrostatic lifters. Leon was slow and inept. Using his own body against Ruben’s swift moves made him long for the sureness and grace of Ipan.

Ruben always opened with a traditional posture: one foot forward, his prod-sword making little circles in the air. Leon poked through Ruben’s defense sometimes, but usually spent all his lifter energy eluding Ruben’s thrusts. He did not enjoy it nearly as much

as Ruben. The dry African air seemed to steal energy from him too, whereas Ipan reveled in it.

He did learn bits and pieces about chimps from Ruben, and from trolling through the vast Station library. The man seemed a bit uneasy when Leon probed the data arrays, as though Ruben somehow owned them and any reader was a thief. Or at least that was what Leon took to be the origin of the unease.

He had never thought about animals very much, though he had grown up among them on the farm. Yet he came to feel that they, too, had to be understood.

Catching sight of itself in a mirror, a dog sees the image as another dog. So did cats, fish, or birds. After a while they get used to the harmless image, silent and smell-free, but they did not see it as themselves.

Human children had to be about two years old to do better.

Chimps took a few days to figure out that they were looking at themselves. Then they preened before it shamelessly, studied their backs, and generally tried to see themselves differently, even putting leaves on their backs like hats and laughing at the result.

So they could do something other animals could not—get outside themselves, and look back.

They plainly lived in a world charged with echoes and reminiscences. Their dominance hierarchy was a frozen record of past coercion. They remembered termite mounds, trees to drum, useful spots where large water-sponge leaves fell, or grain matured.

All this fed into the toy model he had begun building in his notes—a chimp sociohistory. It used their movements, rivalries, hierarchies, patterns of eating, and mating and dying. Territory, resources, and troop competition for them. He found a way to factor into his equations the biological baggage of dark behaviors.

Even the worst, like delight in torture and easy exterminations of other species for short-term gain. All these the chimps had. Just like today's newspaper.

At a dance that evening he watched the crowd with fresh vision.

Flirting was practice mating. He could see it in the sparkle of eyes, the rhythms of the dance. The warm breeze wafting up from the valley brought smells of dust, rot, life. An animal restlessness moved in the room.

He quite liked dancing and Kelly was a lush companion tonight. Yet he could not stop his mind from sifting, analyzing, taking the world before him apart into mechanisms.

The nonverbal template humans used for attract/approach strategies apparently descended from a shared mammalian heritage, Kelly had pointed out. He thought of that, watching the crowd at the bar.

A woman crosses a crowded room, hips swaying, eyes resting momentarily on a likely man, then coyly looking away just as she apparently notices his regard. A standard opening move: *Notice me.*

The second is *I am harmless.* A hand placed palm up on a table or knee. A shoulder shrug, derived from an ancient vertebrate reflex, signifying helplessness. Combine that with a tilted head, which displays the vulnerability of the neck. These commonly appeared when two people drawn to each other have their first conversation—all quite unconsciously.

Such moves and gestures are subcortical, emerging far below in a swamp of primordial circuitry... which had survived until now, because it worked.

Did such forces shape history more than trade balances, alliances, treaties? He looked at his own kind and tried to see it

through chimp eyes.

Though human females matured earlier, they did not go on to acquire coarse body hair, bony eye ridges, deep voices, or tough skin. Males did. And women everywhere strove to stay young-looking. Cosmetics makers freely admitted their basic role: *We don't sell products; we sell hope.*

Competition for mates was incessant. Male chimps sometimes took turns with females in estrus. They had huge testicles, implying that reproductive advantage had come to those males who produced enough to overwhelm their rivals' contributions. Human males had proportionally smaller testicles.

But humans got their revenge where it mattered. Of all primates, humans had the largest penises.

All primates had separated out as species many millions of years ago. In DNA-measured time, chimps lay six million years from humans. He mentioned to Kelly that only 4 percent of mammals formed pair bonds, were monogamous. Primates rated a bit higher, but not much. Birds were much better at it.

She sniffed. "Don't let all this biology go to your head."

"Oh no, I won't let it get that far."

"You mean it belongs in lower places?"

"Madam, you'll have to be the judge of that."

"Ah, you and your single-entendre humor."

Later that evening, with her, he had ample opportunity to reflect upon the truth that, while it was not always great to be human, it was tremendous fun being a mammal.

They spent a last day immersed in their chimps, sunning themselves beside a gushing stream. The plane would pick them up early the next morning; Helsinki waited. They packed and entered

the immersion capsule and sank into a last reverie. Sun, sweet air, the lassitude of the primitive...

Until Biggest started to mount Sheelah.

Leon/Ipan sat up, his head foggy. Sheelah was shrieking at Biggest. She slapped him.

Biggest had mounted Sheelah before. Kelly had bailed out, her mind returning to her body in the capsule.

Something was different now. Ipan hurried over and signed to Sheelah, who was throwing pebbles at Biggest. *What?*

She moved her hands rapidly, signing, *No go.*

She could not bail out. Something was wrong back at the capsule. He could go back himself, tell them.

Leon made the little mental flip that would bail him out.

Nothing happened.

He tried again. Sheelah threw dust and pebbles, backing away from Biggest. Nothing.

No time to think. He stepped between Sheelah and Biggest.

The massive chimp frowned. Here was Ipan, buddy Ipan, getting in the way. Denying him a fem. Biggest seemed to have forgotten the challenge and beating of the day before.

First he tried bellowing, eyes big and white. Then Biggest shook his arms, fists balled.

Leon made his chimp stand still. It took every calming impulse he could muster.

Biggest swung his fist like a club.

Ipan ducked. Biggest missed.

Leon was having trouble controlling Ipan, who wanted to flee. Sheets of fear shot up through the chimp mind, hot yellows in the

blue-black depths.

Biggest charged forward, slamming Ipan back. Leon felt the jolt, a stabbing pain in his chest. He toppled backward. Hit hard.

Biggest yowled his triumph. Waved his arms at the sky.

Biggest would get on top, he saw. Beat him again.

Suddenly he felt a deep, raw hatred.

From that red seethe he felt his grip on Ipan tighten. He was riding both with and within the chimp, feeling its raw red fear, overrunning that with an iron rage. Ipan's own wrath fed back into Leon. The two formed a concert, anger building as if reflected from hard walls.

He might not be the same kind of primate, but he knew Ipan. Neither of them was going to get beaten again. And Biggest was not going to get Sheelah/Kelly.

He rolled to the side. Biggest hit the ground where he had been.

Ipan leaped up and kicked Biggest. Hard, in the ribs. Once, twice. Then in the head.

Whoops, cries, dust, pebbles—Sheelah was still bombarding them both. Ipan shivered with boiling energy and backed away.

Biggest shook his dusty head. Then he curled and rolled easily up to his feet, full of muscular grace, face a constricted mask. The chimp's eyes widened, showing white and red.

Ipan yearned to run. Only Leon's rage held him in place.

But it was a static balance of forces. Ipan blinked as Biggest shuffled warily forward, the big chimp's caution a tribute to the damage Ipan had inflicted.

I need some advantage, Leon thought, looking around. He could call for allies. Hunker paced nervously nearby.

Something told Leon that would be a losing strategy. Hunker was still a lieutenant to Biggest. Sheelah was too small to make a decisive difference. He looked at the other chimps, all chattering anxiously—and decided. He picked up a rock.

Biggest grunted in surprise. Chimps didn't use rocks against each other. Rocks were only for repelling invaders. He was violating a social code.

Biggest yelled, waved to the others, pounded the ground, huffed angrily. Then he charged.

Leon threw the rock hard. It hit Biggest in the chest, knocked him down.

Biggest came up fast, madder than before. Ipan scurried back, wanting desperately to run. Leon felt control slipping from him—and saw another rock. Suitable size, two paces back. He let Ipan turn to flee, then stopped and looked at the stone. Ipan didn't want to hold it. Panic ran through him.

Leon poured his rage into the chimp, forced the long arms down. Hands grabbed at the stone, fumbled, got it. Sheer anger made Ipan turn to face Biggest, who was thundering after him. To Leon, Ipan's arm came up in achingly slow motion. He leaned heavily into the pitch. The rock smacked Biggest in the face.

Biggest staggered. Blood ran into his eyes. Ipan caught the iron scent of it, riding on a prickly stench of outrage.

Leon made his trembling Ipan stoop down. There were some shaped stones nearby, made by the fems to trim leaves from branches. He picked up one with a chipped edge.

Biggest waved his head, dizzy.

Ipan glanced at the sober, still faces of his troop. No one had used a rock against a troop member, much less Biggest. Rocks were for Strangers.

A long, shocked silence stretched. The chimps stood rooted,

Biggest grunted and peered in disbelief at the blood that splattered into his upturned hand.

Ipan stepped forward and raised the jagged stone, edge held outward. Crude, but a cutting edge.

Biggest flared his nostrils and came at Ipan. Ipan swept the rock through the air, barely missing Biggest's jaw.

Biggest's eyes widened. He huffed and puffed, threw dust, howled. Ipan simply stood with the rock and held his ground. Biggest kept up his anger-display for a long while, but he did not attack.

The troop watched with intense interest. Sheelah came and stood beside Ipan. It would have been against protocols for a female to take part in male-dominance rituals.

Her movement signaled that the confrontation was over. But Hunker was having none of that. He abruptly howled, pounded the ground, and scooted over to Ipan's side.

Leon was surprised. With Hunker maybe he could hold the line against Biggest. He was not fool enough to think that this one standoff would put Biggest to rest. There would be other challenges and he would have to fight them. Hunker would be a useful ally.

He realized that he was thinking in the slow, muted logic of Ipan himself. He *assumed* that the pursuit of chimp status-markers was a given, the great goal of his life.

This revelation startled him. He had known that he was diffusing into Ipan's mind, taking control of some functions from the bottom up, seeping through the deeply buried, walnut-sized gyrus. It had not occurred to him that the chimp would diffuse into *him*. Were they now married to each other in an interlocked web that dispersed mind and self?

Hunker stood beside him, eyes glaring at the other chimps,

chest heaving. Ipan felt the same way, madly pinned to the moment. Leon realized that he would have to do something, break this cycle of dominance and submission which ruled Ipan at the deep, neurological level.

He turned to Sheelah. *Get out?* he signed.

No. No. Her chimp face wrinkled with anxiety.

Leave. He waved toward the trees, pointed to her, then him.

She spread her hands in a gesture of helplessness.

It was infuriating. He had so much to say to her and he had to funnel it through a few hundred signs. He chattered in a high-pitched voice, trying vainly to force the chimp lips and palate to do the work of shaping words.

It was no use. He had tried before, idly, but now he wanted to badly and none of the equipment worked. It couldn't. Evolution had shaped brain and vocal chords in parallel. Chimps groomed, people talked.

He turned back and realized that he had forgotten entirely about the status-setting. Biggest was glowering at him. Hunker stood guard, confused at his new leader's sudden loss of interest in the confrontation—and to gesture at a mere fem too.

Leon reared up as tall as he could and waved the stone. This produced the desired effect. Biggest inched back a bit and the rest of the troop edged closer. Leon made Ipan stalk forward boldly. By this time it did not take much effort, for Ipan was enjoying this enormously.

Biggest retreated. Fems inched around Biggest and approached Ipan.

If only I could leave him to the fems' delights, Leon thought.

He tried to bail out again. Nothing. The mechanism wasn't working back at the Excursion Station. And something told him

that it wasn't going to get fixed.

He gave the edged stone to Hunker. The chimp seemed surprised but took it. Leon hoped the symbolism of the gesture would penetrate in some fashion because he had no time left to spend on chimp politics. Hunker hefted the rock and looked at Ipan. Then he cried in a rolling, powerful voice, tones rich in joy and triumph.

Leon was quite happy to let Hunker distract the troop. He took Sheelah by the arm and led her into the trees. No one followed.

He was relieved. If another chimp had tagged along, it would have confirmed his suspicions. Ruben might be keeping track.

Still, he reminded himself, absence of evidence is not evidence of absence.

The humans came swiftly, with clatter and booms.

He and Sheelah had been in the trees a while. At Leon's urging they had worked their way a few clicks away from the troop. Ipan and Sheelah showed rising anxiety at being separated from their troop. His teeth chattered and eyes jerked anxiously at every suspicious movement. This was natural, for isolated chimps were far more vulnerable.

The humans landing did not help.

Danger, Leon signed, cupping an ear to indicate the noise of fliers landing nearby.

Sheelah signed, *Where go?*

Away.

She shook her head vehemently. *Stay here. They get us.*

They would indeed, but not in the sense she meant. Leon cut

her off curtly, shaking his head. *Danger*. They had never intended to convey complicated ideas with their signs and now he felt bottled up, unable to tell her his suspicions.

Leon made a knife-across-throat gesture. Sheelah frowned.

He bent down and made Ipan take a stick. In soft loam he wrote:

IMPERIAL INDUSTRIE AGENTS. WANT US DEAD.

Sheelah looked dumbfounded. Kelly had probably been operating under the assumption that the failure to bail out was a temporary error. It had lasted too long for that. The landing of people in noisy, intrusive fashion confirmed his hunch. No ordinary team would disturb the animals so much. And nobody would come after them directly. They would fix the immersion apparatus, where the real problem was.

THEY KEEP US HERE, KILL US, BLAME ON ANIMALS.

He had better arguments to back up his case, the slow accumulation of small details in Ruben's behavior. That, and the guess that letting them die in an "accident" while immersed in a chimp was plausible enough to escape an investigation.

The humans went about their noisy business. They were enough, though, to make his case. Sheelah's eyes narrowed, the big brow scowled. *Where?* she signed.

He had no sign for so abstract an idea, so he scribbled with the stick, AWAY. Indeed, he had no plan.

I'LL CHECK, she wrote in the dirt. She set off toward the noise of humans deploying on the valley floor below. To a chimp the din was a dreadful clanking irritation. Leon was not going to let her out of his sight. He followed her. She waved him back but he shook his head and stuck behind her. She gave up and let him follow.

They stayed in bushes until they could get a view of the landing party below. A skirmish line was forming up a few hundred meters away. They were encircling the area where the troop had been. Leon squinted. Chimp eyesight was not good for distance. Humans had been hunters once, and one could tell by the eyes alone.

He thought abstractly about the fact that nearly everybody needed eye aids by the age of forty. Either civilization was hard on eyes, or maybe humans in prehistory had not lived long enough for eye trouble to rob them of game. Either conclusion was sobering.

The two chimps watched the humans calling to one another and in the middle of them Leon saw Ruben. That confirmed it. That, and that each man and woman carried a weapon.

Beneath his fear he felt something strong, dark.

Ipan trembled, watching humans, a strange awe swelling in his mind. Humans seemed impossibly tall in the shimmering distance, moving with stately, swaying elegance.

Leon floated above the surge of emotion, fending off its powerful effects. The reverence for those distant, tall figures came out of the chimp's dim past.

That surprised him until he thought it over. After all, animals were reared and taught by adults much smarter and stronger. Most species were like chimps, spring-loaded by evolution to work in a dominance hierarchy. Awe was adaptive.

When they met lofty humans with overwhelming power, able to mete out punishment and rewards—literally life and death—something like religious fervor arose in them. Dim, fuzzy, but strong.

Atop that warm, tropical emotion floated a sense of satisfaction at simply *being*. His chimp was happy to be a chimp, even when seeing a being of clearly superior power and thought.

Ironic, Leon thought. His chimp had just disproved another supposedly human earmark: their self-congratulatory distinction of being the only animal that congratulated itself.

He jerked himself out of his abstractions. How human, to ruminate even when in mortal danger.

CAN'T FIND US ELECTRONICALLY, he scratched in the sand.

MAYBE RANGE IS SHORT, she wrote.

RUBEN SABOTAGED LINK, he printed. She bit her lip, nodded.

Go. We go, he signed.

Sheelah nodded and they crept quickly away. Ipan was reluctant to leave the presence of the revered humans, his steps dragging.

They used chimp modes of patrolling. He and Kelly let their chimps take over, experts at silent movement, careful of every twig. Once they had left the humans behind the chimps grew even more cautious. Chimps had few enemies but the faint scent of a single predator could change the feel of every moment in the wild.

Ipan climbed tall trees and sat for hours surveying open land ahead before venturing forth. He weighed the evidence of pungent droppings, faint prints, bent branches.

They angled down the long slope of the valley and kept in the forest. Leon had only glanced at the big color-coded map of the area all guests received and had trouble recalling much of it. Once he recognized one of the distant, beak-shaped peaks he got his bearings. Kelly spotted a stream snaking down into the main river and that gave them further help, but still they did not know which way lay the Excursion Station. Or how far.

That way? Leon signed, pointing over the distant ridge.

No. That, Kelly insisted.

Far, not

Why?

The worst part of it all was that they could not talk. He could not say clearly that the technology of immersion worked best at reasonably short range, less than a hundred clicks, say. And it made sense to keep the subject chimps within easy flier distance. Certainly Ruben and the others had gotten to the troop quickly.

Is. He persisted.

Not. She pointed down the valley. *Maybe there.*

He could only hope Kelly got the general idea. Their signs were scanty and he began to feel a broad, rising irritation. Chimps felt and sensed strongly, but they were so *limited*.

Ipan expressed this by tossing limbs and stones, banging on tree trunks. It didn't help much. The need to speak was like a pressure he could not relieve and Kelly felt it too. Sheelah chipped and grunted in frustration.

Beneath his mind he felt the smoldering presence of Ipan. They had never been together this long before and urgency welled up between the two canted systems of mind. Their uneasy marriage was showing greater strains.

Sit. Quiet. She did. He cupped a hand to his ear.

Bad come?

No. Listen—In frustration Leon pointed to Sheelah herself. Blank incomprehension in the chimp's face. He scribbled in the dust, LEARN FROM CHIMPS. Sheelah's mouth opened and she nodded.

They squatted in the shelter of prickly bushes and listened to

the sounds of the forest. Scurryings and murmurs came through strongly as Leon relaxed his grip on the chimp. Dust hung in slanted cathedral light, pouring down from the forest canopy in rich yellow shafts. Scents purred up from the forest floor, chemical messengers telling Ipan of potential foods, soft loam for resting, bark to be chewed. Leon gently lifted Ipan's head to gaze across the valley at the peaks... musing... and felt a faint tremor of resonance.

To Ipan the valley came weighted with significance beyond words. His troop had imbued it with blunt emotions, attached to clefts where a friend fell and died, where the troop found a hoard of fruits, where they met and fought two big cats. It was an intricate landscape suffused with feeling, the chimp mechanism of memory.

Leon faintly urged Ipan to think beyond the ridgeline and felt in response a diffuse anxiety. He bore in on that kernel—and an image burst into Ipan's mind, fringed in fear. A rectangular bulk framed against a cool sky. The Excursion Station.

There. He pointed for Kelly.

Ipan had simple, strong, apprehensive memories of the place. His troop had been taken there, outfitted with the implants which allowed them to be ridden, then deposited back in their territory.

Far, Kelly signed.

We go?

Hard. Slow.

No stay here. They catch.

Kelly looked as skeptical as a chimp could look. *Fight?*

Did she mean fight Ruben here? Or fight once they reached the Excursion Station? *No here. There.*

Kelly frowned but accepted this. He had no real plan, only the

idea that Ruben was ready for chimps out here, and might not be so prepared for them at the Station. There he and Kelly might gain the element of surprise. How, he had no idea.

They studied each other, each trying to catch a glimmer of the other in an alien face. She stroked his earlobe, Kelly's fond calming gesture. Sure enough, it made him tingle. But he could say so little... The moment crystallized for him the hopelessness of their situation.

Ruben plainly was trying to kill Leon and Kelly through Ipan and Sheelah. What would become of their own bodies? The shock of experiencing death through immersion was known to prove fatal. Their bodies would fail from neurological shock, without ever regaining consciousness.

He saw a tear run down Sheelah's cheek. She knew how hopeless matters were too. He swept her up in his arms and, looking at the distant mountains, was surprised to find tears in his own eyes as well.

He had not counted on the river. Men, animals—these problems he had considered. They ventured down to the surging waters where the forest gave the nearest protection and the stream broadened, making the best place to ford.

But the hearty river that chuckled and frothed down the valley was impossible to swim.

Or rather, for Ipan to swim. Leon had been coaxing his chimp onward, carefully pausing when his muscles shook or when he wet himself from anxiety. Kelly was having similar trouble and it slowed them. A night spent up in high branches soothed both chimps, but now at midmorning all the stressful symptoms returned, as Ipan put one foot into the river. Cool, swift currents.

Ipan danced back onto the narrow beach, yelping in dread.

Go? Kelly/Sheelah signed.

Leon calmed his chimp and they tried to get it to attempt swimming. Sheelah displayed only minor anxiety. Leon plumbed the swampy depths of Ipan's memory and found a cluster of distress, centered around a dim remembrance of nearly drowning when a child. When Sheelah helped him he fidgeted, then bolted from the water again.

Go! Sheelah waved long arms upstream and downstream and shook her head angrily.

Leon guessed that she had reasonably clear chimp-memories of the river, which had no easier crossings than this. He shrugged, lifted his hands palm up.

A big herd of gigantelope grazed nearby and some were crossing the river for better grass beyond. They tossed their great heads, as if mocking the chimps. The river was not deep, but to Ipan it was a wall. Leon, trapped by Ipan's solid fear, seethed and could do nothing.

Sheelah paced the shore. She huffed in frustration and looked at the sky, squinting. Her head snapped around in surprise. Leon followed her gaze. A flier was swooping down the valley, coming this way.

Ipan beat Sheelah to the shelter of trees, but not by much. Luckily the gigantelope herd provided a distraction for the flyer. They cowered in bushes as the machine hummed overhead in a circular search pattern. Leon had to quell Ipan's mounting apprehension by envisioning scenes of quiet and peace and food while he and Sheelah groomed each other.

The flier finally went away. They would have to minimize their exposure on open grasslands now.

They foraged for fruit. His mind revolved uselessly and a sour depression settled over him. He was quite neatly caught in a trap, a

pawn in politics. Worse, Kelly was in it too. He was no man of action. *Nor a chimp of action, either*, he thought dourly.

As he brought a few overripe bunches of fruit back to their bushes overlooking the river, he heard cracking noises. He crouched down and worked his way uphill and around the splintering sounds. Sheelah was stripping branches from the trees. When he approached she waved him on impatiently, a common chimp gesture remarkably like a human one.

She had a dozen thick branches lined up on the ground. She went to a nearby spindly tree and peeled bark from it in long strips. The noise made Ipan uneasy. Predators would be curious at this unusual sound. He scanned the forest for danger.

Sheelah came over to him, slapped him in the face. She wrote with a stick on the ground, RAFT.

Leon felt particularly stupid as he pitched in. Of course. Had his chimp immersion made him more stupid? Did the effect worsen with time? Even if he got out of this, would he be the same? Many questions, no answers. He forgot about them and worked.

They lashed branches together with bark, crude but serviceable. They found two small fallen trees and used them to anchor the edge of the raft. *I*, Sheelah pointed, and demonstrated pulling the raft.

First, a warm-up. Ipan liked sitting on the raft in the bushes. Apparently the chimp could not see the purpose of the raft yet. Ipan stretched out on the deck of saplings and gazed up into the trees as they swished in the warm winds.

They carried the awkward plane of branches down to the river after another mutual grooming session. The sky was filled with birds but he could see no fliers.

They hurried. Ipan was skeptical about stepping onto the raft

when it was halfway into the water, but Leon called up memories filled with warm feeling, and this calmed the quick-tripping heart he could feel knocking in the chimp veins.

Ipan sat gingerly on the branches. Sheelah cast off.

She pushed hard but the river swept them quickly downstream. Alarm spurted in Ipan.

Leon made Ipan close his eyes. That slowed the breathing, but anxiety skittered across the chimp mind like heat lightning forking before a storm. The raft's rocking motion actually helped, making Ipan concentrate on his queasy stomach. Once his eyes flew open when a floating log smacked into the raft, but the dizzying sight of water all around made him squeeze them tight immediately.

Leon wanted to help her, but he knew from the trip-hammer beating of Ipan's heart that panic hovered near. He could not even see how she was doing. He had to sit blind and feel her shoving the raft along.

She panted noisily, struggling to keep it pointed against the river's tug. Spray splashed onto him. Ipan jerked, yelped, pawed anxiously with his feet, as if to run.

A sudden lurch. Sheelah's grunt cut off with a gurgle and he felt the raft spin away on rising currents. A sickening spin...

Ipan jerked clumsily to his feet. Eyes jumped open.

Swirling water, the raft unsteady. He looked down and the branches were coming apart. Panic consumed him. Leon tried to promote soothing images but they blew away before winds of fright.

Sheelah came paddling after the raft but it was picking up speed. Leon made Ipan gaze at the far shore but that was all he could do before the chimp started yelping and scampering on the raft, trying to find a steady place.

It was no use. The branches broke free of their bindings and chilly water swept over the deck. Ipan screamed. He leaped, fell, rolled, jumped up again.

Leon gave up any idea of control. The only hope lay in seizing just the right moment. The raft split down the middle and his half veered heavily to the left. Ipan started away from the edge and Leon fed that, made the chimp step further. In two bounds he took the chimp off the deck and into the water—toward the far shore.

Ipan gave way then to pure blind panic. Leon let the legs and arms thrash—but to each he gave a push at the right moment. He could swim, Ipan couldn't.

The near-aimless flailing held Ipan's head out of water most of the time. It even gained a little headway. Leon kept focused on the convulsive movements, ignoring the cold water—and then Sheelah was there, her jaws agape.

She grabbed him by the scruff of the neck and shoved him toward shore. Ipan tried to grapple with her, climb up her. Sheelah socked him in the jaw. He gasped. She pulled him toward shore.

Ipan was stunned. This gave Leon a chance to get the legs moving in a thrusting stroke. He worked at it, single-minded among the rush and gurgle, chest heaving... and after a seeming eternity, felt pebbles beneath his feet. Ipan scrambled up onto the rocky beach on his own.

He let the chimp slap himself and dance to warm up. Sheelah emerged dripping and bedraggled and Ipan swept her up in his thankful arms.

Walking was work and Ipan wasn't having any.

Leon tried to make the chimp cover ground, but now they had to ascend difficult gullies, some mossy and rough. They stumbled, waded, climbed, and sometimes just crawled up the slopes of the

valley. The chimps found animal trails, which helped a bit.

Ipan stopped often for food or just to gaze idly into the distance. Soft thoughts flitted like moths through the foggy mind, buoyant on liquid emotional flows which eddied to their own pulse.

Chimps were not made for extended projects. They made slow progress. Night came and they had to climb trees, snagging fruit on the way.

Ipan slept, but Leon did not. Could not.

Their lives were just as much at risk here as the chimps', but the slumbering minds he and Kelly attended had always lived this way. To the chimps, the forest night seeped through as a quiet rain of information, processed as they slept. Their minds keyed vagrant sounds to known nonthreats, leaving slumber intact.

Leon did not know the subtle signs of danger and so mistook every rustle and tremor in the branches as danger approaching on soft feet. Sleep came against his will.

In dawn's first pale glow Leon awoke with a snake beside him. It coiled like a green rope around a descending branch, getting itself into striking position. It eyed him and Leon tensed.

Ipan drifted up from his own profound slumber. He saw the snake but did not react with a startled jerk, as Leon feared he might.

A long moment passed between them and Ipan blinked just once. The snake became utterly motionless and Ipan's heart quickened but he did not move. Then the snake uncoiled and glided away, and the unspoken transaction was done. Ipan was unlikely prey, this green snake did not taste good, and chimps were smart enough to be about other business.

When Sheelah awoke they went down to a nearby chuckling stream for a drink, scavenging leaves and a few crunchy insects on

the way. Both chimps nonchalantly peeled away fat black land leeches which had attached to them in the night. The thick, engorged worms sickened Leon, but Ipan pulled them off with the same casualness Leon would have retying loosened shoelaces.

Ipan drank and Leon reflected that the chimp felt no need to clean himself. Normally Leon showered twice a day, before breakfast and before dinner, and felt ill at ease if he sweated, but here he wore the shaggy body comfortably. Had his frequent cleansings been a health measure, like the chimps' grooming? Or a rarified, civilized habit? He dimly remembered that as a boy he had gone for days in happy, sweaty pleasure, and had disliked baths and showers. Somehow Ipan returned him to a simpler sense of self, at ease in the grubby world.

His comfort did not last long. They sighted raboons uphill.

Ipan had picked up the scent, but Leon did not have access to the part of the chimp brain that made scent-picture associations. He had only known that something disturbed Ipan, wrinkling the knobby nose. The sight at short range jolted him.

Thick hindquarters, propelling them in brisk steps. Short forelimbs, ending in sharp claws. Their large heads seemed to be mostly teeth, sharp and white above slitted, wary eyes. A thick brown pelt covered them, growing bushy in the heavy tail they used for balance.

Days before, from the safety of a high tree, Ipan had watched some rip and devour the soft tissues of a gigantelope out on the grasslands. These came sniffing, working downslope in a skirmish line, five of them. Sheelah and Ipan trembled at the sight. They were downwind of the raboons and so beat a retreat in silence.

There were no tall trees here, just brush and saplings. Leon and Sheelah angled away downhill and got some distance, and then saw ahead a clearing. Ipan picked up the faint tang of other chimps, wafting from across the clearing.

He waved to her: *Go*. At the same moment chorus rose behind them. The raboons had smelled them.

Their wheezing grunts came echoing through the thick bushes. Down the slope there was even less cover, but bigger trees lay beyond. They could climb those.

Ipan and Sheelah hurried across the broad tan clearing on all fours but they were not quick. Snarling raboons burst into the grass behind them. Leon scampered into the trees—and directly into the midst of a chimp troop.

There were several dozen, startled and blinking. He yelled incoherently, wondering how Ipan would signal to them.

The nearest large male turned, bared teeth, and shrieked angrily. The entire pack took up the call, whooping and snatching up sticks and rocks, throwing them—at Ipan. A pebble hit him on the chin, a branch on the thigh. He fled, Sheelah already a few steps ahead of him.

The raboons came charging across the clearing. In their claws they held small, sharp stones. They looked big and solid but they slowed at the barrage of screeches and squawks coming from the trees.

Ipan and Sheelah burst out into the grass of the clearing and the chimps came right after them. The raboons skidded to a halt.

The chimps saw the raboons but they did not stop or even slow. They still came after Ipan and Sheelah with murderous glee.

The raboons stood frozen, their claws working uneasily.

Leon realized what was happening and picked up a branch as he ran, calling hoarsely to Sheelah. She saw and copied him. He ran straight at the raboons, waving the branch. It was an awkward, twisted old limb, useless, but it looked big. Leon wanted to seem like the advance guard of some bad business.

In the rising cloud of dust and general chaos the raboons saw

a large party of enraged chimps emerging from the forest. They bolted.

Squealing, they ran at full stride into the far trees.

Ipan and Sheelah followed, running with the last of their strength. By the time Ipan reached the first trees, he looked back and the chimps had stopped halfway, still screeching their vehemence.

He signed to Sheelah, *Go*, and they cut away at a steep angle, heading uphill.

Ipan needed food and rest to stop his heart from lurching at every minor sound. Sheelah and Ipan clutched each other, high in a tree, and crooned and petted.

Leon needed time to think. Who was keeping their bodies alive at the Station? It would be smart to let them stay out here, in danger, saying to the rest of the staff that the two odd tourists wanted a really long immersion.

His thinking triggered jitters in Ipan, so he dropped that mode. Better to think abstractly. And there was plenty out here that needed understanding.

The biotechnicians who planted chimps and gigantelope and the rest here had tinkered with the raboons. The wild days of explosive biotech, in the first years of the twencen, had allowed just about anything. Capabilities soon thereafter, in the twentens, had allowed the biotech tinkerers to see if they could turn a more distant primate relative, the baboon, into something like humans. A perverse goal, it seemed to Leon, but believable. Scientists loved to monkey with matters.

The work had gotten as far as pack-hunting behavior. But raboons had no tools beyond crudely edged stones, occasionally used to cut meat once they had brought it down.

In another few million years, under evolution's raw rub, they might be as smart as chimps. Who would go extinct then?

At the moment he didn't much care. He had felt real rage when the chimps—*his own kind!*—had turned against them, even when the raboons came within view. Why?

He worried at the issue, sure there was something here he had to understand. Sociohistory had to deal with such basic, fundamental impulses. The chimps' reaction had been uncomfortably close to myriad incidents in human history. *Hate the Stranger.*

He had to fathom that murky truth.

Chimps moved in small groups, disliking outsiders, breeding mostly within their modest circle of a few dozen. This meant that any genetic trait that emerged could pass swiftly into all the members, through inbreeding. If it helped the band survive, the rough rub of chance would select for that band's survival. Fair enough.

But the trait had to be undiluted. A troop of especially good rock throwers would get swallowed up if they joined a company of several hundred. Contact would make them breed outside the original small clan. Outbreeding: Their genetic heritage would get watered down.

Striking a balance between the accidents of genetics in small groups, and the stability of large groups—that was the trick. Some lucky troop might have fortunate genes, conferring traits that fit the next challenge handed out by the ever-altering world. They would do well. But if those genes never passed to many chimps, what did it matter?

With some small amount of outbreeding, that trait got spread into other bands. Down through the strainer of time, others picked up the trait. It spread.

This meant it was actually *helpful* to develop smoldering animosity to outsiders, an immediate sense of their wrongness. *Don't breed with them.*

So small bands held fast to their eccentric traits, and some prospered. Those lived on; most perished. Evolutionary jumps happened faster in small, semi-isolated bands which outbred slightly. They kept their genetic assets in one small basket, the troop. Only occasionally did they mate with another troop—often, through rape.

The price was steep: a strong preference for their own tiny lot.

They hated crowds, strangers, noise. Bands of less than ten were too vulnerable to disease or predators; a few losses and the group failed. Too many, and they lost the concentration of close breeding. They were intensely loyal to their group, easily identifying each other in the dark by smell, even at great distances. Because they had many common genes, altruistic actions were common.

They even honored heroism—for even if the hero died, his shared genes were passed on through his relatives.

Even if strangers could pass the tests of difference in appearances, manner, smell, grooming—even then, culture could amplify the effects. Newcomers with different language or habits and posture would seem repulsive. Anything that served to distinguish a band would help keep hatreds high.

Each small genetic ensemble would then be driven by natural selection to stress the noninherited differences—even arbitrary ones, dimly connected to survival fitness... and so they could evolve culture. As humans had.

Diversity in their tribal intricacies avoided genetic watering down. They heeded the ancient call of aloof, wary tribalism.

Leon/Ipan shifted uneasily. Midway through his thinking, the

word *they* had come in Leon's thinking to mean humans as well as chimps. The description fit both.

That was the key. Humans fit into civilization *despite* their innate tribalism, their chimplike heritage. It was a miracle!

But even miracles called out for explanation. How could civilization possibly have kept itself stable, using such crude creatures as humans?

Leon had never seen the issue before in such glaring, and humbling, light.

And he had no answer.

They moved on against the blunt, deep unease of their chimps.

Ipan smelled something that sent his eyes darting left and right. With the full tool kit of soothing thoughts and the subtle tricks he had learned, Leon kept him going.

Sheelah was having more trouble. The female chimp did not like laboring up the long, steep gullies that approached the ridgeline. Gnarled bushes blocked their way and it took time to work their way around. Fruit was harder to find at these altitudes.

Ipan's shoulders and arms ached constantly. Chimps walked on all fours because their immensely strong arms carried a punishing weight penalty. To navigate both trees and ground meant you could optimize neither. Sheelah and Ipan groaned and whined at the soreness that never left feet, legs, wrists, and arms. Chimps would never be far-ranging explorers.

Together they let their chimps pause often to crumble leaves and soak up water from tree holes, a routine, simple tool use. They kept sniffing the air, apprehensive.

The smell that disturbed both chimps got stronger, darker.

Sheelah went ahead and was the first over the ridgeline. Far below in the valley they could make out the rectangular rigidities of the Excursion Station. A flier lifted from the roof and whispered away down the valley, no danger to them.

He recalled a century ago sitting on the veranda there with drinks in hand and Kelly saying, *If you stayed in Helsinki you might be dead.* Also if you didn't stay in Helsinki...

They started down the steep slope. Their chimps' eyes jerked at every unexpected movement. A chilly breeze stirred the few low bushes and twisted trees. Some had a feathered look, burnt and shattered by lightning. Air masses driven up from the valleys fought along here, the brute clash of pressures. This rocky ridge was far from the comfortable province of chimps. They hurried.

Ahead, Sheelah stopped.

Without a sound, five raboons rose from concealment, forming a neat half-circle around them.

Leon could not tell if it was the same pack as before. If so, they were quite considerable pack hunters, able to hold memory and purpose over time. They had waited ahead, where there were no trees to climb.

The raboons were eerily quiet as they strode forward, their claws clicking softly.

He called to Sheelah and made some utterly fake ferocious noises as he moved, arms high in the air, fists shaking, showing a big profile. He let Ipan take over while he thought.

A raboon band could certainly take two isolated chimps. To survive this they had to surprise the raboons, frighten them.

He looked around. Throwing rocks wasn't going to do the trick here. With only a vague notion of what he was doing he shuffled left, toward a tree that had been splintered by lightning.

Sheelah saw his move and got there first, striding

energetically. Ipan picked up two stones and flung them at the nearest raboon. One caught him on the flank but did no real harm.

The raboons began to trot, circling. They called to each other in wheezing grunts.

Sheelah leaped on a dried-out shard of the tree. It snapped. She snatched it up and Leon saw her point. It was as tall as she was and she cradled it.

The largest raboon grunted and they all looked at each other.

The raboons charged.

The nearest one came at Sheelah. She caught it on the shoulder with the blunt point and it squealed.

Leon grabbed a stalk of the shattered tree trunk. He could not wrench it free. Another squeal from behind him and Sheelah was gibbering in a high, frightened voice.

It was best to let the chimps release tension vocally, but he could feel the fear and desperation in the tones and knew it came from Kelly too.

He carefully selected a smaller shard of the tree. With both hands he twisted it free, using his weight and big shoulder muscles, cracking it so that it came away with a point.

Lances. That was the only way to stay away from the raboon claws. Chimps never used such advanced weapons. Evolution hadn't gotten around to that lesson yet.

The raboons were all around them now. He and Sheelah stood back-to-back. He barely got his feet placed when he had to take the rush of a big, swarthy raboon.

They had not gotten the idea of the lance yet. It slammed into the point, jerked back. A fearsome bellow. Ipan wet himself with fear but something in Leon kept him in control.

The raboon backed off, whimpering. It turned to run. In

midstride it stopped. For a long, suspended moment the raboon hesitated—then turned back toward Leon.

It trotted forward with new confidence. The other raboons watched. It went to the same tree Leon had used and with a single heave broke off a long, slender spike of wood. Then it came toward Leon, stopped, and with one claw held the stick forward. With a toss of its big head it looked at him and half-turned, putting one foot forward.

With a shock Leon recognized the swordplay position. Ruben had used it. Ruben was riding this raboon.

It made perfect sense. This way the chimps' deaths would be quite natural. Ruben could say that he was developing raboon-riding as a new commercial application of the same hardware that worked for chimp-riding.

Ruben came forward a careful step at a time, holding the long lance between two claws now. He made the end move in a circle. Movement was jerky; claws were crude, compared with chimp hands. But the raboon was stronger.

It came at him with a quick feint, then a thrust. Leon barely managed to dodge sideways while he brushed the lance aside with his stick. Ruben recovered quickly and came from Leon's left. Jab, feint, jab, feint. Leon caught each with a swoop of his stick.

Their wooden swords smacked against each other and Leon hoped his didn't snap. Ruben had good control of his raboon. It did not try to flee as it had before.

Leon was kept busy slapping aside Ruben's thrusts. He had to have some other advantage or the superior strength of the raboon would eventually tell. Leon circled, drawing Ruben away from Sheelah. The other raboons were keeping her trapped, but not attacking. All attention riveted on the two figures as they poked and parried.

Leon drew Ruben toward an outcropping. The raboon was having trouble holding its lance straight and had to keep looking down at its claws to get them right. This meant it paid less attention to where its two hooves found their footing. Leon slapped and jabbed and kept moving, making the raboon step sideways. It put a big hoof down among some angular stones, teetered, then recovered.

Leon moved left. It stepped again and its hoof turned and it stumbled. Leon was on it in an instant. He thrust forward as the raboon looked down, feet scrambling for purchase. Leon caught the raboon full with his point.

He pushed hard. The other raboons let out a moaning.

Snorting in rage, the raboon tried to get off the point. Leon made Ipan step forward and thrust the tip into the raboon. The thing wailed hoarsely. Ipan plunged again. Blood spurted from it, splattering the dust. Its knees buckled and it sprawled.

Leon shot a glance over his shoulder. The others had surged into action. Sheelah was holding off three, screeching at them so loudly it unnerved even him. She had already wounded one. Blood dripped down its brown coat.

But the others did not charge. They circled and growled and stamped their feet, but came no closer. They were confused. Learning too. He could see the quick, bright eyes studying the situation, this fresh move in the perpetual war.

Sheelah stepped out and poked the nearest raboon. It launched itself at her in a snarling fit and she stuck it again, deeper. It yelped and turned—and ran.

That did it for the others. They all trotted off, leaving their fellow bleating on the ground. Its dazed eyes watched its blood trickle out. Its eyes flickered and Ruben was gone. The animal slumped.

With deliberation Leon picked up a rock and bashed in the skull. It was messy work and he sat back inside Ipan and let the dark, smoldering chimp anger come out.

He bent over and studied the raboon brain. A fine silvery webbing capped the rubbery, convoluted ball. Immersion circuitry.

He turned away from the sight and only then saw that Sheelah was hurt.

The station crowned a rugged hill. Steep Gullies gave the hillside the look of a weary, lined face. Wiry bushes thronged the lower reaches.

Ipan puffed as he worked his way through the raw land cut by erosion. In chimp vision the night was eerie, a shimmering vista of pale greens and blue-tinged shadows. The hill was a nuance in the greater slope of a grand mountain, but chimp vision could not make out the distant features. Chimps lived in a close, immediate world.

Ahead he could see clearly the glowing blank wall ringing the Station. Massive, five meters tall. And, he remembered from his tourist tour of the place, rimmed with broken glass.

Behind him came gasps as Sheelah labored up the slope. The wound in her side made her gait stiff, face rigid. She refused to hide below. They were both near exhaustion and their chimps were balky, despite two stops for fruit and grubs and rest.

Through their feeble vocabulary, their facial grimacing and writing in the dust, they had “discussed” the possibilities. Two chimps were vulnerable out here. They could not expect to be as lucky as with the raboons, not tired out and in strange territory.

The best time to approach the Station was at night. And whoever had engineered this would not wait forever. They had hidden from fliers twice more this last day. Resting through the

next day was an inviting option, but Leon felt a foreboding press him onward.

He angled up the hillside, watching for electronic trip wires. Of such technical matters he knew nothing. He would have to keep a lookout for the obvious and hope that the Station was not wired for thinking trespassers. Chimp vision was sharp and clear in dim light for nearby objects, but he could find nothing.

He chose a spot by the wall shadowed by trees. Sheelah panted in shallow gasps as she approached. Looking up, the wall seemed immense. Impossible...

Slowly he surveyed the land around them. No sign of any movement. The place smelled peculiar to Ipan, somehow *wrong*. Maybe animals stayed away from the alien compound. Good; that would make security inside less alert.

The wall was polished concrete. A thick lip jutted out at the top, making climbing it harder.

Sheelah gestured where trees grew near the wall. Stumps nearer showed that the builders had thought about animals leaping across from branches. But some were tall enough and had branches within a few meters of the top.

Could a chimp make the distance? Not likely, especially when tired. Sheelah pointed to him and back to her, then held hands and made a swinging motion. Could they *swing* across the distance?

He studied her face. The designer would not anticipate two chimps cooperating that way. He squinted up at the top. Too high to climb, even if Sheelah stood on his shoulders.

Yes, he signed.

A few moments later, her hands holding his feet, about to let go of his branch, he had second thoughts.

Ipan didn't mind this bit of calisthenics, and in fact was happy to be back in a tree. But Leon's human judgment still kept shouting

that he could not possibly do it. Natural chimp talent conflicted with human caution.

Luckily, he did not have much time to indulge in self-doubt. Sheelah yanked him off the branch. He fell, held only through her hands.

She had wrapped her feet securely around a thick branch, and now began to oscillate him like a weight on a string. She swung him back and forth, increasing the amplitude. Back, forth, up, down, centrifugal pressure in his head. To Ipan it was unremarkable. To Leon it was a wheeling world of heart-stopping whirls.

Small branches brushed him and he worried about noise and then forgot about that because his head was coming up level with the top of the wall.

The concrete lip was rounded off on the inside, so no hook could find a grip.

He swung back down, head plunging toward ground. Then up into the lower branches, twigs slapping his face.

On the next swing he was higher. All along the top of the wall thick glass glinted. Very professional.

He barely had time to realize all this when she let him go.

He arced up, hands stretched out—and barely caught the lip. If it had not protectively protruded out, he would have missed.

He let his body slam against the side. His feet scrabbled for purchase against the sheer face. A few toes got hold. He heaved up, muscles bunching—and over. Never before had he appreciated how much stronger a chimp could be. No man could have made it here.

He scrambled up, cutting his arm and haunch on glass. It was a delicate business, getting to his feet and finding a place to stand.

A surge of triumph. He waved to Sheelah, invisible in the tree.

From here on it was up to him. He realized suddenly that they could have fashioned some sort of rope, tying together vines. Then he could lift her up here. *Good idea, too late.*

No point in delaying. The compound was partly visible through the trees, a few lights burning. Utterly silent. They had waited until the night was about half over, he had nothing but Ipan's gut feelings to tell him when.

He looked down. Just beyond his toes razor wire gleamed, set into the concrete. Carefully he stepped between the shiny lines. There was room among the sharp glass teeth to stand. A tree blocked his vision and he could see little below him in the dim glow from the Station. At least that meant they couldn't see him, either.

Should he jump? too high. The tree that hid him was close, but he could not see into it.

He stood and thought, but nothing came to him. Meanwhile Sheelah was behind him, alone, and he hated leaving her where dangers waited that he did not even know.

He was thinking like a man and forgetting that he had the capability of a chimp.

Go. He leaped. Twigs snapped and he plunged heavily in shadows. Branches stabbed his face. He saw a dark shape to his right and so curled his legs, rotated, hands out—and snagged a branch. His hands closed easily around it and he realized it was too thin, *too thin*—

It snapped. The *crack* came like a thunderbolt to his ears. He fell, letting go of the branch. His back hit something hard and he rolled, grappling for a hold. His fingers closed around a thick branch and he swung from it. Finally he let out a gasp.

Leaves rustled, branches swayed. Nothing more.

He was halfway up the tree. Aches sprouted in his joints, a galaxy of small pains.

Leon relaxed and let Ipan master the descent. He had made far too much noise falling in the tree but there was no sign of any movement across the broad lawns between him and the big, luminous Station.

He thought of Sheelah and wished there were some way he could let her know he was inside now. Thinking of her, he measured with his eye the distances from nearby trees, memorizing the pattern so that he could find the way back at a dead run if he had to.

Now what? He didn't have a plan. That, and suspicions.

Leon gently urged Ipan—who was nervous and tired, barely controllable—into a triangular pattern of bushes. Ipan's mind was like a stormy sky split by skittering lightning. Not thoughts precisely; more like knots of emotion, forming and flashing around crisp kernels of anxiety. Patiently Leon summoned up soothing images, getting Ipan's breathing slowed, and he almost missed the whispery sound.

Nails scrabbling on a stone walkway. Something running fast.

They came around the triangle peak of bushes. Bunched muscles, sleek skin, stubby legs eating up the remaining distance. They were well trained to seek and kill soundlessly, without warning.

To Ipan the monsters were alien, terrifying. Ipan stepped back in panic before the two onrushing bullets of muscle and bone. Black gums peeled back from white teeth, bared beneath mad eyes.

Then Leon felt something shift in Ipan. Primeval, instinctive responses stopped his retreat, tensed the body. No time to flee, so *fight*.

Ipan set himself, balanced. The two might go for his arms so he drew them back, crouching to bring his face down.

Ipan had dealt with four-legged pack hunters before, somewhere far back in ancestral memory, and knew innately that they lined up on a victim's outstretched limb, would go for the throat. The canines wanted to bowl him over, slash open the jugular, rip and shred in the vital seconds of surprise.

They gathered themselves, bundles of swift sinew, running nearly shoulder to shoulder, big heads up—and leaped.

In air, they were committed, Ipan knew. And open.

Ipan brought both hands up to grasp the canines' forelegs.

He threw himself backward, holding the legs tight, his hands barely beneath the jaws. The wirehounds' own momentum carried them over his head as he rolled backward.

Ipan rolled onto his back, yanking hard. The sudden snap slammed the canines forward. They could not get their heads turned around and down to close on his hand.

The leap, the catch, the quick pivot and swing, the heave—all combined in a centrifugal whirl that slung the wirehounds over Ipan as he himself went down, rolling. He felt the canines' legs snap and let go. They sailed over him with pained yelps.

Ipan rolled over completely, head tucked in, and came off his shoulders with a bound. He heard a solid thud, clacks as jaws snapped shut. A thump as the canines hit the grass, broken legs unable to cushion them.

He scrambled after them, his breath whistling. They were trying to get up, turning on snapped legs to confront their quarry. Still no barks, only faint whimpers of pain, sullen growls. One swore vehemently and quite obscenely. The other chanted, "Baaas'ard... baaas'ard..."

Animals turning in their vast, sorrowful night.

He jumped high and came down on both. His feet drove their necks into the ground and he felt bone give way. Before he stepped back to look he knew they were gone.

Ipan's blood surged with joy. Leon had never felt this tingling thrill, not even in the first immersion, when Ipan had killed a Stranger. Victory over these alien things with teeth and claws that come at you out of the night was a profound, inflaming pleasure.

Leon had done nothing. The victory was wholly Ipan's.

For a long moment Leon basked in it in the cool night air, felt the tremors of ecstasy.

Slowly, reason returned. There were other wirehounds. Ipan had caught these just right. Such luck did not strike twice.

The wirehounds were easy to see on the lawn. Would attract attention.

Ipan did not like touching them. Their bowels had emptied and the smell cut the air. They left a smear on the grass as he dragged them into the bushes.

Time, time. Someone would miss the canines, come to see.

Ipan was still pumped up from his victory. Leon used that to get him trotting across the broad lawn, taking advantage of shadows. Energy popped in Ipan's veins. Leon knew it was a mere momentary glandular joy, overlaying a deep fatigue. When it faded, Ipan would become dazed, hard to govern.

Every time he stopped he looked back and memorized landmarks. He might have to return this way on the run.

It was late and most of the Station was dark. In the technical area, though, a cluster of windows blossomed with what Ipan saw as impossibly rich, strange, superheated light.

He loped over to them and flattened himself against the wall.

It helped that Ipan was fascinated by this strange citadel of the godlike humans. Out of his own curiosity he peeked in a window. Under enamel light a big assembly room sprawled, one that Leon recognized. There, centuries ago, he had formed up with the other brightly dressed tourists to go out on a trek.

Leon let the chimp's curiosity propel him around to the side, where he knew a door led into a long corridor. The door opened freely, to Leon's surprise. Ipan strolled down the slick tiles of the hallway, quizzically studying the phosphor-paint designs on the ceiling and walls, which emitted a soothing ivory glow.

An office doorway was open. Leon made Ipan squat and bob his head around the edge. Nobody there. It was a sumptuous den with shelves soaring into a vaulted ceiling. Leon remembered sitting there discussing the immersion process. That meant the immersion vessels were just a few doors away down—

The squeak of shoes on tiles made him turn.

ExSpec Ruben was behind him, leveling a weapon. In the cool light the man's face looked odd to Ipan's eyes, mysteriously bony.

Leon felt the rush of reverence in Ipan and let it carry the chimp forward, chipping softly. Ipan felt awe, not fear.

Leon wondered why Ruben said nothing and then realized that of course he could not reply.

Ruben tensed up, waving the snout of his ugly weapon. A metallic click. Ipan brought his hands up in a ritual chimp greeting and Ruben shot him.

The impact spun Ipan around. He went down, sprawling.

Ruben's mouth curled in derision. "Smart prof, huh? Didn't figure the alarm on the door, huh?"

The pain from Ipan's side was sharp, startling. Leon rode the hurt and gathering anger in Ipan, helping it build. Ipan felt his side

and his hand came away sticky, smelling like warm iron in the chimp's nostrils.

Ruben circled around, weapon weaving. "You *killed* me, you weak little dope. Ruined a good experimental animal too. Now I got to figure what to do with you."

Leon threw his own anger atop Ipan's seethe. He felt the big muscles in the shoulders bunch. The pain in the side jabbed suddenly. Ipan groaned and rolled on the floor, pressing one hand to the wound.

Leon kept the head down so that Ipan could not see the blood that was running down now across the legs. Energy was running out of the chimp body. A seeping weakness came up the legs.

He pricked his ears to the shuffle of Ruben's feet. Another agonized roll, this time bringing the legs up in a curl.

"Guess there's really only one solution—"

Leon heard the metallic click.

Now, yes. He let his anger spill.

Ipan pressed up with his forearms and got his feet under him. No time to get all the way up. Ipan sprang at Ruben, keeping low.

A tinny shot whisked by his head. Then he hit Ruben in the hip and slammed the man against the wall. The man's scent was sour, salty.

Leon lost all control. Ipan bounced Ruben off the wall and instantly slammed arms into the man with full force.

Ruben tried to deflect the impact. Ipan pushed the puny human arms aside. Ruben's pathetic attempts at defense were like spiderwebs brushed away.

He butted Ruben and pounded massive shoulders into the man's chest. The weapon clattered on the tiles.

Ipan slammed himself into the man's body again and again.

Strength, power, joy.

Bones snapped. Ruben's head snapped back, smacked the wall, and he went limp.

Ipan stepped back and Ruben sagged to the tiles. *Joy.*

Blue-white flies buzzed at the rim of his vision.

Must move. That was all Leon could get through the curtain of emotions that shrouded the chimp mind.

The corridor lurched. Leon got Ipan to walk in a sidewise teeter.

Down the corridor, painful steps. Two doors, three. Here? Locked. Next door. World moving slower somehow.

The door snicked open. An antechamber that he recognized. Ipan blundered into a chair and almost fell. Leon made the lungs work hard. The gasping cleared his vision of the dark edges that had crept in but the blue-white flies were there, fluttering impatiently, and thicker.

He tried the far door. Locked. Leon summoned what he could from Ipan. *Strength, power, joy.* Ipan slammed his shoulder into the solid door. It held. Again. And again, sharp pain—and it popped open.

Right, this was it. The immersion bay. Ipan staggered into the array of vessels. The walk down the line, between banks of control panels, took an eternity. Leon concentrated on each step, placing each foot. Ipan's field of view bobbed as the head seemed to slip around on the liquid shoulders.

Here. His own vessel.

He fumbled with the latches. Popped it open.

There lay Leon Mattick, peaceful, eyes closed.

Emergency controls, yes. He knew them from the briefing.

He searched the polished steel surface and found the panel on the side. Ipan stared woozily at the meaningless lettering and Leon himself had trouble reading. The letters jumped and fused together.

He found several buttons and servo controls. Ipan's hands were stubby, wrong. It took three tries to get the reviving program activated. Lights cycled from green to amber.

Ipan abruptly sat down on the cool floor. The blue-white flies were buzzing all around his head now and they wanted to bite him. He sucked in the cool dry air but there was no substance in it, no help...

Then, without any transition, he was looking at the ceiling. On his back. The lamps up there were getting dark, fading. Then they went out.

Leon's eyes snapped open.

The recovery program was still sending electrostims through his muscles. He let them jump and tingle and ache while he thought. He felt fine. Not even hungry, as he usually did after an immersion. How long had he been in the wilderness? At least five days.

He sat up. There was no one in the vessel room. Evidently Ruben had gotten some silent alarm, but had not alerted anyone else. That pointed, again, to a tight little conspiracy.

He got out shakily. To get free he had to detach some feeders and probes but they seemed simple enough.

Ipan. The big body filled the walkway. He knelt and felt for a pulse. Rickety.

But first, Kelly. Her vessel was next to his and he started the

revival. She looked well.

Ruben must have put some transmission block on the system, so that none of the staff could tell by looking at the panel that anything was wrong. A simple cover story, a couple who wanted a really long immersion. Ruben had warned them, but no, they wanted it so... A perfectly plausible story.

Kelly's eyes fluttered. He kissed her. She gasped.

He made a chimp sign, *quiet*, and went back to Ipan.

Blood came steadily. Leon was surprised to find that he could not pick up the rich, pungent elements in the blood from smell alone. A human missed so much!

He took off his shirt and made a crude tourniquet. At least Ipan's breathing was regular. Kelly was ready to get out by then and he helped her disconnect.

"I was hiding in a tree and then—poof!" she said. "What a relief. How did you—"

"Let's get moving," he said.

As they left the room she said, "Who can we trust? Whoever did this—" She stopped when she saw Ruben. "Oh."

Somehow her expression made him laugh. She was very rarely surprised.

"*You* did this?"

"Ipan."

"I never would have believed a chimp could, could..."

"I doubt anyone's been immersed this long. Not under such stress, anyway. It all just, well, it came out."

He picked up Ruben's weapon and studied the mechanism. A standard pistol, silenced. Ruben had not wanted to awaken the rest of the Station. That was promising. There should be people here

who would spring to their aid. He started toward the building where the Station personnel lived.

“Wait, what about Ruben?”

“I’m going to wake up a doctor.”

They did—but Leon took him into the vessel room first, to work on Ipan. Some patchwork and injections and the doctor said Ipan would be all right. Only then did he show the man Ruben’s body.

The doctor got angry about that, but Leon had a gun. All he had to do was point it. He didn’t say anything, just gestured with the gun. He did not feel like talking and wondered if he ever would again. When you couldn’t talk you concentrated more, entered into things. Immersed.

And in any case, Ruben had been dead for some time.

Ipan had done a good job. The doctor shook his head at the severe damage.

Kelly looked at him oddly throughout the whole time. He did not understand why, until he realized that he had not even thought about helping Ruben first. Ipan was *himself*, in a sense he could not explain.

But he understood immediately when Kelly wanted to go to the Station wall and call to Sheelah. They brought her, too, in from the wild darkness.

A year later, when the industrial conspiracy had been uncovered and dozens brought to trial, they returned to the Excursion Station.

Leon longed to lounge in the sun, after a year of facing news cameras and attorneys. Kelly was equally exhausted with the rub of events.

But they both immediately booked time in the immersion chambers and spent long hours there. Ipan and Sheelah seemed to greet their return with something approximating joy.

Each year they would return and live inside the minds. Each year they would come away calmer, somehow fuller.

Leon's analysis of sociohistory appeared in a ground-breaking series of papers, modeling all of civilization as a "complex adaptive system." Fundamental to the intricately structured equations were terms allowing for primordial motivations, for group behavior in tension with individual longings, for deep motivations kindled in the veldt, over a thousand millennia ago. This was exact, complex, and original; his papers resounded through the social sciences, which had finally been made quantitative.

Fifteen years later the work received a Nobel prize, then worth 2.3 million New Dollars. Leon and Kelly spent a lot of it on travel, particularly to Africa.

When questioned in interviews, he never spoke of the long trek he and Kelly had undergone. Still, in his technical papers and public forums, he did give chimpanzees as examples of complex, adaptive behavior. As he spoke, he gave a long, slow smile, eyes glittering enigmatically, but would discuss the subject no further.