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Advertising Representative: **Connie Goon**, Advertising Sales Coordinator, Tel: (212) 686-7188
Fax:(212) 686-7414 (Display and Classified Advertising)

Editorial Correspondence Only: analog@dellmagazines.com

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Reader's Department: **EDITORIAL: WHERE CREDIT IS DUE** by Stanley Schmidt

The cover on this issue says “September 2009,” though you're probably reading it a bit earlier than that. That date is why I'm writing this now, though I'm not going to tell you exactly what I mean by that until a bit later. Instead I'm going to start with some general musings about who gets the credit for what, and why—and why who gets credit doesn't always correlate perfectly with who deserves it.

Take the airplane, for instance. Ask almost anybody who invented it, and you'll probably get the answer, “The Wright Brothers, in 1903.” It's certainly true that Orville and Wilbur made a dramatic and major breakthrough on that December day at Kitty Hawk, North Carolina, but to say that they invented the airplane then makes the process sound far simpler than it was. It makes it sound as if before them there was nothing in the aeronautical realm, and then suddenly they brought forth a fully formed new technology.

In fact, dramatic as their first flights were, they were merely the culmination of several lines of work by many people over many decades, many of whom probably had no idea that what they were doing had anything to do with flying machines. And those epoch-making flights could just as easily be viewed not as a culmination, but as the beginning—or one beginning—of another series of events leading to the future development of our current massive air transportation system. Orville and Wilbur couldn't have done what they did without building on the earlier accomplishments of (to name just a few) George Cayley, Otto Lilienthal, and Samuel Pierpont Langley, with their gliders; Thomas Savery, Thomas Newcomen, and James Watt, with their steam engines; Nicolas-Joseph Cugnot, who built a gigantic steam-powered tricycle; Jean-Joseph Atienne Lenoir, Alphonse Beau de Rochas, and Nikolaus August Otto, with their internal combustion engines; and the Wrights' own assistant, Charles Taylor, who played a major role in making the first such engine both powerful enough and light enough for sustained flight.

Or consider genetics, where expansive and still-expanding frontiers were opened up by the understanding of how DNA functions as a genetic code. That got James Watson, Francis Crick, and Maurice Wilkins the 1962 Nobel Prize in medicine and physiology (though for some reason “Watson and Crick” is the catch phrase that everybody now knows, and Wilkins is largely forgotten). But they couldn't have done what they did if physicists like Max von Laue and William and Lawrence Bragg hadn't first developed x-ray diffraction as a technique for analyzing crystalline and molecular structures. Perhaps even more to the point, their insight depended very critically on an x-ray diffraction scan made by Rosalind Franklin, who was very close to figuring it out on her own and whose crucial role has only recently (and, unfortunately, posthumously) come to light.

It's been often (and truly) observed that teaching something is one of the best ways to learn it. I became more conscious than ever of connections like these while writing *The Coming Convergence*, the first parts of which examine some historical examples of the tangled webs that have led to inventions or discoveries commonly credited exclusively (and wrongly) to a single individual or team. One or two people get almost all the credit; a little digging will turn up additional names of people who deserve some but are little known; and there may well be others who are never mentioned in print or online but nonetheless played significant parts in making things as they are.

Certainly that's been true in my own life. My educational resume, as such things are conventionally done, would list the schools I attended and perhaps, if it were unusually thorough, the teachers with whom I took classes. Some of those were actually important influences, but when I look at who my *real* major influences were, I find the correlation with conventional measures is surprisingly low. Most of the official curriculum, through grade school and high school, was at best a minor contributor to what I actually learned, and sometimes an outright impediment. On reflection, I realized that I *am* seriously indebted to

some of my teachers, not for what they were employed to do, but for little but far-reaching things that they did on their own initiative. The second-grade teacher who encouraged me to browse in the “extra” books in the back of the room after I’d finished the boring daily assignments, for instance, and to write my own two-page adventure stories and show them to the principal. Or the seventh-grade teacher who turned me and a classmate loose to learn logarithms on our own while the rest of the class did little more than rehash the same material they’d been slogging through since fourth grade. Or the high school music teacher who offered to loan me his harmony textbook, for as long as I wanted to keep it, when I was unable to fit his music theory course into my schedule.

There were other major influences who weren’t even part of my school system. One neighbor and friend of my parents was a schoolteacher, but in a different district; her educational importance to me was that she gave me a couple of books that introduced me to new subjects not covered in school, and let me borrow books from her personal library. She and her husband showed me by example that ordinary folks could do interesting, “exotic” kinds of travel that I’d thought only “other” people did. Her husband showed me that they could do kinds of photography far more ambitious than the kinds I’d previously known, and gave me the key to learning to do it myself. Then there was the neighbor who gave me my first writing “commission,” inviting me to write a creepy story to be read aloud as the centerpiece of a game at a Halloween party she threw for neighborhood kids. And the friend of my parents who gave me my first long-playing record, and let me borrow some of hers.

Science fiction is no exception to the principle that important influences are not limited to widely known names. Certainly some of those names are hugely important; John W. Campbell, for example, is widely credited with having revolutionized science fiction in these pages, and Ben Bova with expanding its scope while preserving some defining characteristics of this magazine.

What characteristics? Most notably, an equally strong emphasis on the “science” and the “fiction” in “science fiction.” Both John and Ben tried to insist on stories that were strong as *stories*, with engaging characters and coherent plots, and were also consistent with plausible science so integrally woven into the story that it could not be removed without making the whole story collapse. “Plausible” did not necessarily mean rigidly rooted in well-established old science, but it did mean that if a story depended on something that sounded fantastic or even impossible to contemporary minds, the author should provide at least a marginally believable basis to make it conceivable. If that required new science, so be it; but the new science had to be imagined in such a way as to be compatible with what we already knew.

Furthermore, both John and Ben took as a core tenet that many, if not most, problems can be solved by rational thought and appropriate action. They had little sympathy for characters who spent pages and pages bemoaning the terrible world they lived in when they could, and should, have been trying to do something about it. And while they valued most highly stories that were rich in both style and substance, if they had to choose, they prized substance more than style. And in style, they strongly favored clarity over literarily pretentious ornateness and obscurity.

That’s a pretty good, if oversimplified, summary of the values I, too, have tried to maintain in *Analog*. This is not to say that I try to do things exactly as Ben would have, or that Ben tried to do exactly as John would have. We’ve all had our own distinctive leanings and quirks, and those have determined the overall shape of the magazine during our respective tenures. That’s true of any magazine of this general sort; the magazine’s character is very much a reflection of the editor’s ideas, attitudes, tastes, and values.

So I take responsibility, whether you regard that as credit or blame, for the kind of magazine this now is. It’s not to everyone’s tastes, of course; the field of science fiction has now broadened to the point where it accommodates a very wide range of readers’ likes and dislikes. That’s why we have multiple magazines and book publishers. There are readers who have no interest in whether there’s science deeply

embedded in their stories, or whether what science there is is even remotely plausible. There are readers who are far more interested in style than substance, and readers who sneer at the idea that the universe is a rational place that humans can cope with on rational terms.

But there are still plenty of readers who do share the kinds of values that John and Ben and I have tried to make the foundation of *Analog*—enough of them to keep this the best-selling English-language science fiction magazine for several decades. I often get letters or e-mails from them telling me that this is the only place they can still reliably find the kinds of science fiction they prefer. If you're one of them (and if you're reading this, there's a pretty good chance that you are), I appreciate your appreciation. I can only say that I've tried, and will continue to try, to keep those values alive here.

But I cannot claim to have originated them, and I did not first learn them directly from John or Ben. There is somebody else more responsible than you realize—and maybe more than even he realizes—for the fact that *Analog* still exists and is the kind of magazine that it is. You've seldom, if ever, seen his name in print, though you have seen him mentioned indirectly in my editorials. He's the one who introduced me to this field by handing me some old issues of *Astounding* that his uncle had bound and kept, and practically insisting that I read the stories at three bookmarks he'd inserted. He's the one who told me—and showed me—that while all kinds of fantastic imaginings can be great fun, there was something extra special about the kind of science fiction found in *Astounding* (and later *Analog*). The fantastic happenings there were ones that could conceivably *actually happen*—a concept that made a huge impression on me at an early age and has occupied a prominent place in my thinking ever since.

So if you value the kind of science fiction that *Analog* tries to publish, and for which it has become a sort of standard bearer—some say its “last bastion”—you owe its continued existence and vigor in considerable measure to my father, Otto Schmidt. Because, for better or worse, today's *Analog* largely reflects my science-fictional values, and he played a large part in shaping those values. On September 28, he'll be 90 years old—which brings us back to why I'm writing this now.

This one's for you, Dad. Happy birthday, and thanks.

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Reader's Department: **IN TIMES TO COME**

Our October issue starts with a bang, with a Bob Eggleton cover for Michael F. Flynn's novella, "Where the Winds Are All Asleep," a unique and literally deep adventure story. You may think our world has been thoroughly explored, and indeed our knowledge of it has been growing by leaps and bounds. Can it still hold surprises? The answer may be right under your feet, and far bigger (and scarier) than you'd guess.

The rest of our diverse grab bag of fiction comes from both old favorites (like Jerry Oltion and Carl Frederick) and some very promising newcomers. And it includes not only an unusually successful alien-viewpoint story, but at least a couple of nods to different aspects of the season (it being, at least nominally, October).

Finally, our fact article, by psychiatrist Nick Kanas, goes beyond the usual technical problems of exploring the universe to another set that may be even thornier: the psychology of space travel.

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Novelette: **EVERGREEN** by Shane Tourtellotte

Superhumans can come in many shapes and sizes, and for many reasons—which can cause unprecedented problems.

Andrew Crawford could tell an adult in a child's body when he saw one.

He passed by this playground most days walking to work. Four kids were using it on this cool June morning, but only one caught his eye. He might have seen her before, but today she had given herself away.

She looked about eight, wearing a blue jumper, white tights, and high-top sneakers. She was swinging and tumbling around on monkey bars, her long brown hair sometimes falling over her face. She jumped down and ran over to a climbing wall, and there it became obvious.

Children always had a jerkiness in their movements, from never fully adjusting to their growing bodies. She, though, ran with a fluidity of motion that real kids never had, that came from living in a body that hadn't grown for ten or twenty years. Closer to twenty, Andrew judged.

She had been “frozen,” her genes manipulated in the womb to halt her physical maturation partway to adulthood. Parents had been doing this, in varying numbers, for three decades now, for a variety of reasons that all cut no ice with Andrew. The worst of it was, she was probably a contemporary of Andrew's, but was still behaving, playing, like the child that she wasn't.

Revulsion uncoiled in the pit of his stomach. “Act your age,” he hissed. She was much too far away to hear.

Andrew quickened his pace past the playground, his little legs not carrying him fast enough to suit him. He did not look back. A few pedestrians gave him curious looks, but he was used to that, and paid no attention.

* * * *

Andrew had a busy morning, retooling a customer survey page on his company's website. He had just drained his second mug of coffee when he spotted Jason McCarthy chatting up one of the women across the office. “Jason, can I see you?” he called, ruing for about the thousandth time not having a projecting, commanding, adult voice.

Jason sauntered over, already looking insufferable. He made an exaggerated lean over Andrew's scaled-down desk. “Morning, Andy. What's up?”

It's Andrew, asshole, Andrew thought, but that running fight would have to wait. “I need that terms-of-use file for the new linked-appliance line.”

“Yeah, it's coming along. I'll have it done for you by the end of the day.”

“No, it has to be *posted* on-site by the end of today, so I need it earlier.”

“Oh. Shoulda told me earlier.”

“I did,” Andrew snapped. “Ms. Albano did, too, so don't pull that.”

“All right, I'll get it done. Don't worry, Andy.”

Jason reached down to tousle Andrew's hair. Andrew slapped at the hand. “Would you quit treating me

like—” He quickly aborted the words *I'm a child*. “—you're doing me a favor, rather than your job?”

The outburst froze a couple of workmates nearby. Jason looked shaken for a second, then broke out in a simper. “Aw, you're so adorable when you get mad.”

Andrew grabbed his empty mug and reared back. “Okay,” Jason quickly said, “I take it back.” He smirked. “You're always adorable, Andy.”

Someone tittered: Andrew couldn't tell who. It was all he could do not to hurl the mug at Jason's retreating head. The onlookers awkwardly drifted away, and Andrew got back to work after only a couple of minutes of steaming.

A quarter-hour later, a PM popped up on his screen. *Come see me*, it read, from Ms. Albano. Andrew locked down his terminal, walked to the webmaster's office door, and entered after a single quick knock.

“Let me guess, Tiffany. You heard about Jason's latest patronizing display, and not only are you going to fire him, but you're letting me personally kick him out the door. Very considerate.”

Tiffany Albano stood up from her computer station, shaking her snowy head. “I'm not looking to fire anybody, Andrew.”

“C'mon, we both know Jason's a douche. Let him fulfill his destiny. Make him a disposable douche.”

Tiffany held her composure. “He's not the only problematic personality in the office.”

“Oh, right, I forgot. It's a problem when I object to being treated like a nose-picking toddler. He's a bigoted asshole, Tiffany. You should have canned him months ago.”

“I'd have to give cause. Whatever you think of him, he does good work, and a personality conflict is not sufficient cause for firing.”

“It should be.” With any decency in the world it would be, he thought, but the Supreme Court in its finite wisdom had ruled that freezing a person into perpetual childhood did not constitute a disability, and didn't trigger the appropriate laws. Now the matter lay in Congress's palsied hands. However quickly they addressed the issue, it wasn't fast enough for Andrew.

“It'd be a lot easier if you let me work from home. Or made Jason work from his.”

Tiffany glanced upward, toward the executive floors. “The company likes having its associates in physical proximity,” she recited. “They find it helps them work together.”

“Yes, it's doing a fabulous job of that,” Andrew said, and Tiffany had the decency to look embarrassed. “I don't know how I'd get along working at a less enlightened company.”

“Well, before you update your resume, I did have business to discuss: a new assignment.”

“Tiffany, I've got a full load already.”

“It'll get you out of the office,” she said. Andrew shut his mouth with a fresh complaint halfway out, and she hid a smile. “You recall the company planning to overhaul our customer service setup, phone and net.”

“Yeah, the AI stuff. Tough to forget a meeting that long.”

“Well, they've picked the woman to set up the new AI system, and it happens she lives here in the city,

very close by. I'd like you to be our liaison with her, help her integrate her programs with what we have now. I was hoping you could meet her this afternoon."

"The terms-of-use files. I can't—"

"I'll get them posted, Andrew. Can you finish up your other work by, say, three?" He nodded. "Good. Here's her card."

She handed Andrew a thin plug-in with print across one face:

Alice McGirt

Advanced Computer Applications

Her address was below, a mere few blocks from the office.

"She'll want a longer session in the next couple days," Tiffany said, "but today will be briefer, more informal. Once you're done there, you can head home."

"Okay," said Andrew. "And while I'm gone, I assume you'll be giving Jason a big piece of your mind."

"Now, now. I wouldn't want to spoil the surprise." But behind that smile, Andrew could see he'd be getting no satisfaction on that score. What else was new?

* * * *

McGirt lived on the third floor of a high-end condominium building. The lobby did a fair imitation of a good hotel, with some brass mixed in with the other gleaming metals and looking like it was thoroughly polished every week. The elevator wanted ID, and after a baffled second he thought to wave the plug-in card past its scanner. That sufficed, and he got taken straight up.

He rechecked the number on the door, rang, and waited. Before long, an older woman opened the door. She was somewhere in her sixties, with a long, tired face, and brown hair that was plainly dyed. "Yes?" she said, a little tentative.

"Alice McGirt?"

"Oh. No, I'm Lauren, her mother. Are you Andrew Crawford?"

"Yes, ma'am."

"Come right in. She'll be with you in a second."

He followed her into the living room, a tasteful display of bright earth tones much better appointed than his own apartment. Andrew liked Lauren right away. Having someone deal squarely with him on sight, without any condescension, was refreshing. Hopefully Alice took after her mother.

"Is that Mr. Crawford?"

The voice stopped Andrew short. It was high, pre-pubescently high, and now light footsteps followed it up. No wonder Lauren wasn't ruffled by him—and no wonder Tiffany had given him this assignment.

Then Alice came into the living room, and Andrew could only stare. She was his apparent age and height, with her mother's face and long brown hair. And though she was out of the jumper and high-tops, he knew her instantly. This was who was revamping their customer service? This—this *girl*?

He took a few seconds to recover, but Alice had been taking her own surprised look. A grin passed across her face. "Mr. Crawford? How do you do? I'm Alice." She was business-like now, but still looked a bit smitten. He had that effect.

Andrew shook the hand she offered. "Good to meet you," he said on auto-pilot, "and good to have you helping us out." *Put the right face on it*, he told himself. He'd get through this meeting. That much he could manage.

* * * *

"It almost knocked me cold, Kaz. She plays on swings and see-saws, still lives with her mommy and daddy, and she's doing our overhaul."

Kazuo Ishii laughed. "You really have the luck sometimes, Andrew. Pass the ketchup."

Andrew slid it over. Kazuo Ishii had discovered this pub a few years back. He commended it to Andrew because it served food in the back booths along with the alcohol, and because the staff didn't hassle them about their apparent age. It had become their weekly dinner venue.

"So is she competent to do the job?" Kazuo asked, squeezing a fresh layer of ketchup onto his fries. "I can't imagine even your company hiring a real infantile for something important."

"I'm not sure yet. She seemed pretty well organized, asked some good questions about how our online help center works. Said she wanted a different perspective on the job the humans do there now."

"She didn't ask those humans?"

"She didn't trust answers from people her system might be replacing. Guess that makes sense." He spied their waitress passing. "Want a second round, Kaz?"

"I'll just have a Coke, but you go ahead."

Andrew got their order in, and drained his beer bottle to make room for the next. "Still, I've got to go back to her home office on Saturday to help her test the program, suggest adjustments. I'm worried about how much of her work she expects me to do. I'm in no mood to hold her hand through this."

"Oh, holding her hand wouldn't be bad. You never know what it might lead to."

Andrew knew this leering tone from Kaz, too well. "I've got no such interest in her."

"That's right. You like older women."

"No, older women like me. There's a difference." Jason's barb about his being adorable doubly stung because it was true. Many adults just couldn't get over him. He was tempted sometimes to blight his looks with outrageous haircuts, piercings, or tattoos, but he never did. It was an advantage in business sometimes to look sweet and angelic, and he was learning to exploit that to the limit.

"Well, sorry I can't take this Alice off your hands, but one lady at a time's enough for me."

Andrew took Kazuo's bragging with accustomed tolerance. "So, you and Luna are still good? Still, um—" He stuffed a crabcake into his mouth, but too late: the subject was already implied.

"Luna's doing fine," Kaz said, but he was frowning. "We still have our special nights, every week or so, but I can tell she's still going through the motions."

Even in frozen bodies like Kazuo's and Luna's, there was some sexual responsiveness, from the trickle of

hormones pre-pubescent bodies produced. "Stronger than they like to admit," Kaz once said of it, "and lots weaker than *I* like to admit." Function was one thing, but desires and urges were another.

"She says she's taking the pills," Kazuo said, "but they aren't helping. She tolerates doing it, may even like it, but it's not all it's supposed to be." By his tone, he was feeling the same way.

Andrew shook his head. "I keep telling you, those people are charlatans. They're selling snake oil, exploiting frozen people who are chasing after a sex life their bodies aren't equipped to handle."

"Well, who else is offering us hope?" Kazuo demanded. "What have I got to lose?"

"Besides your money? Not to mention dignity? Bad enough we suffered one injustice against our bodies: you're letting them compound it."

"I thought I was trying to undo it. Y'know, you're the activist, Andrew. Get the drug companies to do some research, or make the politicians lift that ban on hormone treatments for us."

"They'd never budge. And why don't you petition them?"

"How about *we* do it? Just 'cause you had a bad—okay, sorry, I won't go there."

Andrew's glare faded away. "We wouldn't affect anything. Sexualizing children is radioactive. Yes, I know *we're* not children, but anything that worked on us would probably work on real kids. Hate to say, they've got a point."

"Bull," Kazuo said through a mouthful of cheeseburger. "They're covering their butts, never mind serving the public, the adults—" He jerked a thumb at himself. "—demanding their help. Damn it, I'm an adult man, who deserves an adult sex life." He was getting a little loud. "I have a Constitutional right to make girls scream in the sack, and it's high time they delivered it!"

Andrew started telling Kaz to cool it, before a big man leaned over from the next booth. "Hey! Would you two little pervs knock it off? There are decent people who come here."

Andrew looked up, scowling. "So, what's that got to do with you?"

"I don't gotta take this!"

"Well, there's the door!" Andrew shot back, ignoring Kazuo's warning tugs on his sleeve.

The man was halfway to Andrew when their waitress intervened. "Whoa, whoa," she said, blocking the man's path. "Why don't we just find you a better table, sir, out of earshot?"

"My table's fine," he protested, but he soon let her argue him into taking her offer. He took a last look at Andrew and Kazuo, grimaced, and went up front.

Kazuo blew out a sigh. "You really gotta learn to fight in your weight class, pal." The waitress came back with their drinks, hesitating a bit as she handed Andrew his beer.

Kazuo reached to pull it away. "Maybe you've had enough, Andrew."

Andrew snatched it back, but he took Kaz's hint. "I've been meaning to ask, how's Evergreen coming?"

Kazuo politely made no mention of the sudden change in subject. "Still on schedule. Construction's nearly done; inspections won't be long after. We should be open in three months." He eyed Andrew. "You're still moving in, right?"

"You've got my money. Of course I'm moving in."

"I have it as an investor. I wasn't assuming—"

"Kaz, this complex is everything people should be doing to accommodate us. When you start taking on lessees—when do you, anyway?"

"End of the month, three weeks from today."

"You'll get my deposit that day." Andrew took a swig, and grinned. "Did I ever tell you how lucky I am to have such an enlightened entrepreneur as a friend?"

"Nope, never. So I think you should start now, in cloying detail." They both chuckled. "Or you could show your gratitude by aiming your Alice my way. I changed my mind about—ow!" Andrew's half-strength punch in the shoulder only made him laugh harder.

* * * *

Andrew arrived at the condo early Saturday morning. This time, Mr. McGirt was there to let him in. Timothy McGirt was close to six feet, with retreating hair still holding a few streaks of its original black.

"You're a little early yet," he told Andrew, while flute music played somewhere within. "Have a seat. I'll tell Alice you're here."

Andrew found a living room chair just his, or Alice's, size and sat. Someone stopped the flute music, but it restarted a moment later, just as Timothy reappeared. "Give her ten minutes to finish her practice," he said, "then she'll be with you. Would you like something to drink while you're waiting? Water? Juice?"

"No, thank you." Andrew was left alone, to listen. He was no music expert, but the piece sounded Romantic, maybe Debussy. Or was that Impressionist? No, weren't those painters? What was plainer was that Alice was no dabbler. Maybe not professional quality, but close to it.

Too soon, it ended, and a moment later Alice emerged from a nearby doorway. "Sorry, Mr. Crawford. I always get in an hour of practice, whatever work I'm doing that day. So, shall we get started?"

Andrew stood and followed her, though not to the room she had just left. This one was a real workroom, dominated by a mainframe computer that took up a good quarter of the space and hummed with cooling fans. "Wow," Andrew breathed. "How'd you get that in here?"

"I had to partially disassemble it," Alice said. "I'm in big trouble if I ever have to move." She smiled at her joke. Andrew wondered whether it was a justification for herself.

Alice took a seat at the workstation, both sized for her. Andrew found a mismatched but well-proportioned chair for himself nearby. Alice tapped a keyboard button, then lifted an interface cap off its stand. A light flashed green on the monitor. "Good morning, Dinah," she said.

"Good morning, Alice." Faint lines faded into view on the screen, outlining a mouth that moved as the voice spoke. "Is this the appliance company gentleman with you?"

"Yes, Dinah. His name's Andrew Crawford." She leaned over, still fitting the mesh over her head. "Say hello so she'll recognize you."

"Um, good morning, Dinah."

"Good morning, sir. Do you prefer Mr. Crawford or Andrew? Or some other name?"

His pause was longer this time. "Andrew is fine."

"Very well, Andrew. I'm Dinah, Alice's template AI program. A trained version of me will be handling your telephone and Internet customer service inquiries. I'm ready to receive your specific training."

"All right. We'll start soon." He dropped his voice. "You mentioned your AI Thursday, Alice, but I didn't realize it'd be this, er, all-purpose. You certainly didn't create all this just for us."

"Of course not. I started her my junior year at Purdue. I thought of making her my master's thesis, before I realized the colleges couldn't teach me anything I couldn't teach myself. I bud off copies of Dinah and program them for whatever my clients need."

"By yourself? No partners? No assistants?"

Alice smiled. "You're my assistant today. Shall we put Dinah through her paces?"

"Yeah." Andrew slipped his function-all out of its belt case. Alice went blank with concentration, and a copy of Dinah came up, announcing itself with a slightly different voice. Andrew dialed up a few training scripts he had borrowed from Customer Service, and started his drill.

Common service questions came first, often serious, sometimes clueless. Dinah fielded them without a hitch. He then switched to more unusual questions, and some rougher attitudes. He got snippy with Dinah, then rude, then outright abusive. Dinah had some trouble with those questions. Alice apparently didn't: she never flinched as Andrew laced into her baby.

Andrew paused to make notes. "No offense to Dinah, Alice, but she wouldn't pass a Turing test."

"Really?" Alice finally seemed perturbed. "I programmed her specifically for social interaction. I thought she was cool and polite."

"Exactly. I was loading on stressful situations, and it didn't sound stressed, at all. It's an inhuman reaction: people will pick up on that. Didn't you consider the psychological effect that might have on the humans talking to it?"

"Actually, yes. I thought calmness would be better than pure human authenticity, to avoid feeding the anger."

"Some callers won't like the evident artificiality. Others might actually be scrapping for a fight."

Alice eyed him. "I doubt your company is looking to fill *those* consumer needs. But yes, a different emotional shading might be in order." A control board appeared on her main monitor. Sliders began moving left and right, numerical readouts tumbling up or down, all seemingly from Alice's intent stare. "I also need to judge when an outright confrontation is breaking out," she said with an air of distraction, "so Dinah can transfer a call to a human supervisor. Looks like you can help me find that threshold."

"I can, if you don't mind me abusing Dinah some more."

Alice sighed and wiped her brow. "Not at all, Andrew. It's the only way to find the failure points. Consider yourself a test pilot," she said with a quirky smile, "only you're guaranteed to walk away from your test."

Her metaphor soon felt apt, as a few hours of feigning arguments left Andrew feeling like he'd been in a long dogfight. Alice was little fresher from her brain-interfacing. He finally asked to break for lunch, and pulled a brown bag out of his case.

Alice's face fell. "My mother was making us something for lunch," she said.

"I didn't know." He shrugged. "Sorry. And don't let me stop you."

"That's okay. Maybe we can make dinner out of it instead."

"I ... was hoping to finish the work here and get straight home."

"Oh. I understand. Well, at least come out and eat with us."

Andrew conceded that much, and sat through a tolerable lunch with Alice and her parents. Timothy brought out a chilled spinach salad, serving out a plateful for his daughter before helping himself. Lauren didn't obviously condescend, but Andrew noted how she sat a little closer to Alice, her chair turned a little more her way, than necessary.

They both turned out to be lawyers, little surprise if they had been wealthy enough to have Alice frozen so soon after it became possible. He probed them on the Supreme Court's recent disability ruling, and was irked to find them both on the opposing side. Perhaps they noticed the clash of ideas, because they finished up and excused themselves before either he or Alice was done eating.

He thought of something to ask Alice, both to clear the air and to help him figure her out. "Why haven't I heard of you before?"

Alice scraped the remnants of her salad together. "Why should you have? I'm certainly not famous."

"I try to know who in the city is frozen. There are several hundred of us adults here, about as many others still adolescent or younger. There's strength in numbers."

"You make yourself sound like an activist."

"I am one, at least on the side. We need to band together to assert our rights. There's no counting on full-grown to give us our due."

His jab might have gone home, but Alice gave no sign. "I've never gotten much into politics. Too busy with work, maybe."

Andrew didn't mask his frown. "You're never too busy to stand up for yourself. Or others."

Alice didn't, or couldn't, meet his eyes. "Ready to get back to work?"

"Sure. Um, after I use your bathroom." Alice pointed the way, and over he went.

He returned to the workroom a few minutes later, to find Alice looking over a news story on a personal computer to the side of her main workstation. He got close enough to read over her shoulder, and his guts lurched. A college student had been raped down in Kentucky. The victim was twenty—with a physical age of nine.

Alice gave a start, finally noticing Andrew was there. "Horrible," she whispered.

"Hope they string him up," Andrew said. He looked again, and did a double take. "Who would send you that as an e-mail?" he wondered. "Seems awfully creepy."

"My parents," she answered evenly. "They keep an eye out for violence against ... us." She looked back at him. "Is this the kind of thing you fight against?"

"Yeah. Sometimes. Um, let's get back to work."

Andrew soon forgot that uncomfortable interlude in his persistent drilling of Dinah. He kept throwing out suggestions for improving it, which Alice kept implementing with a consistent grace. When she wasn't tweaking program parameters by brain-interface, she was doing it by voice, speaking in gentle tones to Dinah. Her manner made Andrew uneasy somehow, but he didn't dwell on it.

He lost track of the hours at some point, but Alice stayed more aware. "Maybe we should leave off for today," she said, "and finish this up tomorrow morning."

"Already? It's only—" To Andrew's surprise, it was a few minutes past seven. "If it's all the same, Alice, I'd like to keep going, get this done in one day. Wouldn't you rather not have to work tomorrow?"

"I'll be working tomorrow either way. I have to write whole new code for this version of Dinah, maybe some for the original too. How long do you think you'll need?"

He gave it a second's thought. "We should be done by nine-thirty, ten at the outside." He caught her frown, and couldn't resist some archness. "Am I keeping you up past your bedtime?"

Alice colored, then pulled herself up straight. "Actually, yes. I turn in at nine most nights."

"What? Even on weekends?"

"Our bodies need the rest, whatever day it is. We can't get by on seven or eight hours and function optimally."

"Sure we can. That's why God invented coffee."

Alice turned back to the monitor, shaking her head. "Young bodies aren't invulnerable. Not even ours."

"Well, fine. I'll try not to handle you too roughly and leave you bedridden in one night."

There was a gasp, and it wasn't Alice. Lauren McGirt was in the doorway, looking scandalized. "We're working later than expected, Mother," Alice told her. This relieved Lauren only a little. "Have dinner without me. I'll eat later."

"All right." Lauren slipped out, leaving the door ajar.

Andrew was still looking after her, rudely amused, when Alice tapped him on the shoulder. "Come on, Andrew," she said. "If this is going to take so much time, let's not waste any."

* * * *

Andrew shuffled into his apartment, tossed the briefcase onto his old sofa, and headed straight to the refrigerator. Alice had stuck it out, working till quarter past ten without a complaint. She could work long, and well. That made her that much more baffling.

He kicked a stool across the kitchen floor, over to the microwave. He threw a frozen dinner in to cook, then hopped down and got a beer out of the fridge to hold him for the eight minutes. As he took his first drink, he pondered the curious case of Alice McGirt.

She was more than that infantile he saw in the playground. She was very smart, probably a couple steps ahead of him, and plainly knew her work. Dinah was a real accomplishment, especially if it was as much a solo project as Alice suggested.

Dinah was also, he thought, a clue. It was always a "her" to Alice. While she would tolerate his verbal

abuse of the program, her speech to it was gentle, soothing, as if placating a sensitive child. Was Dinah a surrogate, a Pinocchio for someone who could never have her own children?

That's what her parents had done for her. They'd taken a full life away from her, then worked to keep her timid and fearful in the curtailed life she had left. They clung to her, and she to them—and she seemed glad for it. They kept her, in many ways, a child, and she didn't know how to break free, or even that she should. Were there a way to reverse her freezing, she probably wouldn't take it. It would seem ungrateful.

Andrew had known how to handle his own parents. Alice would need someone's help in breaking her shackles. That someone was going to be him.

The microwave beeped. He hopped onto the stool to retrieve his dinner, nearly burning his hands, and sat down to eat. Before he could get his first bite, a yawn overcame him. Maybe it wasn't her stamina he should have worried about.

Alice needed a friend like him, someone to act as her guide and mentor. He could awaken her consciousness, pull her away from the smothering grip of her parents for her own good. No, for *all* their good, even Timothy and Lauren. Convince Alice that her presence was inhibiting her parents' lives as well as her own, and he would multiply his leverage.

Of course, the time-honored way of getting a young adult to leave the nest was to have her make her own nest with someone else. Andrew wasn't inclined that way with Alice. She looked nice enough—not beautiful, but pleasant—but her personality had that flaw. Which was the point, of course: making her a better person.

Still, if he could cultivate an attraction in her, without any false promises, it might be worth it. He could play that by ear.

All this, of course, required more interaction with her. He was sure that opportunity would come, though. All he'd have to do was wait.

* * * *

He reported the weekend's progress to Tiffany Albano on Monday morning. Albano had heard nothing from Alice, but promised to keep him in the loop. With that, Andrew headed back to his desk, and his usual work.

Jason walked up. Andrew tensed, but “Did things go well with McGirt on Saturday?” was all Jason said.

“They did, thanks,” Andrew replied, still wary.

“Any idea when the project will be done?”

“Not yet. Ms. Albano's waiting to hear.”

“M-hm.” Jason walked three steps away before turning back. “Do you think you'll get another play-date with her?”

Andrew thrust out an arm. “Get out, McCarthy!”

Jason chuckled. “Now, now, Andy, you won't have any friends if you don't play nice.” He bounded away, leaving Andrew to fume.

Nothing much new came from Tiffany. She reported that Alice was working on their program, and would

report in at the appropriate time. Andrew let it go at that, and concentrated on his work, with only fleeting thoughts about Alice. Familiar patterns reasserted themselves, and by Wednesday it felt as though his contacts with Alice had never happened.

So seeing Alice walk into the office that afternoon was a bit of a shock.

She came in with a brisk gait, a satchel slung over one shoulder. She looked like a pupil carrying her backpack, though her business wear certainly wasn't the current elementary school fashion. It did flatter her, though, and his eyes lingered a second longer than intended.

"Andrew." Alice had turned his way, and he snapped out of it. "Could you point me toward—oh, there she is. Thanks anyway."

Tiffany had appeared at her office doorway. Alice walked over, pulling a hard drive out of her satchel that was slightly bigger than a brick and looked like it weighed more, too. "Here's the beta version, Ms. Albano. Didn't care to trust it to an upload. It's yours to test for—" Albano shut the door, and Andrew could hear no more.

Andrew didn't even pretend to work for the next few minutes. He went over various plausible ways he could contrive another meeting with Alice, without making his purpose obvious and scaring her off. The best he could manage was to volunteer to do more testing at her home, whether Tiffany wanted him to or not.

Albano's door opened. "—it upstairs to them right now." Alice stepped out. Andrew prepared a line about how fast she had worked, and rose to intercept her.

Alice made it moot by walking right toward him. "Andrew, I have to get this other copy upstairs to one of your VP's, but I wanted to talk first."

"Um, sure. I..."

"Ms. Albano says she'll be reviewing the program with you, and wants to keep getting your input, now that you have some experience with it. Might I suggest a working dinner tomorrow night, to go over it?"

So much for subtle plans. "That sounds fine, Alice. Would Bouchard's be a good place?"

"Yes ... though it's a little far. Could I ask you to pick me up?"

"Sure." No comments about why she'd need a ride. He didn't want to spoil this now.

"Thanks. I'll make the reservation, say for six?" She nodded, hoisted her satchel, and went on her way.

"I'll see you tomorrow," Andrew said after her. He dropped back into his chair, his head foggy. A couple of co-workers stood nearby, but wisely kept their comments down to whispers. Another was not as reserved.

"Boy, you move fast, Andy," Jason McCarthy said. Andrew was still too muzzy to get immediately irate. "Lemme know what color panties she wears. I'm betting she's partial to the Pooh-bear kind. Still, if you get nailed for statutory, don't say you weren't warned."

That was too far. Andrew sprang up, ready to clobber him, heedless of consequences.

"Mr. McCarthy!"

The shout froze Andrew, before realizing Tiffany wasn't calling him. She stood in her doorway, pointing

right at Jason, then jabbing her thumb over her shoulder. "My office. Now!"

Looking more stunned than Andrew had just been feeling, Jason walked to his fate. The loitering co-workers scattered. Andrew slowly got back to his work, keeping the smile on his lips just half-formed. He wouldn't let himself expect too much out of Jason's trip to the principal's office. That would be the one way to spoil what had become a very good day.

* * * *

"So, why did your parents freeze you?"

Andrew dropped that question just before the entrees arrived, figuring it would buffer his bluntness. He had nudged talk with Alice away from business, managing it earlier and easier than he'd expected. They had talked about their respective colleges, about friends—none of whom, oddly, they had in common—and he let her talk about her family while he ducked the matter.

Alice took a long first taste of her salmon, and Andrew began thinking she was doing her own dodging. "Oh, this is very good. You should try it next time." He made some positive noise, figuring his gambit had failed. It hadn't.

"They had two reasons," Alice said. "Longevity was number one. With my physical development stopped where it was, all the infirmities of old age were going to be spared me. Telomeres, aging effects of sex hormones, all of that. They may have expected me to be immortal—they don't say so now—but they definitely expected I'd have a greatly extended lifespan."

Andrew nodded. "Extended, yes. Greatly, the jury's still out. Aging may not be as genetically coded as we thought, and the hormone thing only goes so far, at least in full-grown. And we haven't provided thorough data yet. The oldest of us is still only, what, thirty?"

"He's thirty," she echoed. "Born exactly a year and a day before I was."

Andrew still wasn't used to that. Guessing her age in the park was one thing; it was another matter to learn from her lips that she was two years his senior. He heard Kazuo's voice inside his head, talking about older women.

"Whether this doubles my lifespan, or does more," Alice continued, "I intend to live my extra years to the fullest. Otherwise, it's a waste of what my parents did for me."

To *you*, *not for you*, sprang to Andrew's mind. "And second?" he asked instead.

"Intelligence. It really excited them, Mom especially, to think of the plasticity and receptivity of a young mind being maintained indefinitely." A smile curled up, dimpling her face. "That theory's turned out easier to confirm."

"Yes," Andrew said, "and a lot scarier to full-grown than a longer life."

The dimples vanished. "How so?"

"You mean you've never noticed their reactions? How much do you get out, Alice?"

She gave him a blank look. "Humor me, Andrew. Pretend I'm as old as I look."

Andrew ignored the veiled irony. "Well, if you're an average adult, having someone who looks seven or so be plainly smarter than you is horrible enough. What's worse is knowing that 'kid' is literally built to absorb new information faster and easier, and is going to become more intelligent and skillful faster than

you can ever hope to, and probably have all those skills longer than you'll be alive. They're intimidated, feeling inferior—rightly so, in lots of cases—and they strike back. Sometimes it's the petty, patronizing slights; sometimes it's the systemic prejudices they throw up, and that we have to tear down brick by brick." He sat back, not too tired to sum it up quick. "Living longer just disturbs them. Being smarter threatens them."

He noticed a couple frowning heads tipping his way. Maybe it was time to throttle back the honesty a little. Getting thrown out of Bouchard's as a disturbance to other diners was no textbook persuasion technique.

Alice chewed pensively, then winced. "What's wrong?" Andrew asked.

"Nothing," she said, quickly rubbing her jaw. "An old—nothing."

Andrew guessed at what something it was. The earliest freezing manipulations hadn't fully tweaked the genes for tooth development, among a few other slips. All the secondary teeth developed, for which there was no room in a child-sized mouth. Alice probably had eight molars extracted during her teens, maybe from inside the gums before they could erupt. She hadn't been sheltered from everything, he had to admit.

Alice had recovered by now. "There's nothing guaranteed about our intelligence and skills. You've got to work on them, no matter who you are. And honestly, Andrew, people haven't reacted that way in my experience. Not generally, at least."

Good she has some general experience. "But you'll admit to specific instances. Count them up some time, Alice. You may find it more general than you think."

"Fine. I can tell you about one general instance. I've been playing with a local chamber orchestra for four years now. I have never had a fellow player show me a bit of envy. If I'm becoming a better musician, it gives them joy, not fear."

"Oh, I'm sure it doesn't threaten your violinists. If your orchestra has another flutist, though—"

"Max semi-retired to make room for me. He still plays piccolo when we need one. I think he's a bigger fan than my parents. And now it's turnabout time," she said, with not too much haste. "Why did *your* parents freeze you, Andrew?"

"Oh, out of pure, selfless enlightenment," Andrew said, the sarcasm heavy. "Mom and Dad were committed Greens—still are, I assume—and took personal responsibility in not overburdening the planet with excess population. Not having any children at all was the optimal choice, but a close second was having a child who, by design, could never himself reproduce. So they got to have their family, and only needed to defer their sacrifice one generation."

Alice nodded slowly. "I know some parents have ecological motivations," she said, "but maybe you're filling in the blanks more harshly than is merited."

"Oh, no, I'm inferring nothing. They were right up front with me about what a wise thing they had done. Told me I should be glad to be so short, too." He took a drink of wine, then held up the glass. "Smaller people consume fewer resources. Unless they're really thirsty." With that, he drained it.

"Please don't order a second," she said. "You are driving."

"I know, I know. You should take advantage of that, and have a couple yourself."

"I don't drink," she said. Andrew wasn't remotely surprised. Any excuse to act like a child, and she took it. "Anyway," she continued, "whatever their mistakes may have been, they're still your parents. I hope you've reconciled with them."

"Don't need to. Haven't seen them since college, except by phone a couple times. They're behind me."

Alice shook her head. "Our parents are never behind us, as long as they're alive. I hope you come to see that before they're gone." He said nothing, and she took a moment to eat and think. "Do your other frozen friends, like Kazuo, feel that way about their parents?"

"Oh, Kazuo's different. He's so active, always moving forward, never back. Not that he's forgotten who he is: far from it. I told you he's in real estate, right?"

"Yes."

Perfect, Andrew thought. He couldn't have had a better way of bringing this up. "Have you heard of Evergreen?"

"Can't say that I have."

"It's a new development he's building in town. One for us, the frozen, built for our needs. Everything sized down to the right proportions, security measures to discourage the usual predators." He let the last item sink in. "You've really never heard of it? He's been advertising, narrow-spotting to local frozen people."

"Well, something may have been sent to me, and gotten strained out. I've got strong filters for all my computers. Very strong." She sipped her water. "This project is all your friend's doing?"

"It's his concept, but not all his money."

"Really. Kazuo sounds like someone worth knowing, worth emulating."

What luck. Andrew had thought it would be hard teasing her out of her parents' clutches and among her own. Instead, she sounded almost eager. He dug out one of Kazuo's plug-in cards for her. "I'll be taking one of the units myself. Who knows, we might be neighbors some day."

"Could be," Alice said, slipping the card into her bag without a look.

The rest of dinner passed quite pleasantly for Andrew. He got to unburden himself a little about the cluelessness of his employers, and listened to some of her work experiences with attention that grew beyond the polite. Alice really was smart, capable, successful. It made him want that much more to break her out of the narrow, juvenile compass of her personal life.

He saw her into his two-seater velomobile to drive her home. The vehicle was cheap compared to cars, efficient on power, and most important, could be adjusted fairly easily for someone his size to drive. It also made him self-conscious around big folk, especially certain co-workers. Alice didn't show a smirk, didn't raise an eyebrow.

Maybe he was connecting with her. But maybe he wasn't the only one.

Her interest in Kazuo was nagging at him. Andrew wanted to be the one raising her consciousness, but Kaz was muscling in, without even being there. Didn't the guy have enough success with women, even if a different kind? Setting Alice straight was Andrew's project. He wanted no accomplice, no competition.

He was probably going to have to kiss Alice.

It might be risky, but he needed some kind of bond with her, something he could build on. Kissing a woman who liked to pretend she was eight wasn't his usual style, but it was the best idea he could think of on the quick drive back to her condo.

He pulled up in the driveway and walked her to the door, making pleasant talk while planning how to make his move. He had never exactly honed this skill.

They stopped at the door. "This wasn't as much a working dinner as we'd planned," he said. "If you want to meet again—" He stopped, cursing himself. You didn't get a woman thinking about work before kissing her. How to retrieve this?

"Oh, we'll definitely get together again." And with the barest hesitation, Alice came forward, threw her arms around his neck, and kissed him full on the lips. Andrew gasped for air as they parted. Alice grinned like a mischievous girl. "Soon. Good night, Andrew."

"Good night," he echoed, the sound lost somewhere in his throat. Alice went inside, literally skipping across the lobby to the elevators. After a moment, Andrew got back into his velo and drove for home.

Two blocks along, he had to pull over and wait for the spinning of his head to run down.

* * * *

Kazuo Ishii spread his arms wide. "So how do you like it, Andrew?"

Andrew looked it over, nodding. The building itself took up three sides of the block, surrounding a courtyard. He counted five stories of windows, though the structure didn't seem that tall. Where the main courtyard path met the sidewalk stood a freshly mounted brick and wood sign. "Evergreen," it read in recessed gold lettering on russet brown, with a modest "MMLVII" incised near the bottom.

"Your landscaping needs work," Andrew giped. Most of the courtyard was churned-up dirt, shimmering with the heat.

"That's all the heavy machinery. We've got months to fix that up. So, ready for the grand tour?"

"Why else would I be here?"

They walked inside, Kazuo greeting a security guard by name in the lobby. He led Andrew to one of the elevators. "Notice anything yet?" he said.

"You mean this?" He pushed the elevator call button that sat just above waist height: his waist, not the average adult's. "Nice. And if we took the stairs, they'd be shorter, right?"

"Uh, no." The door dinged open, and they got in. "Fire codes, for one thing. For another, we ran a couple ergonomic tests, and people our size kept stumbling on short stairs. We're just too used to the standard size in some things."

On the third floor, Kazuo led Andrew down a corridor. Andrew looked up and smiled. The ceiling didn't tower above him nearly as much as usual. "How high is that, Kaz? Two and a quarter meters?"

"Two even. A meter eighty in the doorways." Kazuo flashed him a grin. "Gene-tweaked basketball players need not apply."

"Course not. Those poor bastards would need someplace with round-the-clock nursing service."

Kazuo's grin melted. Genetic alteration's failures were a grisly subject, even for his friend. "Well, here we

go, three-sixteen.” He slid one card into a slot, waved a second past a scanner, and opened the door. Andrew breathed the wave of muggy heat rushing out at him and followed his friend inside. Kazuo tapped a control panel on the wall, set at the perfect height, and lights came on.

Andrew took it all in. The place still smelled faintly of paint and drywall dust, with an undertone of machine oil. “Is this going to be mine?”

“One like it. This is the very first unit completed. Most of the others will have the same dimensions, just with different room orientations. Take a look around.”

One thing Andrew noticed early was how the living and dining rooms had chairs in two sizes. Full-grown guests were anticipated. Seats for smaller people well outnumbered them, though, and the tables were all at three-quarter height. *Time for them to adjust*, Andrew thought, liking how that turnaround felt.

The kitchen was even a better fit. Counters were lower, cabinets and the microwave were placed within unaided reach, and the oven was a shorter model that let him reach the back of the stovetop without straining. It wasn't his company's oven, but that just served them right for not catering to his market.

“No more stools in the kitchen,” Andrew said.

“Not for you, maybe,” said Kazuo. “Tenants who got frozen younger, around five or six, might still need them. We've got a few different building scales at Evergreen, but you can only reduce things so far.”

“Still, it'd be a big improvement for them.” A new thought struck Andrew. He scooted past Kazuo, and found the bathroom. A few seconds later he emerged, pumping his fist.

“Yes! Perfect height, Kaz! For that alone, you should sell this place out.”

Kazuo matched his friend's smile. “We're working on it. Want to see more?”

“Sure, let's check out the bedroom. Seriously, this is great. You have to take pictures, post them on your site.”

“The photographer was in yesterday. We'll have the walk-through posted by Monday. I have some business smarts, remember.”

Andrew was ahead of him, in the main bedroom. The bed was lower to the floor, but otherwise the same as any adult's bed. Andrew hopped on, laying himself out on the comforter. Andrew despised futons, and disliked adult-height stuff on principle. You could get beds this low, but usually at extortionate custom prices, a problem Kazuo's bulk ordering for Evergreen alleviated, and not only for beds.

When he sat up, he looked more thoughtful. “Kaz, could you send me copies of those walk-through photos? I want to show them to a potential customer, one who might not be checking Evergreen's page.”

Kazuo leaned into the doorframe. “Would this potential customer happen to be a certain computer prodigy who sometimes goes swinging, though not in the interesting sense?”

“Umm, yes, it's Alice McGirt,” Andrew said, aiming for nonchalance. “I've told her about Evergreen a couple times, in, er, the few times we've met since she started working with us.”

“Met a few times. Uh-huh. Doing what?”

“Consulting. On her work.”

“Oh. Consulting.” Kazuo strolled over. “I'm a connoisseur of double entendres, but that one's new to

me."

Andrew's hands clenched. "Kazuo! You're acting like McCarthy did before he got transferred to home officing."

"And you're acting like I'm not your friend, and like I've got no sense. That Thursday dinner you cancelled a month ago didn't sound like it was for strictly business." He sat beside Andrew on the bed. "So how about letting me in on the real story?"

Andrew looked away, sulking, as long as he could bear to. It wasn't long. "I had it all planned," he said, and started spilling his guts about his intent to reform Alice. "And before I could figure out how to lay that kiss on her, she beat me to it." A wolfish grin came over Kazuo, but he hid it when Andrew looked his way. "And I felt like ... I don't know. I've been seeing her since then, and I've still got my plan, but ... I also know I really feel something for her."

Kazuo turned sober, banishing the merry lecher. "How serious is this?"

"Well, we've gotten to making out a couple times—kid stuff, really."

"That's not quite what I meant."

"Yeah." Andrew's head drooped. "I'm not using the 'L' word here, and God knows I still get annoyed at these ways she doesn't act quite adult ... but I just want to be around her. Ugh!" he cried, putting his face in his hands. "It was never like this in college."

Kazuo needed no clarification. Andrew had had a couple of full-grown girlfriends in college. The young women had treated Andrew as an exotic ornament, a symbol of their broad-minded bona fides, and one with no undertone of sexual danger. They did gladly accept, even encourage, the improvised efforts Andrew could make for them erotically, until they grew jaded. Andrew had confessed these warped and demeaning relationships to Kazuo years ago, and it had been the last Andrew had dabbled in romantic matters. Until now.

"I don't know how to go about this," Andrew said. "I'm searching for something in a pitch-black room. Every move I make, I'm afraid I'll crash into something."

"All right. First, let's figure out what it is you're looking for. Are you trying to rescue Alice, or to have a real relationship with her?"

Andrew took a long time answering. "I want both. I'm trying to do both. But if I have to choose ... it's more important to make her a better person."

Kazuo smiled sadly. "Gotcha. One cynical game plan coming up. First off, women like it when you listen to them."

"I manage that fine. Can't say I'm always interested in what she's saying."

"That's okay, for your purposes. Another way to get closer to her is shared interests, and I mean beyond better customer service."

"M-hm. I can do a couple things in that department. But how does that pull her out of the ranks of the infantile, Kaz?"

"Reciprocity. You can start bringing her into a couple of your interests. Pick those right, and you're getting somewhere." Andrew digested that one. "The next one will be tougher in your position."

"What is it?"

"Honesty," Kazuo said. "Openness. Women, at least in my experience, always know when you're holding something back. It may be only a subconscious sense, but it'll color the whole relationship, leave them dissatisfied. And it'll always boomerang on you eventually."

"I can deal with that, when the time comes." Andrew caught Kazuo's dubious look. "Besides, I'm being open with Alice now, on certain things. Emotional things." His mouth twisted. "Maybe too honest about some stuff. I'll have to watch that."

"Fine. Now that you've gotten the lesson, here comes the lecture. Just how is what you're doing with Alice different from what those couple of girls did with you in college?"

Andrew glared at Kazuo, his cheeks coloring. "It *is* different. I have Alice's interests at heart, the interests of all of us. She shouldn't live such a degraded life. We shouldn't be stigmatized as worthy of being treated like children, the way she treats herself—at least sometimes."

"Is Alice going to see it that way?"

"Alice isn't going to know about it. Unless you ... Kazuo—"

Kazuo lifted his hands. "I won't go and tell her anything, Andrew. But if she comes and asks me, unsolicited, that might be a different matter. So, are you sure you want her coming to ask me about Evergreen now?"

Andrew gave Kazuo a friendly shake on the shoulder. "Would you stop worrying? It's under control. If you can handle building this whole complex, I think I can handle one semi-mature woman."

"Right." Kazuo stood up from the bed. "Lemme show you my office downstairs now."

"What's there?"

Kazuo ticked off fingers. "Air-conditioning; beer in the mini-fridge. Yeah, thought you'd like that." Andrew sprang off the bed, and they headed for the door. "God knows I could use one too."

* * * *

"So did you enjoy it?"

Andrew kept hold of Alice's hand as they moved slowly up the theater aisle, and considered her question. He had a serious problem with the casting, but ... "Yeah. Yeah, I did. Funny, I usually think public theaters do better with spectacles, oughta leave romantic movies like that for home release."

"They had to run this in theaters. It's a remake of a classic."

"That movie's over sixty years old. It—" He was doing it again, indulging his argumentative side. He had to keep catching himself, but he did stop. "I won't quibble. Good movie, Alice. Thanks."

"You're welcome." She met him halfway for a kiss. A snort and grumble from behind interrupted them. Some tall man pushed by them, shooting back a censorious look as he passed. Andrew felt like starting up a tongue-lashing, but forbearance won out one more time, and he just pulled Alice a little closer.

"Heh. Little freaks."

That voice was farther behind, and younger. Nasty laughs followed it. A clutch of teenagers had been talking throughout the movie, never quite disruptive enough to get ejected. They had new targets.

"Go on, Bill. Do it."

Andrew started to turn back, ready to ask exactly what they thought they were going to do to him. Alice's sharp tug on his hand stopped him. "Let's go," she whispered. "Out of here."

He relented, hanging on to her through the lobby and into daylight on the sidewalk. He began to relax, until he heard that laugh again, not as close, but still threatening. "Wish we'd taken my velomobile instead of walking," he said.

"Never mind. Keep moving."

They kept up a hurried pace for two blocks, until Andrew took a look back and saw the kids were nowhere near them. "It's okay," he told Alice. "They gave up on us."

He felt Alice's hand tremble in his. "Why do people have to be that way to others? I've never understood."

Andrew felt a lecture welling up inside him. He diverted it into a pointed joke. "They're just ticked that child admission prices got eliminated when people like us started confusing cashiers."

Alice gave him a jaundiced look. "They're too old to have gotten child admissions."

"Yeah, but they were still that age when the admissions got changed. Some people hang onto grudges forever."

Alice rolled her eyes. "Andrew, sometimes I don't know when you're kidding or being serious."

"Who says it's one at a time?" He started to cross the street, but stopped when Alice didn't follow. "We're heading to my place, right?"

"Mine," Alice said. "Those last adjustments with Dinah, remember?" Andrew walked back to the corner. "And yes, I know why you wanted me at your place."

"If I had a real car, we could go park in that," he said. "Maybe it's time I traded in my velo."

Alice gave him a playful swat. "Stop being silly. Besides, I can always borrow my parents' car."

"Wait, you don't drive."

"Occasional business trips. It's awkward, but I manage." Alice took his hand again. "Anyway, let's talk about something else."

They discussed the movie for a few blocks. Alice gushed over a couple of the actors, notably the one playing the widower's young son: Hector Price was frozen, twenty-three years old in real life. Andrew itched to tee off, but merely said Price had done a good job, and there was no telling he wasn't really seven. He even walked like a kid, but Andrew didn't bring that up.

They walked past the local playground, across the street and rather empty for a Saturday afternoon. Alice gave Andrew's hand a tug. "Wanna go over?"

Andrew froze up, barely able to get out a "Huh?"

"To the playground. Get a little exercise, have a little fun. C'mon."

"No!" He pulled his hand out of hers, hard. "I'd ... really rather not."

Alice obviously was disappointed, but didn't push. "All right," she said, and they resumed their walk. "Personally, I can't see how people can tolerate walking on treadmills or lifting weights for their exercise. It's awfully dull."

Andrew could contain his aversion no more. "So you enjoy monkeying around on a kids' playground?"

Alice regarded him for a moment. "Yes," she finally said.

Andrew turned away, shaking his head. "I couldn't do that. It'd be like—like Hector Price."

"What? How?"

"He's an adult, but he keeps playing the child. It gets him some fame and fortune, but it costs him his development as an actor. He's being stereotyped into forever playing the juvenile. He could try to play frozen adults instead, but of course there aren't the roles. Maybe the screenwriters think if they ignore us, we'll go away."

"That's not so," Alice said. "Frozen people get portrayed."

"In low-budget, low-profile, direct-to-home stuff. The big money for Price is in playing kids, so he takes the easy way. And someday, when he wants adult roles, it'll be too late. Everyone will expect him to be the kid—and worse, by then he'll be so used to being a boy, he won't have the skills to be a man."

Alice was looking at the ground. "You might have something," she allowed, "but maybe he's just exploiting an opportunity that's never been there before."

Andrew frowned. "How's that?"

"Well, before now, you could only play a child for so long before nature made it impossible. Now, an actor can hone his talent in that niche for years, decades, become better at portraying a child than a Temple, an Osment, or a Chen ever could. And remember, he's got a young, plastic brain. If he ever wants to shift into other roles, it'll be easier for him than most."

"I have my doubts," Andrew said. "Would you consider playing one composer's music sufficient practice to keep you proficient in playing all the others?"

"Well, music is ... it's not acting. Oh, I did tell you about the concert, right?"

"What concert?" Andrew said, forgetting the change of subject.

"My orchestra's performing at Wilson Hall this week. Thursday, seven-thirty. Interested?"

"Of course!" He didn't have to suppress or fake anything here. This was one of Alice's interests he was ready to share. "Will I have to go rent a tuxedo?"

Alice laughed. "You can get away with a little less."

"Good. They never have my size anyway."

* * * *

He had to cancel his weekly dinner with Kazuo to make time for the recital. Kaz was more amused than put out. "I guess that's one of my suggestions taken," he said over the function-all, smiling wryly. "Well, enjoy yourself, or is this music gonna be too serious to enjoy?"

"I'll let you know. And I'll make it up to you for canceling."

"How about Friday dinner instead? Or will you be busy with Alice again?"

"I don't know yet, actually. And don't look at me that way. There are so many reasons why the dirty old man routine doesn't work for you." They laughed.

The workweek skimmed by fast, leading up to Thursday. Andrew dreaded work far less, now that Jason McCarthy was reduced to a distant presence, doing his jobs without extraneous comments. Co-workers still in the office had skirted Andrew for a couple weeks after that final incident, but things had since swung, not back to normal, but to an even more relaxed and comfortable level. He'd have to put the fear of firing into people more often—except that no one was getting in his hair and making him wish that on them.

Tiffany Albano came to his desk on Wednesday with an extra task: adjusting the webpages to reflect the final version of Alice's customer assistance AI. Andrew accepted the work gladly, which made Tiffany look at him oddly. "You seem pretty happy about it."

"Sure. It's good to get this finally nailed down, and it'll only take a few hours."

"I see." She inched in. "Will you miss your time working with Alice?"

"Huh? I'll see her plenty, even without work. We've ... become friends."

"Good. I'd rather hoped you would," Tiffany said, and walked away.

Andrew watched her go, wondering what he should make of that. Had she thought he needed a friend, and that only a frozen one would do? Had she been aiming at something more? Part of him thought he should resent her presumption. More of him thought he should thank her. Silence was his compromise, and he got working.

Thursday evening, it was a shower and a quick bite at home, then on with his best coat and tie and out to Wilson Hall. It was half-full when he arrived, and he got to his middle-row seat with no problem. He glanced over the single-sheet program, glad to recognize all the composers. The performers were listed on the reverse, and his eyes lingered over one name. Tuning sounds rose and fell behind the stage curtain, and he strained to hear the flute.

He noticed Alice's parents in the aisle just as they passed, and caught their attention with a wave. He still didn't approve of the hold they had on their daughter, but at that moment it seemed no excuse not to be civil, even friendly. They exchanged pleasant words before the McGirts headed down to their second-row seats. *Could've been your row*, Andrew told himself, *if you'd found out about this earlier.*

The curtain parted to applause. Andrew craned his head until he spotted her, almost dead center. She was in a long dress of dark purple, easily the smallest figure on stage. He tried to catch her eye, but she was intent on her instrument and the screen on her music stand.

The conductor gave his introduction, and led the orchestra into some Brahms. Andrew liked the piece, but there wasn't that much for the flute to do. The next piece was Vivaldi, and Alice didn't even take part. Andrew didn't fret: her turn was coming.

Next, as the flyer promised, was Mozart's Concerto for Flute and Orchestra Number Two. The conductor singled out "our rising star" as the featured performer, and Andrew couldn't help a grin. That grin began to waver as the first movement began to unfold, without a hint of the flute. What was going on?

Then Alice began to play, and carried Andrew aloft with her.

It reminded him of a birdsong, or a bird in flight: sometimes the wings fluttering too fast to see, sometimes soaring effortlessly. Was that Mozart's doing, or Alice's? A few minutes more of it, and he forgot about Mozart. It was all Alice, and as beautiful as anything he'd ever heard.

He needed the more sedate second movement to catch his breath and start digesting the performance. By the return to allegro in the third movement, he was watching as well as listening. Her music swooped and fluttered again, but just as impressive was how fast and precisely her fingers moved across a flute made for hands twice the size of hers. A few more decades—no, a *century* of practice, with reflexes undiminished, and how accomplished would she be? A good question, but one he couldn't care about long, when the now was so good.

Andrew let himself fly with her until the rest of the players carried the concerto to its end. He could barely join the applause, still feeling like he was floating in midair. It took the rest of the recital, through the von Weber and Mendelssohn, for him to settle back to earth.

He had told Kazuo he wasn't using the “L” word. Now, he wondered.

He was up with the rest of the audience, applauding at the end—and couldn't see Alice over the bodies in front of him. He stretched, stood tiptoe, but caught only a flash of purple before the curtain rang down. He would have muttered curses at them, but didn't have it in him right then.

Andrew made his way backstage to find Alice. He found her with her parents, and hung back, giving polite compliments to other musicians who came by. Alice spied him after a moment, and excused herself.

Andrew would have kissed her, had not her parents been so nearby. Instead, he took both her hands in his. “Alice, I—” He laughed at himself for being so tongue-tied. “That was the best music I've ever heard.”

Alice looked down. “You must not listen to much classical,” she said.

“Maybe not,” he allowed, giving her hands a squeeze, “but I know what I like.”

Alice looked back up at him, and he saw the blush. It should have looked childish on her, but didn't. He felt the urge to kiss her again.

No, he thought. *More*.

He leaned close to her ear. “Can you come home with me for a while?” he whispered.

A giggle caught in her throat, and she reddened more. “A little while,” she answered. “Give me a moment.” She disengaged and walked back to her parents. Andrew turned away, granting a bit of privacy.

What was he planning? To deepen their relationship, or take a step in turning Alice the child into Alice the woman? He tried to ignore that question. He could serve both ends at once, couldn't he?

Alice came back, her father's disapproving gaze following her. “Let's go,” she said, linking an arm with his. “I told them to expect me home in an hour.”

“Okay.” *Well, maybe a little longer...*

* * * *

The lights in Andrew's living room were down to their faintest glow. He could barely see Alice's face in front of him, in the brief moments when he opened his eyes. Much of her was lost in darkness, but that was no problem. He knew where everything was.

"Andrew, stop that."

Her hand pulled his back, settling it on her knee again. Andrew was amused. Okay, he could play this game. He concentrated on their more standard caresses for a few minutes. Then, with his lips working at her throat, he made his move again.

This time she jerked his hand back. "No, Andrew," she said firmly.

"Come on, Alice." He shifted legs, and resumed the advance. "What's the harm?"

"Stop it!" She slapped his arm away.

The tone stung as much as the blow. "Alice, what's your problem?"

"What's yours?" She pushed herself away and stood up. He got up to follow, but heard her move away, then bang against something. "Ow! Lights up!" The lights brightened, showing Alice barefoot and trying to straighten her rumpled dress. She gave him a hurt look. "Why would you do that, Andrew?"

Andrew let himself fall back onto the couch. "I thought it was the right time between us," he said. "Time to do what adults do when—"

"We're not that kind of adult," Alice said. "We're not going to consummate things that way."

"C'mon, even if I wasn't fully responsive, some good heavy petting—"

"No, stop it! Stop ... trying to be something you aren't!"

Andrew felt like something had scooped out his insides. When the shock faded, anger rushed into the void. "Look who's talking! You've got no place accusing me, you and your ilk."

Alice didn't look as wounded as he'd hoped. "Leave 'my ilk' out of it. What am *I* trying to be that I'm not?"

"A little girl!" Andrew sprang up. "The perfect little Goody Two-Shoes, who doesn't drink, doesn't swear, doesn't have an impure thought, doesn't go out after dark without letting Mommy and Daddy know, and doesn't ever, ever have to grow up!"

Alice gaped. "Is that how you really think of me? Of everyone who's frozen? That if they don't follow your example in all the details, they're really just children?" She shook her head hard. "Being an adult is about being responsible for yourself, your decisions. I'm satisfied with the decisions I've made for my life—and I'm comfortable within my skin, Andrew, even if you aren't."

Now it was Andrew's turn to goggle. "What's that supposed to mean? I'm great with who I am!"

"You're great with half of who you are. You go to exaggerated lengths to prove you're a regular grown-up, including loathing the part of yourself that isn't." She sniffed, and wiped at an eye. "Would it really so unbearably humiliate you to let go of your resentments for a while, and let yourself experience the simple pleasures of being eight years old?"

"I don't want infantile pleasures, Alice. I want to take you to bed the way a regular man would, to *want* you the way a man does." His hand reached for her, but she flinched back. "But since our parents were

so much wiser than us, we get a shadow of the real thing, or less. But even that frustration beats—" He threw up his hands. "—teeter-totters and puppet shows!"

"Fine. Being frozen denied you some things, but you respond by scorning the things it offers in return. Extended life: doesn't that mean anything to you?"

"Being half a man for twice as long is no bargain to me. I guess you're different."

"I guess I am. A longer life, a youthful body, an agile brain: I think those things compensate, but you turn your back on them for nothing."

"Because I never had a choice. Because this was imposed on me before I was born, and for all time, no matter what I might want. If I resent that, that's my right."

"But it's so pointless," she lamented. "I've tried to show you what you've been rejecting, to unbend your—"

"Hold it!" Andrew looked long and hard at her, silently stoking his indignation. Alice began to draw back. "Showing me what I'm missing, huh? Is that what this relationship has been to you? Is that what you were doing all along?"

"No." She began stammering. "I mean, sometimes, partly, because—"

"Because you believed you could reform me," he said, ominously softly. "Because you thought I needed reforming, whether I thought so or not." He snorted a laugh. "Not like you're the first person to make me some kind of reclamation project. But I didn't need it then, and I don't need it now. Damn it, I'm—I'm sick of people pretending to do things for my own good, when it's really for their own purposes!"

"Andrew, that's unfair. Or, or maybe it is fair, but it's not—"

Andrew's voice turned back to quiet ice. "I think you should leave now, Alice. Go home to Mommy and Daddy." She choked off a sob, and a tear trickled from her eye. "And don't cry," he added in a cruel hiss.

His last words roused something within Alice. She straightened, and fought down the tears. "No," she rasped. "No, I wouldn't dream of discomforting you that way." She walked back to the couch, picking up her shoes tumbled to one side. "You've got your worldview, and you're welcome to it." She looked around, growing frustrated. "Stockings. Where'd they go?"

"Hang on. They've gotta be around. I'll find—"

"No, forget it," she said, jamming on her shoes. "Doesn't matter." She got halfway to the door, and turned, her face burning red. "I'm sorry I was such a disappointment to you, Andrew. Good-bye."

Andrew stared dumbly after her for a second. "Wait, let me drive—" The slamming door cut him off like a slap in the face. "Fine!" he shouted.

He stormed into the kitchen, hoisted a half-full bottle of vodka out of its cabinet, and grabbed a nearby glass. To think he'd been taken in by that—that *girl* so easily. All this time he thought Alice genuinely cared for him, she was really treating him like some hapless, deluded soul, needing her care and instruction to make a better person of him. What arrogance! What—

With the glass halfway to his lips, Andrew finally acknowledged a certain parallel.

He slapped the glass down on the countertop, splashing his fingers. It wasn't the same thing, of course, not by a long stretch. He wanted Alice to be a better person. All Alice wanted was, what? Another playmate? No, he didn't really believe that. What, then? To make him happy? He *was* happy—and if he wasn't, it was because he saw how society treated him and his kind. The frozen had to hang together, watch out for each other, care about each other.

And how had he just cared about Alice?

He found himself staring into the glass, and the distorted self-image in the vodka. He pushed the glass down the counter and left the kitchen. Once he got his clothes in order and found his keys, he dashed out of the apartment, heading to the garage.

Andrew had no idea what to say to Alice once he caught up with her. Whatever it took to make her get inside, let him drive her home safe. He'd probably even tell her he was sorry: he was going to have to admit that eventually.

He drove his velomobile toward her condo, looking as far down the roads as he could without plowing into the light traffic. The few people he saw walking were all full-sizes. He turned onto a side street, and a hundred meters down the sidewalk he saw someone else.

Running. And being chased down. And tackled.

Andrew floored it as the plainly bigger assailant threw a hard punch. Fending off blows, he dragged his victim—and now there was no doubt who—toward a nearby alleyway.

But Andrew would get there first. Turning and braking, he brought his velo to a hard stop at the alley's entrance, a second before the attacker would have gotten inside. Andrew groped under his seat for the tire iron he kept there, then swung the door open with a yell, flourishing his weapon.

It worked. The attacker didn't see another kid: he saw his easy prey turning into a fight, and bolted. Alice managed to cuff him as he turned to run. Then she looked at Andrew, panted twice, and slumped to the sidewalk.

Andrew dropped the tire iron and knelt by her. Her dress was torn at the shoulder, one leg was scraped up, and a bruise was darkening on her cheek. Her eyes were staring at nothing.

"Alice, are you all right? Alice? He's gone, Alice. Where did he hurt you?"

She blinked, and her head turned a little his way. "Take me home," she droned.

"You sure? Maybe a hospital should look—"

Her voice rose toward a shriek. "Home!"

Andrew bundled her into the back seat, and drove as fast as he dared. He scanned the streets once or twice for a fleeing figure, hoping for the chance to run him over. He babbled to Alice, saying it'd just be a couple minutes. He hadn't the nerve to say more.

He walked her into the lobby, supporting her on one arm. At the elevator bank, she fished her ID card out of a pocket and swiped it. "He didn't search my pockets," she said, still toneless. "He wasn't robbing me. He wasn't going to rob me."

"He didn't get to do anything else," Andrew said. The doors opened, and he got her inside the car. She gave the voice interface her floor, and hung onto him hard on the way up.

Four steps from her door, her feet slowed. "You—you came after me."

Andrew said nothing. Only when Alice had her door open could he reply. "I'm sorry I had to."

Alice's look held all the trauma of that night. She slipped through the door, not opening it wide. Inside, she gave a trembling "Mom."

"Alice! What ha—"

The door shut in Andrew's face. He made as to knock and follow her in, but he heard the rising adult voices inside. His nerve failed, and he was back in the elevator almost before he could think. The miseries of the last half hour crowded upon him, and his only consolation was that he had a big drink poured and ready when he got home.

* * * *

Andrew awoke with a hangover, or what felt like one. He had slept, in fits and starts, but felt as bad as he had last night. He called in sick to work, then threw himself back down on the bed, hoping to drift off. Ten minutes later he gave up, put on a robe, and went to the kitchen for coffee and something resembling breakfast.

The doorbell gave him a start. He went to the door, standing on his toes to look through the peephole, and saw Timothy McGirt there. Andrew opened right up, forgetting any enmity. "Mr. McGirt, how's Alice?"

Timothy stalked in, backing Andrew up. "She's got nothing worse than bruises and scrapes, physically. Emotionally, it's too soon to judge the damage you did."

Andrew stopped his retreat. "Me!?"

"You, Crawford, and you won't be doing it again. You're not going to see Alice any more."

"First off, take a step back. Overbearing me with your height doesn't impress me, so pull the bully act on someone else."

"Don't you play the poor little victim with me," Timothy said. "I would have decked you already, if I didn't have to bend over to do it."

"I can always stand on a chair. Anyway, how about saving some of your venom for the guy who actually attacked her?"

"No, mister, you don't get off that easily. Lauren and I have been trying for years to shield Alice from something like this."

"Yes, I've noticed that," Andrew broke in. "Nice racket you had, keeping her in constant fear."

"And now she's experienced some of what she had a right to fear. Do you—" He grunted, fighting off pain. "You saw her last night. Do you really think she's better off now?"

Andrew's mouth stood agape. He had no good answer.

Timothy's voice began rising. "Do you really think she should expose herself to the world like anyone else? Ordinary predators are bad enough, but now we've got the perverts, multiplying like some disease. All these pushes to awaken the libidos of the frozen, the erosion of taboos against sexualizing the child-like, and they come flooding in, ready to use ... to abuse..."

The anguish came over him again. Andrew exploited the chance. "Then how could you have ever frozen her," he demanded, "knowing what you'd be putting her through?"

Timothy looked stunned. "We *didn't* know. We thought the world would be different for her. It's so terrible how people have reacted." He recovered, and glared down at Andrew. "But you? One of her own? How heartless could you be, sending her out into the night that way? I know: the fight. I heard. Alice won't say why that fight brewed up, but I've got an idea."

Andrew saw Timothy bunching up a fist. "That's between us. And I'll say it again: you can't protect her forever. She's got to face the world some day."

"I know that! And she has to know why she needs to protect herself, from muggers, from rapists, from *you!*"

He was drawing his arm back, and Andrew was wondering whether to fight back or play the martyr, when his function-all rang from the living room. Andrew went to get it, not quite at a run. "No, this isn't over yet!" Timothy said as he pursued.

Andrew picked up the function-all, read the ID on the screen, and froze in place. Before Timothy could catch him, he answered it. "Alice! Alice, I'm—"

"Is my father there?"

Andrew looked up at Timothy's fuming face. "Matter of fact, he is."

"Let me talk to him," she said, as clipped as before.

With an ironic smile, Andrew offered the device. "It's for you."

Timothy snatched it away, his glare unaltered. "Alice, what is it? What's wrong?" Andrew couldn't make out Alice's end, and he wasn't going to get any closer to eavesdrop. He stayed still, following Timothy's side of the conversation.

"Except that he threw you out to walk the streets alone at night."

"Not before you got beaten, almost—"

"No, you're not all right now, Alice! Wait, hold on."

Timothy marched through Andrew's apartment, finding the bathroom and going inside. Andrew arrived behind in time to hear the door lock. He reared back to pound on the door, then decided to listen. He caught snatches, when Timothy's voice rose.

"—just luck that you weren't hurt worse—"

"—move somewhere safer."

"—can't talk this way. I'll—"

Andrew backed away from the door before Timothy opened it. He stormed straight out of the apartment, slamming the door just as Andrew exclaimed "Hey, my function-all!" He went into the bathroom and found it there, screen-down in the sink.

He wiped it down and called Alice's number, but got only her veemail. He switched off without leaving a message, and briefly thought of chasing her father down to rebuke him. But no, he had an obligation to

take care of. Timothy could wait: he'd still be a jerk later.

It had been years since Andrew had been inside a police station, but if anyone there remembered running him in from that protest, they said nothing. He filled out a report on the attack, giving the best description of the attacker he could piece together from memory. Then the officers began with their questions.

No, he couldn't describe the attacker better. It was dark, and he hadn't thought to bring his function-all to take pictures. Yes, she's age twenty-nine, and frozen like him. And precisely what the hell business is it of yours what our "relationship" is?

His righteous offense was refreshing. He could finally vent some anger, make someone else uncomfortable. The officers did some gratifying cringing, and he let them off the hook before they thought about returning the indignation. He felt better, for a few minutes.

Back at home, he steeled himself to call Kazuo, and felt relief when he got his veemail. "Kazuo, it's Andrew. I can't go out to dinner tonight. There was ... trouble with Alice. The recital was great, but after ... maybe I should tell you about it another time. I really screwed this one up, Kaz. I—oh, hell."

He confessed everything, trying to purge himself of the poisons inside him. He ended up feeling as he usually did after a bout of vomiting. "Anyway, I'd be no fun at dinner tonight, so I'll spare you. Sorry to fill up your veemail file with all this. Talk to you later: maybe tomorrow, maybe ... well, bye."

He stared a moment at his function-all, wishing he could take that outburst back, then put the device away in his bedroom. He didn't want it near him, to be tempted into a similar performance. He got to the threshold, then ran back and called Alice again, but cut off before her end could even ring.

He spent the afternoon in a fugue. He nibbled a bit of lunch, watched a couple of programs, even did a bit of work when a guilty mood struck him. He never even looked at his alcohol cabinet, or touched the beer in the fridge. He wanted to save himself for a proper binge in the evening, so he could pass out and sleep through the night.

Just before six, as the call of beer began to sing in his ears, his doorbell rang. He was halfway to the door before thinking to dread who it might be. He had almost decided not to be at home when the knock and the voice came. "Andrew, you home?"

Andrew opened up. "Kazuo? What are you—"

"Didn't eat already, did you?" Kazuo flourished his big takeout bag from Rajdhani's.

"Um, no, but..." Kazuo was past him before he could say he wasn't hungry. Then the first whiff caught him. "Didn't you get my message?"

"Sure. You didn't want to go out, so I brought dinner in." Kazuo began unpacking the bag. "Are you going to stay miserable on principle, or are you going to eat?"

Andrew liked his principles, but he liked Indian better. He fetched plates and silverware. "What can I get you to drink?"

"I bought mango lassis. One's for you, unless you're going for something stronger."

Andrew paused by the refrigerator, but the beer had quit singing by now. "I'll take it." He set up the tableware and pulled over the lamb saagwala. "This is really great, Kaz. You didn't have to do this."

Kazuo's smile weakened. "Well, I kinda did, to start setting matters right. Naan, basmati, or saffron

rice?"

"Basmati, of course. Give it. And set what right?"

Kazuo had trouble looking him in the eye. "My advice on women. I really messed that up, Andrew. I played along with your whole cynical take on things. That might've been okay for you, but I should have been thinking about Alice's side."

Andrew plopped down a last scoop of rice. "As I recall, you followed that advice with a serious plea for me to treat Alice differently. I don't see how it's your fault."

"Because I didn't start and end with that lecture. I was giving you two messages."

"And who picked the wrong one to listen to? Besides, you never told me to, well, go for broke the way I did."

Kazuo grimaced. "Given that I was reeling off 'how to score with women' pointers, it was kinda implicit." He leaned his head on his hand. "I wish I knew how to apologize to Alice."

Andrew hiked an eyebrow. "I thought that was my problem." He chewed his first mouthful. "Are you gonna eat, or do I have to start cheering *you* up?"

Kazuo gave in and started on his chicken vindaloo. "Serious, though, I'll go to Alice, take as much heat as you'd like, if that'll help patch things up."

"Just eat, Kaz. We'll save the miracle working for a little later."

* * * *

He awoke Saturday morning feeling almost as bad as the morning before. He got halfway through his first cup of coffee before getting the urge to call Alice again. A second later, he recalled his luck the last time he called, after Kazuo left the previous night. No veemail; not even a ring tone on her end. Her phone was shut off. He was shut out.

Andrew got through coffee and a slice of toast before his stomach rebelled and he abandoned breakfast. He got cleaned up in the bathroom, then stood staring at nothing for a few minutes, wondering what to do with the day. Each time his eyes drifted toward the mirror, he turned them violently away. He wouldn't say so to Kazuo, especially after last night, but his friend's gesture hadn't helped that much.

Finally he walked out of the apartment, into a warm, overcast morning that felt like rain. His intent, as far as he had one, was to walk to Alice's condo and force some kind of resolution there. It would probably end up a worse debacle than yesterday, but he had no better ideas.

Somewhere along the way, he realized his feet had carried him off the path to Alice's. He was about to change course, when he heard a child's playful shout nearby. It was from the neighborhood park, right across the street, almost empty from the early hour and threat of rain.

Andrew stared that way for a moment, then headed over. The few kids and one adult paid him no attention as he walked across the grass and onto the packed dirt of the playground. Finding an empty swing set, he sat leadenly in one of them, motionless. When he began pumping his legs, it came awkwardly, a motion long abandoned, almost forgotten.

He concentrated on the sensation of swinging, waiting for some new feeling. He gave it a few minutes, but it would not come. He didn't feel his cares falling away, didn't feel the simple joy of the moment wash over him. He didn't feel eight. He didn't even feel a mere twenty-seven.

He let his momentum give out, then rocked himself in place with his toes. He stayed there a long time, even during a drizzle that cleared out the rest of the playground. He kept rocking, and waiting.

Andrew heard the footsteps, but didn't look up. He was sure—and he had no idea how to start. He said nothing until a pair of sneakers came into view right next to him: low-tops today.

"Did you know I'd come here?" Alice asked him.

He finally raised his head. A bruise still disfigured her left cheek, and gloom tarnished the rest of her face. "I thought ... I guess it seemed the right place to find you," he said. "Are you feeling better?"

Alice shrugged. "No pain that aspirin doesn't help." She eased herself onto the swing next to his, on his left so he only saw her unblemished side. "Andrew—"

"No, don't say anything yet. I have a lot of apologizing to get through first." He watched his scuffing feet. "I should have listened the first time you warded off my advances. I should never have said you were being a child. And I should have seen you home safely if I had to tie you up and put you in the back seat to do it. I'm terribly sorry for all those things, and more."

"Not driving me home wasn't your fault, Andrew," Alice said. "I walked out. If you didn't stop me, it's because I upset you so much over wanting to reform you."

"No. You didn't."

"Don't deny it. I saw how much I wounded you. If anyone should apologize—"

"It was an act!" he cried. "The only reason I lashed out that viciously is because I was doing all the things I accused you of doing. *I* was trying to remake *you*, Alice."

Alice fell silent. Andrew made himself look at her, though it made his heart wither.

"The first time I saw you wasn't at your home. It was here in this park. I saw you while I walked to work. I could tell you were an adult, and I thought it so ... so beneath you to act like a child. Every time afterward that I've seen you, it's been through that lens.

"I wanted something better than this—" He waved his arm across the playground. "—for you. I still do, God help me, even after getting to know other aspects of you." He heaved a sigh. "It's tough to reconcile the Alice who programs AIs and whose flute makes me want to weep with joy, and the Alice who climbs monkey bars and lives with her parents. I haven't managed it, and I'm sorry." His eyes sank back to the dirt. "So sorry."

Alice took her time speaking. "How long are we supposed to live, Andrew?"

"Hm? Nobody really knows. A minimum hundred and fifty years, likelier two hundred."

"I've heard as much as three hundred. In all of those years ahead, we're going to see more medical advances. Odds are, one of them will extend our lives again, probably long enough that we'll be able to exploit the next big advance, and the next, and so on. We may not get actual immortality, but there's a half-decent chance we'll outlive the millennium."

Andrew stirred his head enough to see Alice. She was strangely somber for someone with a thousand years to live.

"From the articles I've read, the next big leap should come within fifty years, easily soon enough for our

benefit.” She paused. “But not soon enough for my parents. Within a few decades, I’m going to see both of them die, Andrew. And then, I will have to live the rest of my years—of my centuries—without them.” A mist came over her eyes, then passed. “Maybe that explains why I’m holding on so tightly to them, while I can.”

Andrew took a while digesting this. “No offense,” he said carefully, “but from what I’ve seen, they’re the ones with a tight grip.”

Alice nodded. “I think they really expected me to live forever. I know they expected the world to re-order itself around our existence. Neither one happened, not yet, so they’ve put a lot of effort into keeping me safe and sound, doing what they thought freezing me would accomplish.”

“They were wrong. The world never adjusts itself to you. You have to go and adjust the world.”

“Or adjust yourself.” She had started to swing herself, and Andrew unconsciously kept pace. “I’ve never known what to make of you, Andrew. You’ve got a strength of personality I admire, but you never seem to notice when it goes from helping to hurting. I want to be like you sometimes. Other times, I feel like I need to save you, from yourself.”

Andrew smiled lopsidedly. “So it was my forceful personality that attracted you.”

“Partly. That and ... other reasons, not as profound.”

He felt a prickle of embarrassment. People couldn’t help falling for a pretty face. For once, he didn’t mind so much.

“What’s going to happen between us, Alice?”

Alice pulled up her legs, letting her momentum run down. Andrew let his feet scuff the dirt to stop his swinging. When Alice replied, she was looking up at the sky, as though hoping some better answer would fall from the clouds.

“We’re going to walk away from each other. We’re going to figure out who we are, where we’re going with our lives, without the distraction of considering how it will affect someone else. Once that’s done, maybe we’ll feel different about each other, or maybe we won’t. We can go from there.”

Andrew swallowed. “How long?”

“Whatever we need. Weeks, months, more. We have a lot of time.”

She hopped off her swing, with Andrew a beat behind. He struggled to say something, until she gently took his hand. “Goodbye, Andrew,” she said, and started to walk away.

“Wait. Can I at least walk you home?”

“I’m okay,” she said without turning. “I’ve never felt in danger going home from the park.”

“Still, I—”

Now she turned. “Andrew, don’t make it harder. Goodbye.”

He stood watching her walk away for a long while. She was at the corner, about to cross, when she looked back. He couldn’t see her expression for the distance, and she quickly turned away to cross the street.

He felt too brittle and hollowed-out to move. The swings beckoned, at least as somewhere to sit for a while. Then a boy ran up and jumped onto the swing he'd been occupying. The moment had passed. He started for home, giving Alice's swing a parting push.

* * * *

That was three months ago. Time enough for some pains to fade; time enough for many things to change.

Andrew had spent most of that Saturday morning tracking down faults on an order form at his company's website. He hadn't done any work on Saturdays until recently. Neither had he been doing it from home.

The company was rethinking its policy on telecommuting, and office rumors had it that Tiffany Albano had spurred their reassessment. While she said nothing about that, she was dropping hints about looking forward to retirement in a few years. Andrew would have a shot at taking her place as webmaster, if he proved his worth. That meant putting in a few extra hours a week, to lay some groundwork.

But he had laid enough for today. The order form had stopped acting up, so he could knock off with a clear conscience. He shut down the machine and left his bedroom office, to fix himself an early lunch.

Midway through making his sandwich, he stopped. He hadn't once thought about how the placing of the refrigerator or the cabinets was different, because it hadn't felt different. He'd been living at Evergreen just over a month now, and finally it was feeling like home. Kazuo's vision had come true.

That thought made lunch quite jolly for him. He'd have to mention that to Kaz today sometime. Indeed, he'd probably mention it when he called his parents in half an hour.

He had made the first contact two months ago. They were both in reasonable health: his father had had no sequel to that mild heart attack four years ago. Andrew hadn't expected to feel as relieved as he was—at least that he wouldn't have to feel too guilty.

They talked every other weekend now, as awkward as that usually felt. There was a notion of meeting, but his parents weren't inclined to travel the several hundred miles from Connecticut. Less wasteful for him to make the trip east, they hinted. The old tensions were still there, and Andrew's lone concession was not to push things to a blow-up.

Andrew dodged their questions about why he had ended the estrangement. He didn't mention her name once. All he admitted was that he had been seeing a frozen woman for a while. "Didn't really work out," closed the topic, and they hadn't tried to reopen it.

He didn't reopen it now, even in his own thoughts. He pulled over a magazine to skim, occupying his mind while he finished his sandwich.

One bite from the end, he heard a commotion in the hallway. "New tenant," he guessed. Plenty of people were still moving into the half-full Evergreen. He carried his crust to the door, thinking of greeting a new neighbor.

Several movers were in the corridor, handling large boxes on dollies. A pair of them carried one through the door two units down, barely squeezing it inside. Andrew squinted to read the label on the nearest box. *Computer Parts*.

Another loaded dolly arrived. Whoever was moving in owned a lot of computers, Andrew thought, or one really big one.

Something clicked in his head. No. It couldn't be.

But then he heard it, around the corner, probably by the service elevator. It was a girl's voice with an adult cadence, no rarity here. And it was much more.

He slipped back inside before she could appear, and downed the last of his sandwich with a hard gulp. *Kazuo*, he thought. Their last two dinners, he'd been making a show of keeping some secret. Andrew thought it had involved Luna, and Kazuo had seemed to encourage the assumption. That sneaky SOB.

So she'd moved to Evergreen. If nothing else, she had pried herself out of the death-grip. What else it meant wasn't at all clear, save for one thing. She knew he lived here, and came.

Andrew dropped himself into his softest chair. He was excited, and scared—and somewhere beneath that, he thought he was glad. She didn't despise him, not enough to stay away. Whether she still held some of those old feelings, he couldn't say. He wasn't even sure about himself.

But he was going to find out, soon enough.

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Among those whom I like, I can find one common denominator: all of them make me laugh.

—W. H. Auden

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Science Fact: **FROM ATLANTIS TO CANOE-EATING TREES: GEOMYTHOLOGY COMES OF AGE** by Richard A. Lovett

Long ago, according to Indian legends of the inland Pacific Northwest, the twin sons of the Great Spirit, Wyeast and Pahto, dwelt on opposite sides of the big river the whites would one day call the Columbia. For many years, they lived in peace. But then, as is the way with young men, they quarreled for the attention of a beautiful woman known as Tah-one-lat-clah. Soon, Wyeast and Pahto were hurling rocks and fire at each other, scorching the land and frightening its residents.

Learning of the commotion, the Great Spirit came back to restore order, forcing the brothers to apologize and promise to quit fighting. As a sign of the truce between them, he built a beautiful stone bridge across the river, not far from the place where the whites would later build Bonneville Dam.

Then he went away again. For a while, peace reigned. But the brothers soon forgot their promise and resumed their quarrel. Tah-one-lat-clah tried to intervene but was severely burned in the fray. The bridge was destroyed, and the brothers, chagrined, withdrew to the locations where they reside today as the mountains later to be called Adams and Hood. Tah-one-lat-clah, now known as Mt. St. Helens, also moved away, seeking a place to hide, far from other mountains. There she nursed her wounds, and there she remained, even after the Great Spirit returned to heal her disfigurement and restore her to her former beauty.

It's a great story, though this version has probably been somewhat Paul Bunyanized by the white missionaries who collected it in the nineteenth century. But it's just a myth, right? A tale to be told around the campfire to entertain the children and maybe teach a lesson about sibling rivalry?

Maybe not, say geologists. Such myths were once discounted, but these days, scientists are paying more attention. There's even a new field called geom mythology that draws on everything from Aztec legend to Bible lore in an effort to better understand the Earth's turbulent history by correlating old stories to actual geological events.

Let's take another look at the Bridge of the Gods legend. As far back as 1805, Lewis and Clark knew there was something odd about that part of the Columbia. Approaching from upstream, they found the river curiously sluggish, with deep, calm waters in which the boles of dead firs rose from the bottom like drowned sentinels, twenty feet tall.

Aware the water couldn't have been that high when the trees were alive, Clark figured something must have dammed the river. When the expedition reached the giant boulder field that (unknown to them) the Indians interpreted as the ruins of the Bridge of the Gods, he speculated that it must have been formed by a gargantuan landslide—recently enough that the submerged tree trunks hadn't yet had time to rot.

As it turns out, he had everything right but the date.

"They thought it occurred twenty years [before], but it was hundreds," says John Jengo, a geologist who's studied the Lewis and Clark expedition's records. "But there was no way for them to know that."

The Indian legend actually matches the region's geological history quite well. Mt. Adams has frequently vented steam, and Mt. Hood had a series of eruptions several hundred years ago.

Mt. St. Helens also went through a major eruptive phase from 500 to 350 years ago. The eruptions began with the mountain blowing its top in the 1480s (determined by growth-ring dating of trees buried in the ash). Ensuing eruptions then slowly rebuilt it from an ugly, stumpy pyramid into the elegant cone that persisted until its famous 1980 explosion.[1]

"It would have been something that would have been very noticeable," says Peter Frenzen, monument scientist at Mt. St. Helens National Volcanic Monument.

According to Pat Pringle, an earth science professor at Washington's Centralia College, the latest radiocarbon studies on the submerged tree trunks indicate that the Bridge of the Gods landslide occurred somewhere between 1435 and 1455. That's several decades before Mt. St. Helens' 1480s blast, but the events occur in the right order and in close-enough sequence for storytellers to have combined them into a single tale, especially since the story doesn't bother to state how many years elapsed between its events.

* * * *

Troy and the "Telephone" Game

Geomythology may be a new science, but it has precedents in archaeology, which has been discovering truths in ancient stories since at least the 1870s, when Heinrich Schliemann found the ruins of Troy, the city besieged and defeated in Homer's *Iliad*. Archaeologists have also found many biblical sites once believed to be nothing but myth. Today, biblical archaeology is a flourishing field, complete with its own journals.

But geologists have been slower to take the hint.

Partly that's because many of the old stories sound fantastic. Also, our culture is steeped in the "telephone game," in which a phrase is whispered to one person, who whispers it to another, and then another ... until the statement reaching the end of the chain is barely recognizable. "Eliza has the flu," for example, could easily emerge as, "Arise and get glue." Or worse.

But we are not an oral-tradition-based culture. We're poor storytellers and worse listeners—with a bad tendency to assume that everyone else has always been just like us.

From everything anthropologists have been able to determine, the ancients were very good at passing on stories by word of mouth. And, at least as importantly, they were a lot better than we are at paying attention to the world around them. (If you doubt this, go on the web and check out the "bioregionalism" test, which asks such questions as where your water comes from and what is the current phase of the moon.[2] Many modern city-dwellers can't even get close to answering such questions.) "The ancients, because they were closer to nature, were very observant," says Jelle Zeilinga de Boer of Wesleyan University in Middletown, Connecticut.

Just how observant came to the fore in mid-2008, regarding a passage in *The Odyssey*. The passage describes the Sun as having "perished out of heaven" and an "evil mist" spreading across the world, which occurs shortly before Odysseus slaughters the suitors besieging his wife, Penelope.

The line about darkness and evil mist is clearly a prophecy of doom, but in a paper in the June 24 issue of the *Proceedings of the National Academy of Sciences*, Marcelo Magnasco, a physicist at Rockefeller University, teamed up with Constantino Baikouzis of the Astronomical Observatory in La Plata, Argentina, to argue that it also describes a total eclipse of the Sun.

Magnasco and Baikouzis weren't the first to hit upon the eclipse theory. More than eighty years ago, other astronomers went so far as to calculate that if it was an eclipse, it had to have occurred on April 16, 1178 B.C.E., because that was the only such eclipse visible from Greece during the Homeric era. It even occurred at noon, as described in the poem. But the suggestion had been pooh-poohed by Homeric scholars.

Then Magnasco and Baikouzis went back and looked for other astronomical references in *The Odyssey*.

They found several. Some related to the phase of the Moon (which must be new at the time of a solar eclipse). Others described Odysseus steering his boat by the positions of the constellations Boates and the Pleiades, twenty-nine days before the slaughter. Both constellations are visible at sunset, something that only happens at certain times of year.

Venus is also visible as a morning star, high in the sky. There's a somewhat cryptic reference to the god Hermes (equivalent to the Roman god Mercury) taking a trip to the far west and turning back, thirty-four days before the slaughter. That, Magnasco and Baikouzis hypothesized, might be a description of the planet Mercury at the far end of one of its retrograde cycles.

The two scientists then used planetarium-style computer software to simulate the Greek skies, night by night for 135 years (49,000 nights) centering on the known date of the eclipse. What they found was that the descriptions of the Moon, stars, and planets only fit the story line on one occasion: a sequence that had the suitors being killed on—you guessed it—April 16, 1178 B.C.E.

Did Homer really include an actual eclipse in his story? Who knows? “The implication is that ‘Homer’ (in quotes as [he] may have been many poets) was aware of astronomical events occurring four centuries before the poem was cast in its current form and was interested enough in those events and knowledgeable enough about them to weave them into the narrative,” Magnasco told me. The implication is also that there might be a great deal of history woven into both *The Odyssey* and its prequel, *The Iliad*.

“Under the assumption that our work turns out to be correct, it adds to the evidence that he knew what he was talking about,” Magnasco added, to the Associated Press. “It still does not prove the historicity of the return of Odysseus. It only proves that Homer knew about certain astronomical phenomena that happened much before his time.”

Or maybe he was just really, really lucky and his poem had an awful lot of astronomical coincidences written into it.

* * * *

Floods and Trumpets

Let's take a look at another old story, this one from the Bible: the account of how the Israelites crossed the River Jordan into the Promised Land.

According to the story, the Israelites, who had been wandering in the Sinai wilderness for two generations, finally moved into Canaan in harvest season, which in that part of the world came in late spring. But that meant they hit the river at flood stage, an obvious problem.

For three days, they camped on the bank. Then their leader, Joshua, announced it was time to cross, with priests carrying the Ark of the Covenant leading the way. The moment the priests' feet touched the river, the Bible says, the water from upstream stopped flowing:

* * * *

It piled up in a heap a great distance away, at a town called Adam in the vicinity of Zarethan, while the water flowing down to the Sea of the Arabah [the Salt Sea] was completely cut off. So the people crossed over opposite Jericho. The priests who carried the ark of the covenant of the LORD stood firm on dry ground in the middle of the Jordan, while all Israel passed by until the whole nation had completed the crossing on dry ground. (Josh. 3:16-17)[3]

* * * *

The river stayed dry long enough for the people, including 40,000 soldiers, to cross over. Then, as soon

as the priests stepped out, the water returned, flowing at flood stage, as before. Soon after came the famous story of the siege of Jericho, in which the Israelites circled the city each day, carrying the Ark of the Covenant and blowing trumpets and rams horns until, on the seventh day, the walls fell down.

So what's going on? The two simplest answers are that God intervened miraculously, or that it's all just a myth. But it could be a little more complex.

It is well known that the Jordan River valley is prone to landslides that can block the flow of the river. The most recent was triggered by an earthquake on July 11, 1927. It even occurred near the site believed to be the one called "Adam," about sixteen miles upstream of Jericho, and it blocked the river for twenty-one hours. Another five such landslides, all caused by earthquakes, are known to have occurred in the past 3,000 years, says Zeilinga de Boer.[4] Thus, he says, the biblical account is "very logical."

Similarly, the fall of Jericho might well have occurred in the aftermath of a major earthquake, related to the one that blocked the Jordan River.

"If you read the Bible carefully," Zeilinga de Boer suggests, "you can see geological events very clearly."

It should be noted that interpreting such stories in this manner doesn't necessarily boot God out of them; many Christian Bible commentaries take the earthquake theory seriously. There's plenty of room for a miracle if you want one. The Israelites seem to have done an extremely good job of being in the right place at the right time.

* * * *

Vanishing Cities

Another good example is the tale of Helike, a coastal city in ancient Greece, which reputedly disappeared overnight after an earthquake in 373 B.C.E.

According to the legend, the earthquake occurred on a winter night. By morning, everyone was dead and the city had sunk into the sea. Some people, in fact, think that this is the source of the legend of Atlantis, though as we'll discuss later, that legend might have a better source farther back in history.

Accounts of the demise of Helike are sprinkled through Greek and Roman writings. There are stories of a rescue attempt in which nothing was found but the tops of trees, rising above the water, and stories of travelers, years later, seeing the ruins beneath their boats.

But could a city truly be swallowed by the sea? For years, Zeilinga de Boer says, geologists viewed that as "total nonsense."

But the sea isn't the only thing that can swallow a city. In 1692, a powerful earthquake shook Port Royal, Jamaica. The destruction wasn't total, but in places the vibrations turned sand to quicksand that swallowed buildings and people whole. (To see this phenomenon on a small scale, try tapping your foot gently on damp beach sand and watch the way it tries to flow.)

This process, called liquefaction, isn't the only way a town can vanish. In British Columbia, natives long told of a village called Kwalate, destroyed when a big chunk of a mountain fell into the sea, beside a narrow fjord. It sounded like another Atlantis myth, half a globe away. But the village was real and archaeologists have found it, determining that it was destroyed in the late 1500s. The culprit: a giant landslide from a 2,800-foot peak. Somewhere between 100 and 140 million cubic meters of rock fell into the water, says Brian Bornhold of the University of Victoria. Minutes later, the entire village, home to about 100 people, was gone, wiped out by a wave that might have topped thirty feet in height.

In 1988, a team led by Dora Katsonopoulou of the Helike Project[5] and Steven Soter of the American Museum of Natural History,[6] began a serious search for Helike, which they knew lay somewhere along the Gulf of Corinth, a narrow rift that nearly slices Greece in two, west of Athens. Their story is an exciting exercise in false starts and dashed hopes.[7] They found ruins, only to determine that they were from a Roman city that post-dated Helike. Then they found more ruins, but these were from a Bronze Age village dating back nearly 5,000 years.

Then, in 2001, Katsonopoulou and Soter found what they were looking for: a Greek city from the fourth century B.C.E. Never looted by treasure hunters, ancient or modern, it might be one of the greatest archaeological finds of recent times: a Pompeii, buried in mud. But the discovery is recent; only time will tell whether the promise pans out.

In part, Katsonopoulou and Soter have determined, Helike appears to have sunk due to liquefaction. But there also may have been a tsunami that ricocheted through the narrow gulf. Either way, an entire city had indeed vanished, overnight. It may even have gone under water as well as being buried in mud; such earthquakes can easily create lagoons a mile or two inland from the beach. The myth of Helike was no longer a myth.

But does that mean Helike was Atlantis? Probably not. The Atlantis myth dates from the writings of Plato in about 355 B.C.E., barely a generation afterward. Personally, I find it hard to believe that a real disaster could have been so thoroughly mythologized so quickly.

Besides, Plato said the story originated in Egypt, where it was told to a visiting Greek named Solon. Plato wrote that Solon was told that Atlantis had sunk 9,000 years before—roughly 11,000 B.C.E. by our calendar.

There's little chance an advanced civilization could have existed at that date, which is part of why many people have either discounted the story entirely or tried instead to link it to Helike, difficult as that might be.

Then, in 1969, Greek seismologist Angelos G. Galanopoulos suggested that Plato might have botched up one little detail about the source of the myth. Maybe, instead of being told about it when he was in Egypt, Solon *read* about it on an Egyptian scroll and mistranslated the date: not 9,000 years before, but 900. That would put the date for the demise of Atlantis at 1250 B.C.E. or so.

Plato also said that Atlantis was 2,500 miles away from Egypt—something that put it somewhere in the Atlantic Ocean, beyond the Strait of Gibraltar. But suppose that number was a similar misreading and should have been 250 miles.

Suddenly, we have a very, very good candidate for Atlantis, right in the eastern Mediterranean: the Aegean island of Santorini.

Santorini was part of a large volcano called Thera, and was inhabited by outposts of the seafaring Minoan civilization, based in Crete. Thera has been active on and off for hundreds of thousands of years, most dramatically in a blast that was probably the largest volcanic eruption in human history. That blast, in about 1600 B.C.E., blew a large part of the island into the stratosphere and may have set in motion a chain of events that took down the entire Minoan civilization.[8] The date of the eruption doesn't match perfectly with Galanopoulos' 900 years, but it's not wildly far off, and the blast had to have had major effects throughout the eastern Mediterranean. "That eruption was a mega-event in the middle of a flourishing culture," says Floyd McCoy, a volcanologist at the University of Hawaii's Windward Collage. "You don't forget that. I think it stuck as a myth, and the myth that best seems to reflect that is Atlantis."

* * * *

Sniffing Gas

As long as we're talking about Greece, let's take a look at one more Greek story: the oracle at Delphi.

The oracle was a temple, served by priestesses whose prophecies were held in high regard through centuries of Greek culture. According to Plutarch, the women would first descend to the temple basement and breathe sacred fumes emanating from a fissure in the temple floor. Only then would they make their pronouncements.

But modern historians didn't believe it. There was no doubt the temple existed, but they thought the entire thing, including the fumes, was an ancient hoax. That's because Delphi didn't sit on a volcano that might have produced intoxicating fumes. Instead, the underlying rock was limestone.

Visiting the temple ruins in the 1980s and '90s, however, Zeilinga de Boer noticed a pair of geological faults running through the area, intersecting directly beneath it. Later, he and some colleagues took a better look at the rock, and discovered that the limestone was rich in hydrocarbons. And suddenly, the ancient story made sense: the priestesses were indeed breathing fumes, but they weren't volcanic gases. Rather, they were hydrocarbons baked out of the underlying rocks by subterranean heat and finding their way to the surface through the faults.

Zeilinga de Boer and a team that eventually included an archaeologist, a geochemist, and a toxicologist, made tests on water drawn from nearby springs. In 2001, they announced their findings in the journal *Geology*. The fumes at Delphi, they said, were a mix of several gases, but the most important was ethylene. Until recently, it was used as a general anesthetic for surgery, but in smaller doses, it can make you high. The priestesses might as well have been smoking peyote.

Today, there's not enough gas to notice except in lab tests. But that's not because it's not being produced in the underlying rocks, Zeilinga de Boer's team suggested. More likely, modern well drilling has altered the water table, causing the gas to go elsewhere (and, since entire neighborhoods aren't getting high on it, probably diluting it, as well.)

* * * *

Canoes in Trees

It's hard to say precisely when geomythology became a serious science. The link between Thera, Crete, and Atlantis was suggested as far back as 1939, but even as the theory spread, it was viewed as an exception. A few myths might be backed by something real, but that didn't mean you could expect the same to apply to others.

"Five years ago, I couldn't do this without destroying my career," McCoy said in a 2006 telephone interview.

Perhaps the field has yet to truly make it. It hasn't been hurt, though, by recent findings in the Pacific Northwest, when researchers began to take seriously Indian legends of killer waves.

The legends describe in considerable detail changes in the shapes of islands and marshes. But they also contain descriptions of how the ocean waters rose and receded, killing people by throwing their canoes into trees.

It all sounds rather fanciful—enough so that Brian Atwater, a U.S. Geological Survey geologist based at the University of Washington, says that the legends themselves weren't the motivators for the studies that confirmed them. Rather, scientists were starting to become concerned about the possibility of mammoth earthquakes offshore from the Pacific Northwest.

What they knew was that there was a large subduction zone offshore, similar to the one that would later produce the tsunami that devastated Indonesia. But the Cascadia Subduction Zone was thought to be inactive.

Then, in the 1980s, geologists started finding signs of sudden land subsidence. Archaeologists discovered fishing camps that had been overrun by waves. Growth-ring dating of trees killed by the event put it in 1699 or 1700.

That alone was interesting because it correlated with Japan's "Orphan Tsunami," which damaged several coastal villages on January 27, 1700. The Japanese had long known that tsunamis were triggered by earthquakes. But the Orphan Tsunami had struck with no accompanying temblor (hence its name). At the time, the Japanese were puzzled. Now we know that it started in the Pacific Northwest, then traveled all the way across the ocean to strike Japan. And if it could do that, it could certainly throw canoes into trees.

This discovery, Atwater says, provides an excellent opportunity for "calibrating" myth against reality. And what it shows is that, despite generations of retelling, the legends retained an amazing amount of truth.

"Here's an event that occurred almost a hundred years before the first European contact," he says, "and about 150 years before ethnologists started to write down the traditions of these people. By then, smallpox and other diseases had wiped out large parts of the population that could be telling these stories, so what's left has to be only a fraction of what was around. But still, you have an event that's pretty well established from geology."

More recently, Lori Dengler, a geology professor at Humboldt State University, found something similar in the aftermath of the deadly tsunami that swept Indonesia in December, 2004.[9]

In most places, the wave caught people unprepared. But on Simuelue Island, so close to the epicenter that the tsunami struck within eight minutes, there were only seven confirmed deaths out of 78,000 people.

The reason, says Dengler, is that the island was hit by a similar event in 1907, with massive casualties. The survivors told their children, who told their children, and so on, until, 97 years later, everyone still knew that when the earth shook, it was time to run for high ground. When asked where to go for safety, they all pointed to a hillside, about 100 feet above sea level.

"That's about where I would have told them to go," Dengler says. In cultures attuned to them, she'd found, oral traditions can still be extremely accurate.

So, what's the future? Obviously, there are plenty more myths to be explored. Aztec carvings, for example, indicate a belief that the world was destroyed on four occasions: once by jaguars, once by hurricanes, once by fire, and once by flood.[10]

Other than the jaguars, Zeilinga de Boer says, the Aztec's disasters are geological events that may also have left identifiable traces. "I suspect that once geologists start getting core samples, the pieces will fall together," he says.

Other scientists are taking a literal view of the even more ancient myth of a massive flood, recounted in the Bible as the story of Noah. In 1996, marine scientists Walter Pitman and William Ryan of Columbia University shocked geologists by arguing that the melting of Ice Age glaciers, 7,500 years ago, caused water to cut through what is now the Bosphorus Strait into the Black Sea, raising water levels by several hundred feet and inundating vast tracts of below-sea-level lands. Describing these arguments in detail is beyond the scope of this article, but they are the stuff of continued debate at geophysics meetings, not to

mention websites.

* * * *

In general, this appears to be how the field of geomythology is developing. Few if any myths have led to new geological discoveries. Rather, the geology has helped firm up the history surrounding the myths.

"We find things and then go back to the mythology and say, "My gosh,"" says McCoy.

The infant field's next step, he believes, is to reverse the current approach and start parsing old legends for clues to previously unrecognized geological events. "I think that's just around the corner," he says. "It's going to depend on a much closer dialog with historians."

Still, geologists should find the old stories to be great sources for ideas. "It's like candyland," he says.

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* * * *

[FOOTNOTE 1: For more on the history of Mt. St. Helens, Mt. Hood, and Mt. Adams, see *Fire Mountains of the West*, by Stephen L. Harris, 1988, or any of the more recent Pacific Northwest books in the *Roadside Geology* series.]

[FOOTNOTE 2: The quiz, comprised of twenty questions, first appeared in an article by Jim Dodge in *Coevolution Quarterly*, Winter 1981.]

[FOOTNOTE 3: Scripture taken from the HOLY BIBLE, NEW INTERNATIONAL VERSION. Copyright 1973, 1978, 1984 International Bible Society. Used by permission of Zondervan. All rights reserved. The "NIV" and "New International Version" trademarks are registered in the United States Patent and Trademark Office by International Bible Society. Use of either trademark requires the permission of International Bible Society.]

[FOOTNOTE 4: Zeilinga de Boer and Donald Theodore Sanders, *Earthquakes in Human History: the Far-Reaching Effects of Seismic Disruptions*, 2005.]

[FOOTNOTE 5: See www.helike.org.]

[FOOTNOTE 6: If the name sounds familiar, Soter previously worked with Carl Sagan on the PBS series *Cosmos*.]

[FOOTNOTE 7: The hunt for Helike is described in detail in magazine articles, websites, and a BBC documentary. For one example, see Tom Gidwitz, "City of Poseidon," *Archaeology*, Jan/Feb 2004, reprinted on www.tomgidwitz.com/main/poseidon.htm.]

[FOOTNOTE 8: See: R. A. Lovett, "Geology, Geohistory, and 'Psychohistory': The (Continuing) Debate]

[FOOTNOTE 9: See R. A. Lovett, "The Great Sumatran Earthquakes of 2004-5," *Analog*, October 2006.]

[FOOTNOTE 10: These carvings are much in the news because some people believe they predict the end of the world in 2012.]

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Novelette: **FROM THE GROUND UP** by Marie DesJardin

Sometimes there are second chances....

Carrie hadn't packed. She'd suspected she might have to, but she didn't want to jinx the funding decision by preparing for the expected result. Now, the packing went surprisingly fast. How much easier it is to fold up one's life and go home than it is to try something new.

"It won't last forever."

Carrie ignored her roommate. The pictures from the slim bookshelf went into the case on top of her neatly folded shirts. She laid her uniform on top to cushion them.

"Funding cycles come and go," Allison continued. "NASA will get its act together, and manned exploration of space will continue. They can't do it *all* with robots."

The bookshelves and drawers were clean. Carrie hadn't brought much with her. The largest part, the part that weighed most heavily, was inside her.

Allison asked, "Are you going to try JPL?"

Carrie zipped her suitcase. "I'm going home."

"To Minnesota? That's good. Take a break, visit your parents—"

"I meant I'm going to my aunt's old house."

Allison paused. "Didn't your aunt die?"

"The house is there."

"It's in the middle of the boonies. It's probably falling apart."

"It is."

"Then *why*?"

Carrie picked up her suitcase. "I want to see the sky."

"There's sky in California, kiddo. Why don't you come home with me? My folks would be glad to put you up. I don't want you brooding—"

"I'm not brooding."

Allison threw up her hands. "Fine. Go and see the Minnesota sky. But call me before you sink into a pool of depression."

"I will."

Carrie faced her roommate. Curly-haired, dusky-toned Allison, her skin smooth and her intelligence shining in her dark, compassionate eyes. *She's our best*, Carrie thought. *They had the best of us in their hands, and they just sent us away.*

Allison seemed to read her thoughts. "They'll change their minds. They have to."

"That's the trouble. They start, they stop—but when will we actually *go*?"

"Houston isn't the whole industry. We should try for JPL now, before every other former candidate does the same thing."

"I know. But first, I need to—"

"—see the sky. I heard." Allison sighed. "Do what you have to. Good luck."

But Carrie wasn't going home to see the sky. She was going to see the ground.

* * * *

Children don't tell. They cover things up.

Carrie was eight when she saw the spaceship. There was never a moment's doubt in her mind that it *was* a spaceship. Even today, she could see the image as clearly as if it had just happened:

Carrie, walking through the long grass behind her aunt's house, her pudgy toes naked against the brown soil that anchored the strong blades. The break in the grass, the scrape in the mud, the tiny crater where the object had come to rest, half buried in the earth.

There was no metal; this wasn't a human spaceship. But the tragedy was clear. Sometimes Carrie came across baby rabbits, huddled together in their nest of grass. But these things were unlike any she had seen before, all writhing limbs and colors that, while emphatically different from other beings on Earth, were clearly living creatures. But so *tiny*. The entire impact site was no larger than a basketball. The inhabitants were oddly shaped and naked, twisting within the shattered globe. The shell fragments looked soft and translucent, scattered among the wreckage.

She didn't know what to do, so Carrie crouched next to the depression and watched the tiny visitors move. She expected them to squeak, like kittens, but they made no noise. Carrie poked one of the clear shell fragments with a fingertip; it was moist and bent beneath her touch. She took her finger away and wiped it on the grass.

Her aunt's house seemed a vast distance away. If her dad had been home, she would have told him. But her mom was yakking with her sister, and wouldn't want to investigate something peculiar in the grass.

"You'd have done better to let it be," she had said the last time Carrie had brought home a baby rabbit, intending to feed it. And her mom had been right, because the rabbit had died within a day. If Carrie couldn't save a baby rabbit, how could she save something that was already so hurt?

The things were still moving when Carrie took herself in for dinner. All through the meal, helpless forms walked through her mind. When Carrie hurried out again afterwards, it took her some time to find the correct spot in the field. She resumed her vigil. One by one, the forms stopped moving. Carrie stayed by them until it was dark, and her mom's repeated calls drew her inside.

The next morning it was over. The minuscule remains melted into the ground—crew, spaceship, and all. She might almost have dismissed the entire episode as a dream, had not every visit presented the evidence of her failure in the form of barren earth. As the years passed, the event became so unutterably huge that Carrie could never bring herself to mention it. Her doubts aside, she was ashamed over her cowardice in never even trying to help the strange visitors she had seen.

When her aunt moved into a group home, Carrie bought the property with her mother's help. No individual could afford to be a farmer anymore, but Carrie's mom was pleased that the property would not be turned over to an agricultural conglomerate. Carrie told no one the real reason why she had to have the land; the unmarked grave could not be pulverized into nonexistence. It was the least Carrie

could do to honor the unacknowledged dead. Eventually she went into the astronaut program, because she *knew* that other beings were out there. But she never told anyone that, either.

* * * *

Carrie hugged herself as she walked out the back of the abandoned house towards the field. The grass was shorter now, brown and dry. All around her, the monotonous tilled fields boasted stubby lumps of drought-resistant cabbage. Clouds hung heavily in the sky, grumbling and threatening rain that rarely came. The air was muggy, but the mosquitoes mercifully few. Perhaps they were dying off, as farm animals had all but vanished from the scene.

Carrie experienced the usual rush of panic when she thought that this time she had lost the crash site for good. Then, out of ground she was certain she had already trodden, sprang the familiar configuration: the slight tilt to the plain, the scrape through the dead grass that now revealed rocks rather than roots, the elliptical stain of the crash site. As always, no grass grew on the site. It had been almost twenty years, and still the ground was bare.

Guilt mingled with melancholy. Carrie had done what any eight-year-old girl would have done: scattered soil over the melted remains and marked the spot with a stick. Adult Carrie knew she should have done so much more. She should have told her parents. Even if they couldn't have saved the travelers, at least they would be a known part of our universe. No one would cut back on space exploration funding if there was something so immediate and important to investigate. But the evidence was long gone. What could grown Carrie do now? All a belated announcement would accomplish would be to dash her hopes of joining the space program forever. As far as she knew, NASA wasn't fond of taking on astronauts who believed they'd seen little green men.

Carrie stared at the vacant spot, mulling her thoughts. A patch of earth; all that was left was a patch of earth. Such an insufficient memorial to mark the end of so many dreams.

Her eyes narrowed. Standing alone among the hissing grasses, idly listening to the rumble of thunder, it struck her: why did the grass never grow back? There had been rain enough to nourish the tough sprouts underfoot. Even the roundish crater had started drifting down the slight incline over the years, more evidence of water flow. Yet the soil on the site never bore seed.

Carrie had specialized in engineering. For this problem, she needed a biologist. She pulled out her phone and touched the code.

Allison answered on the second ring. "All right, kiddo?"

Carrie gathered her courage. "What would keep grass from growing back over a crash site?"

There was an extended pause. Carrie gathered that Allison was adjusting her thoughts from renewing her invitation to this unexpected topic. "What kind of crash?"

"A flying vehicle."

"A *vehicle*?"

"A ... spaceship. If a spaceship crashed into my aunt's backyard, why would grass never grow over the site in twenty years?"

The pause was longer this time. Carrie expected a challenge. Instead, Allison said, "That's why you wanted to be an astronaut."

Carrie sagged with relief. "Yes. I didn't want to say anything before, but now that there's no longer an

astronaut program to get kicked out of—"

"Right." Allison took a breath. "Okay. If a lifeform evolved elsewhere, there's no reason why their chemical composition would be compatible with ours. DNA is basically an accident; our whole ecosystem owes its current shape to random mutation. But somewhere else? Who knows what path natural selection might take?"

"So the foreign chemicals might somehow inhibit ours—"

"Possibly. I would think they'd simply be overwhelmed, but it's impossible to say without conducting a proper analysis."

"Could you?"

Allison paused. "Not by myself. For something like this ... I'd like to contact Dr. Allen. He's spent a lot of time thinking through a scenario like this—just in case."

"And he no doubt will want to bring his staff."

"Probably."

"So, delusion or no, word will get around pretty quickly."

"I'm sorry, Carrie, but space aliens are news. See? I just said 'space aliens,' and now everyone in the room is looking at me."

"And when the news breaks, they'll be looking at *me*."

"If there's something in this ... Carrie, I hate to say it, but you'll probably receive a lot of flak over not having reported the incident earlier."

"If it *was* a real incident." Carrie looked at the patch of ground, so insignificant in size. Today, it seemed smaller than ever. "Call Dr. Allen. I'll be standing by."

"You got it. And don't worry; we'll keep it as quiet as we can at first, just in case you *are* crazy."

"So only the professionals in my chosen field will know to avoid me with a ten-foot pole."

"Exactly."

Carrie nodded. "I can live with that."

"I knew you could. Listen, kiddo, I'm going to get rolling on this. Stay tuned."

"Thanks, Ally."

"Hey, we're wingmates. Talk to you soon, bunkie."

Carrie put the phone away. Her stomach roiled inside her as uneasily as the clouds above. She had just risked her career and her reputation on a childish memory.

She looked at the patch of earth. "But I owe you that much, don't I?"

Lightning cracked. Fat drops fell around her, smacking the earth like stones. She stayed put, the occasional raindrops pelting her almost hard enough to bruise. But she was in no mood to go inside. This was her metaphor: Carrie Sutcliffe, all wet.

Slowly her eyes widened. The rain had intensified, and was falling steadily, pushed about by gusts of wind. But over the crash site, there was a localized haze—as if something in the soil repelled moisture. The droplets danced above the barren ground, breaking into a low, misty dome.

Carrie stared. This was no dream. Whatever was happening now was *real*—as real as anything she could see with her own eyes. All her former doubts vanished. In one magical instant, Carrie felt she could redeem her past mistake—and the stars were again within her reach.

Carrie spread her arms, welcoming the storm. The rain lashed down.

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* * * *

The trouble with the future is that it usually arrives before we are ready for it.

—Arnold Glasow

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Novelette: **ATTITUDE ADJUSTMENT** by Eric James Stone

Sometimes it just takes the right kind of nudge to change an attitude—in either sense of the word.

Danica Jarvis switched off the *Moonskimmer's* main engine, and her stomach lurched in the familiar way that marked the change to zero gravity. She fired the attitude thrusters, turning the mushroom-shaped ship until it floated head-down over the Moon, so the long stem of the engine wouldn't get in the way. The clear diamondglass of the *Moonskimmer's* hull allowed an unobstructed view of the lunar landscape.

From her pilot's chair in the center, she looked around at the eight tourists strapped to their seats along the circumference of the cabin. "This is the fun part of the trip. Unbuckle your seatbelts and float while you enjoy the view."

"Fun?" A teenage boy—Bryson Sullivan, according to the manifest—snorted. "Can we go back to the Hilton now?" He sported a bright purple datavisor and a shaved head.

Danica mustered her best be-nice-to-the-people-who-pay-my-salary grin and said, "Don't worry, Eddie and I will have you back to Luna City before the basketball game tonight. Right, Eddie?" Lunar-gravity basketball was a major tourist draw.

"Yes," said Eddie, the *Moonskimmer's* A.I. "Our total flight time is less than two and a half hours. You'll get to see the far side of the Moon, something fewer than a thousand humans have seen with their own eyes. You should enjoy it." Eddie's voice was enthusiastic.

The boy rolled his eyes, then opaqued his visor.

Danica decided to ignore the useless brat and turned her attention to the rest of the passengers. She pointed to one of the craters below and began her routine tour-guide patter.

* * * *

"Okay, folks, if you'd please return to your seats and buckle up," said Danica, "I'm going to turn the ship so you can see the Earth rise over the lunar horizon."

It took a couple of minutes for everyone to get settled. For most of the tourists, this was their first zero-gee experience, and it showed.

"Wait, I want to try zero-gee," said Bryson. He began unbuckling his seatbelt.

Danica couldn't believe it. The kid had stayed in his seat the whole time, probably playing videogames on his visor. "I'm sorry," she said, "but we—"

Fwoomp!

The *Moonskimmer* jerked sideways, then lunged forward at its maximum acceleration of 0.75 gee.

Bryson yelped as he hit the floor.

"Eddie, what was that?" asked Danica.

Eddie didn't reply.

Above the engine's hum came the hiss of air escaping the cabin.

Fix the air leak first. That was Sergeant Conroy's first rule of disaster preparedness, drilled into Danica's mind during space pilot training. She quickly unbuckled her seatbelt and stood in order to go get

the leak kit off the cabin wall.

But before she took a step, her conscious mind overrode her instinctive reaction.

The *Moonskimmer* was accelerating toward the Moon. Every moment of delay in shutting down the engine meant more altitude lost. She looked at her control panel and found nothing but blank screens. Not just Eddie—all the computers were down.

Manual engine shutdown required her to go down to the ship's lower level through the hatch in the main cabin's floor.

And sprawled on top of the hatch was the teenager.

She was beside him in two steps. "Out of my way," she said, grabbing his arm and pulling him off the hatch.

"Get off me!" He yanked his arm away.

She unlocked the hatch and pulled its recessed handle. It resisted her, and air rushed by her hand to flow down into the lower level. The leak was below.

Pointing to the leak kit's shiny red case, she said, "Someone grab that and drop it down to me." She took a deep breath, then exhaled as much as she could while yanking the hatch open.

Air swirled around her as she slid down the eight-foot ladder. There was still atmo on the lower level, although the pressure difference made her ears pop.

The main engine cutoff switch was right next to the ladder. She twisted it clockwise a half turn, and the engine died. Even though she was now weightless, the airflow from above kept her feet pressed against the deck.

Her lungs demanded air, and she decided it wouldn't hurt to take a breath from the thin atmo. She'd expelled her breath before coming down in case it was hard vacuum.

"Heads up!" said a man's voice from above.

One of the older passengers, Mr. Lyle, gripped the edge of the hatch opening with one hand and held the leak kit in the other.

She waved for him to toss it down. He did, and she caught it with her right hand while anchoring herself to the ladder with her left. She removed the sealant grenade from the kit, pulled the pin, and tossed it into the middle of the room.

The grenade exploded into a cloud of light-blue fibers.

Air currents caused by the leak made the fibers swarm like insects toward the hole in the hull. Some were swept out into space, but some stuck to the edges of the hole and caught others as they passed. In less than a minute the leak was sealed as the fibers congealed over it.

With the *Moonskimmer* airtight again, Danica manually released air from the reserve tanks to bring the pressure up to normal. Then she carefully checked the lower level to assess the damage.

* * * *

"I think my arm's broke," Bryson said as Danica floated up through the hatch. "My mom is *very* gonna sue you. You'll be lucky to pilot a garbage truck in the future."

At least he was back strapped into his seat.

Danica ignored his comment and returned to her chair in the center of the cabin. "Well, folks," she said, "looks like we got hit by a meteor. Our computers are down, and I had to shut off the main engine manually. But the leak is sealed, and we've still got plenty of air, so I think the danger is past." With the computer destroyed, Danica had been unable to calculate their trajectory to know whether she had stopped the main engine in time. She hoped she had.

"That was very heroic, what you did, young lady," said Mr. Lyle.

She shrugged and smiled at him. "Just doing my job. And thanks for the assist."

"What do we do now?" asked Ms. Paloma, another of the vacationing retirees.

"We wait," said Danica. "Traffic control will realize we're overdue and start searching for us. They'll send a tug to pick us up eventually." She looked at Bryson and said, "I guess you're going to miss that basketball game."

"Why can't we just call and ask them to come get us?" asked Bryson's younger sister, Maddy.

"Coms are out, too," said Danica. "That meteor really did a—"

"It wasn't a meteor," Bryson said.

Danica blinked. "Well, I guess you're right. Technically, it's a meteoroid."

"It wasn't a *meteoroid*." He stared defiantly at her from behind his purple visor.

"Just shut up, Bryson," said Maddy. "Why do you always act like you know everything?"

"You shut up, dumwitch," he replied.

"It doesn't really matter what hit us," said Danica. "What matters is we're—"

"Nothing hit us," said Bryson.

Danica let out a slow breath. "Maybe I just imagined the hole in the hull and the air leaking out of the ship."

Bryson shook his head. "Yeah, okay, I'm just a kid. I don't know zot. But my A.I.—" he tapped his datavisor "—says the engine activated slightly *before* the sideways jolt."

Danica raised her eyebrows. An A.I. small enough to fit in a visor would be so expensive that this kid had to come from one of the trillionaire families. His last name clicked in her mind—Sullivan, as in Sullivan Space Technologies. "Then what did it?"

"Sabotage," said Bryson. "Someone did this to us."

Maddy gasped.

Shaking her head, Danica said, "Why would anyone sabotage the *Moonskimmer*?"

"I know," said Maddy. "Our mom's chief negotiator for L.M.C. The union's made threats."

"Now wait a minute," said Mr. Lyle. "My son's a union steward. They would never—"

Several people began talking at once.

"Stop!" Danica said. "Who did this and why is a matter for the authorities back in Luna City. We survived. That's all that matters right now."

After a few seconds of silence, Bryson said, "We have forty-seven minutes left to live."

As the others responded with shocked exclamations, Danica asked calmly, "Our trajectory?"

Bryson nodded. "My A.I.'s done a nice little animation. In just under half an orbit, we're going to make a tiny new crater on the moon."

Obviously she had shut down the engine too late. But ... She unbuckled herself and moved to the hatch leading to the lower level.

"Come with me, Bryson," she said as she opened the hatch.

Instead of unbuckling, he folded his arms tight. "You gonna lock me up? I'm only telling the truth!"

"I know," Danica said. "Congratulations! You and your A.I. have just been promoted to navigator. Now get down here and see if you can link up with what's left of the computer."

"Already tried through the wireless. The software's skunked," said Bryson. "No way for my A.I. to make sense of it. And rewriting from zot's gonna take a lot more than forty-five minutes."

Danica tightened her lips for a moment. "Look, it's just our attitude that's the problem."

Bryson snorted. "If we just think positive, everything'll turn out brightwise?"

"No, the *Moonskimmer's* attitude," said Danica. "The main engine will push us forward if I switch it back on, but we can't turn without the A.C.S.—Attitude Control System."

"There's no manual override?" asked Bryson.

"There was." Danica pointed down to the lower level. "Unfortunately, whatever fried the computer also fried the A.C.S. board. The only way we're controlling those rockets is by computer. Have your A.I. focus on that."

Mr. Lyle's voice came from behind her. "I think I can get your radio working again."

Danica's heart seemed to jump inside her. "Keep working on the A.C.S.," she said to Bryson. She launched herself back to her seat at the center of the cabin.

"What've you got?" she asked Mr. Lyle, who had started taking apart her control panel.

"Well, it seemed strange to me that a computer problem would take out the com, too." Mr. Lyle tugged at some multicolored wires.

Danica shrugged. "It's all digital."

"Yes, but radio doesn't have to be digital. I can remember the days when even TV was still analog. Terrible picture, but at least the shows were better back—"

"Honey," said Mrs. Lyle, "fix the radio?"

"Oh, right," he said. He pulled out a circuit board and frowned at it. "Anyhow, I figure even if the digital

part doesn't work, the radio part might. And if we can send an S.O.S., someone might pick it up and come to rescue us."

Danica doubted anyone would be listening for non-digital radio signals, but there was no harm in letting Mr. Lyle try. "Do what you can."

She turned to the other passengers, still strapped in their seats. "Anyone have any experience repairing computer control systems?"

After a few seconds of silence, Maddy said, "We're going to die, aren't we?"

"Not if your brother and his A.I. can get the attitude rockets to work," said Danica. "We just need to get into a safe orbit, and someone will eventually pick us up."

Bryson shook his head. "Can't."

"What do you mean, 'Can't'? Keep trying," said Danica.

"No point. Got into the A.C.S. enough to read the fuel pressure: zero. Explosion must've taken out a fuel line." Bryson shook his head.

"So we can't do anything but float until we crash?" asked Mrs. Park, a retired high school teacher who had chatted merrily with Danica earlier in the trip.

"What about the main drive fuel?" Danica asked.

"Nothing wrong with the main drive, far as I know." Bryson shook his head. "They wanted it to work until it smashed us into the moon."

"So we can accelerate, but we can't turn," Danica said. "We've got to find a way to ... spacesuit!" She floated over to the cabinet where her spacesuit was stored. "I'll attach a line to the nose and use the suit thrusters to swing us around."

She opened the cabinet and grabbed her suit. The composite fabric, stronger than woven steel, tore like cotton candy. She stared at the wispy handful. Nanobots. That was the only possible explanation: someone had infected the suit with composite-eating nanobots.

With little doubt as to what she would find, she checked the fuel gauge on the thrust-pack. Empty.

She shoved the suit back into the cabinet. She swung over to the cabinet holding the "Breach-Balls," inflatable life-support bubbles with breathable air for two passengers for up to twelve hours. Nanobots had ruined all four of them. No one would be doing any E.V.A.

She turned to face her passengers. All but Mr. Lyle, still working at the radio, stared back at her.

"Anyone have any ideas?" she said.

There was a long pause.

Mr. Godfrey, a wizened bald gentleman who had hardly said two words during the whole trip, broke the silence. "I read a science fiction story once where people were marooned in orbit, and they made a hole in their water tank so that it acted like a rocket."

"Good thinking," said Danica. "Our drinking water tank isn't big enough, though. The only liquid we have enough of is fuel, and we need that for the main engine." She wrinkled her brow. "Plus, the only access to

the fuel tank is from outside, and we haven't got a spacesuit. But we need to think of all possibilities."

"Young man," said Mrs. Park, looking at Bryson, "you said we had less than half an orbit before crashing. Is it more than a quarter?"

"Um, yeah," he said.

Mrs. Park smiled. "Then we have nothing to worry about." She made a fist with her right hand. "This is the moon." She pointed at the center of her fist with her left index finger. "Our ship started off pointed at the moon. But without the attitude rockets to keep us facing the moon as our orbit takes us around, our inertia will keep us pointing the same direction." Without changing her left hand's orientation, she moved it a quarter of a revolution around her fist. Her index finger now pointed 90 degrees away from her fist. "When we're no longer pointing at the moon, fire the main engine. All we need to do is wait."

Several passengers sighed in relief.

"There's only one small problem," said Danica. "We weren't using attitude rockets to stay pointed at the moon. We use gravity gradient stabilization—tidal forces. Basically, the long axis of the ship stays pointed at the moon because of the slight difference in the gravitational force on the near end as opposed to the far end."

"Oh," said Mrs. Park.

"What if we made another hole near the nose?" said Mrs. Lyle. "Use some of our air to push us before plugging the hole?"

Danica frowned. "Maybe, if we had something that could make a hole through ten centimeters of diamondglass..."

"No," said Bryson. "My A.I. says it wouldn't be enough even if we emptied all the atmo."

"Action and reaction. We need to find something to use as propellant, or else we can't turn the ship," said Mrs. Park.

"Wait," said Mr. Godfrey. "That's not true. I read a story once where an astronaut turned his ship one direction by spinning a wheel in the other direction at the ship's center of gravity."

"Yes!" Mrs. Park's voice was excited. "Conservation of angular momentum. It could work." She looked at Danica. "Where's the center of mass on this ship?"

"It would be in the fuel tank, just above the main engine." Something about the idea seemed to click in Danica's mind, but then she shook her head. "There's no way to access it from here, and even if there were—it's full of liquid hydrogen."

"What if we all got on one side of the ship, made it unbalanced, and then you turned the main engine on?" said Maddy. "Wouldn't that make it curve around?"

"A bit," said Danica.

Bryson puffed in exasperation. "Not enough to keep us from smashing into the moon, picoceph."

"Well, forgive me for not having an A.I. to tell me how to be smart," said Maddy.

"Quiet!" said Danica. "Arguing doesn't help."

"*Nothing's* gonna help," said Bryson. "My A.I.'s smarter than all of us put together, and it's run all the scenarios. In thirty-six minutes we're going to crash. Get used to it."

Danica felt she should protest against hopelessness, but had no idea what to say.

"Ah, "The Cold Equations." Mr. Godfrey made a sound that seemed half chuckle, half sigh. "Did your A.I. calculate how many of us would need to jump out the airlock in order to change the ship's attitude?"

Bryson's eyes widened behind his visor.

"You can't be serious," said Danica.

Mr. Godfrey smiled crookedly. "Deadly so. I volunteer myself as reaction mass, but I doubt I weigh enough on my own."

"Not enough," said Bryson. "Even if *all* of us jumped, it's not enough."

"I've got it!" yelled Mr. Lyle. "It works! I think."

"What?" said Danica.

"The radio. I think I'm sending out an S.O.S." Mr. Lyle tapped two wires together in rhythm. "Dot-dot-dot dash dash dash dot-dot-dot."

"So now we just sit back and wait for them to rescue us?" said Bryson's sister.

"There's a possibility that an ore freighter is in a nearby orbit," said Danica. She figured it was only a five percent chance, but that was five percentage points more than they'd had before.

"Except the freighters are all grounded 'cause the miners are on strike," said Bryson.

"Don't blame this on the miners, boy," said Mr. Lyle. "The working conditions—"

"Stop it," said Danica.

"—are completely unsafe," continued Mr. Lyle. "L.M.C. makes obscene profits while paying sub-standard wa—"

Bryson opaqued his visor.

"Enough!" Danica pointed at Mr. Lyle. "It doesn't matter now."

Mr. Lyle shut up.

"You can either keep sending the S.O.S. on the slim chance someone'll hear it." Danica took a deep breath. "Or you can spend some time with your wife before the end."

He stopped clicking the wires together and looked over at his wife.

"Or," Mrs. Lyle said, "you could do both. Keep trying—I'll come to you." She unbuckled her seatbelt and pushed herself away from her seat, toward her husband in the middle of the cabin.

But her inexperience in zero-gee showed as her right hand caught for a moment on her loose seatbelt. She started spinning as she drifted through the air, and her instinctive move of clutching her arms to her chest only made her pirouette faster.

"Oh dear," said Mrs. Lyle.

Bryson let out a slight chuckle, proving that he could still see through the opaqued visor.

Danica launched herself to rescue the poor woman. For a moment she pictured Mrs. Lyle as a ship, floating helpless in space, just like the *Moonskimmer*. Except Mrs. Lyle was spinning on her long axis...

"I've got it!" Danica shouted as she grabbed Mrs. Lyle by the arm. Their momentum carried them across the cabin, and Danica was able to catch a handhold and steady them both.

"We're going to survive," Danica said firmly. "We just need to get the ship spinning on its long axis."

"How?" said Bryson.

Danica pointed at Mr. Godfrey. "Kind of like that story he mentioned. We use my chair in the center of the cabin. And we rotate ourselves around it like we're on one of those playground merry-go-rounds where you spin yourself around by hand power. We'll need everyone's mass for this—some of you will just have to hang on to the people in the middle doing the turning."

"Glad my idea helps," said Mr. Godfrey, "but what good is it to rotate on the long axis? We'll still be pointed at the moon."

Danica turned to Mrs. Park. "Gyroscopic inertia."

Mrs. Park's eyes lit up. "Oh, of course. You all remember my example before? It was wrong because the tidal force kept pulling the long axis toward the moon. But if we're spinning on our long axis, gyroscopic inertia will resist that pull, just like a spinning gyroscope resists the pull of gravity trying to make it topple over."

"Mr. Lyle," said Danica, "can you handle catching people there?"

"I can." He anchored himself with one arm through the seatbelt strap, and Danica gave his wife a gentle push toward him.

"I don't believe it," said Bryson.

Danica paused in making her way toward the next passenger. "Why not? I think it'll work."

"That's just it," he said. He cleared his visor and looked at her with wide eyes. "My A.I. agrees with you."

Twenty-eight minutes later, and only 160 meters from the lunar surface, Danica activated the main engine. The *Moonskimmer* accelerated toward the clear space ahead, and the Moon gradually fell away beneath them. It was another eight hours before a tug from Luna City caught them.

Just before stepping into the airlock, Bryson turned back to Danica. "I'm not going to let my mom sue you."

Danica smiled wryly. "Thanks, I guess."

Bryson shrugged. "You know, my grandfather runs Sullivan Space Technologies."

"I suspected as much," said Danica.

"He'll track down whoever was behind the sabotage, even if the police don't."

She nodded.

"Gramps just built a luxury cruise ship to go out to Saturn," Bryson said. "He really wants me to go on the maiden voyage with him."

Puzzled as to why he was telling her this, Danica said, "Well, I hope our little adventure hasn't put you off tourism forever."

"Nah." He shook his head. "I'm going to tell him I'll go—if he hires you as the pilot."

He stepped into the airlock, leaving Danica speechless.

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Reader's Department: **THE ALTERNATE VIEW: THE TROUBLE WITH PHYSICS** by Jeffery D. Kooistra

I won't keep you in suspense. I am going to highly recommend that you guys obtain and read a copy of Lee Smolin's *The Trouble With Physics* (Mariner Books, 2006. ISBN-13: 978-0-618-55105-7).

I did not know if I would like this book much when I started it. After all, Smolin is a regular physicist, and not a heretic physicist. But he said some intriguing things in the Introduction and I began to get the hint even in the first chapter that when Smolin entitled his book, he was serious. He really meant the trouble with *physics* itself, as practiced in the last 30 years or so, and *not* unresolved problems physics still has left to explain (even though he does have his own list of five things).

I first discovered Lee Smolin when his book *Three Roads to Quantum Gravity* was offered by my book club. That one was well received and much better written than another string theory book I once wrote about (the overblown *The Fabric of the Cosmos* by Brian Greene, which I lambasted in my September 2005 Alternate View, "Allure-Free Strings"). So I was encouraged that *Trouble* might be right up my alley. Smolin is currently at the Perimeter Institute for Theoretical Physics, of which he is a founding member, and you can find out more about him at his website, www.leesmolin.com.

What drove him to write *Trouble* was the observation that, unlike in generations past, his generation of physicists hadn't accomplished much. After all, Maxwell's electrodynamics was followed by Einstein's relativity was followed by quantum mechanics was followed by nuclear physics and quantum electrodynamics and so on, every generation having done its share to add pieces to the puzzle of how the universe works. Just prior to Smolin's generation the standard model of particle physics was hammered out, and when he got his Ph.D. he had every right to assume that his generation would continue the illustrious pursuit, with similar successes along the way. But it didn't. This book exists as Smolin's explanation for what went wrong and what should be done to fix it. I should clarify at this point that when Smolin is talking about physics, most of the time he means theoretical physics, and more specifically, string theory and string theorists.

From my point of view, the last 30 years have been astonishingly successful in providing physicists with the tools they need to pursue knowledge. We've never been able to measure things more accurately, look at things more closely, or calculate more precisely than we can at this moment in history. For experimental, industrial, and computational physicists, this current generation is living through a golden age. We've sent robots to other planets, put observatories above the ocean of air, and learned how to manipulate matter one atom at a time. Soon we'll be taking quantum computing from the lab out into real life. But while doing all this, we haven't required anything recent from theoretical physics to guide us on our way. It was very soon after Maxwell predicted radio waves that radio was invented. Nuclear physics was still in its infancy when the first atomic bombs were built. But we've been messing around with string theories for over a quarter century now and so far the string theorists haven't provided us with one testable prediction, suggested any new technologies, or even been able to agree that there really *is* a string theory that applies to our universe.

Yet there is no shortage of praise for and faith in this thing called String Theory. Science articles and books discuss it as if we've already seen strings and branes and all seven of the extra dimensions. As an insider for part of his career, Smolin lays out in meticulous detail just what it is string theorists have been trying to do and how very far away they still are from reaching their goal.

The first half of the book deals with nothing but string theories. As Smolin points out, string theorists own the universities, and the new postdoc in theoretical physics had better be on board with the string theory program or his chances of obtaining a job, let alone tenure, at a university are pretty slim. Frankly, I

found this part a bit tedious. For those of us who have been hearing or reading about string theory with increasing disdain for 30 years, we've already had more than enough of it. The accomplishments I listed above were brought about by scientists and engineers too busy with real matter on real test benches to keep paying attention to the latest exaggerated claims out of the string theory camp. On the other hand, I must admit I didn't appreciate just how much of a stranglehold string theory and theorists have on the halls of theoretical physics, at least here in the United States.

It is the second half of the book that makes me say that *Analog* readers would do well to see what Smolin has to say. Smolin shows that some of the practitioners of string theory, having spent their lives at it, want to "change the rules" about what constitutes doing science (they're willing to do without string theory ever being experimentally validated), rather than simply accept that string theory isn't the answer. He says: "It seems rational to deny this request and insist that we should not change the rules of science just to save a theory that has failed to fulfill the expectations we originally had for it. If string theory makes no unique predictions for experiments, and if it explains nothing about the standard model of particle physics which was previously mysterious—apart from the obvious statement that we must live in a universe where we can live—it does not seem to have turned out to be a very good theory. The history of science has seen a lot of initially promising theories fail. Why is this not another such case?"(p. 170)

See why I like this book? I could have said this! It just wouldn't mean as much coming from me since I've spent no time in the string theory trenches. But Smolin has and his love of physics and his concern for what his generation is leaving to the next motivated the book. As he says quite poignantly: "What has my generation bequeathed to these young scientists? Ideas and techniques they may or may not want to use, together with a cautionary tale of partial success in several directions, resulting in a general failure to finish the job that Einstein started a hundred years ago? The worst thing we could do would be to hold them back by insisting that they work on our ideas. So the question for the last part of the book is a question I ask myself every morning: Are we doing all we can to support and encourage young scientists—and by virtue of this, ourselves—to transcend what we have done these last thirty years and find the true theory that solves the five great problems of physics?"(p. 258)

Smolin thinks we are living in a revolutionary period (see successes listed above), but "we are trying to get out of it using the inadequate tools and organization of normal science."(p. 311) What we desperately need is for someone to come up with the missing revolutionary idea, to point out the mistake that has been made, to expose the false assumption that has gone unchallenged. Which brings him to ask this question: "Do we have a system that allows someone capable of ferreting out that wrong assumption or asking the right question into the community of people we support and (equally important) listen to? Do we embrace the creative rebels with this rare talent, or do we exclude them?"(p. 309)

Smolin breaks theoretical physicists into two categories, the craftspeople and the seers, and describes them like this:

"Master craftspeople and seers come to science for different reasons. Master craftspeople go into science because, for the most part, they have discovered in school that they're good at it. They are usually the best students in their math and physics classes from junior high school all the way up to graduate school, where they finally meet their peers. They have always been able to solve math problems faster and more accurately than their classmates, so problem solving is what they tend to value in other scientists.

"Seers are very different. They are dreamers. They go into science because they have questions about the nature of existence that their schoolbooks don't answer. If they weren't scientists, they might be artists or writers or they might end up in divinity school. It is only to be expected that members of these two groups misunderstand and mistrust each other."(p. 310)

This last sentence is key to understanding just exactly what the trouble with physics is today and it's worth taking the time to understand it.

The one scientist whom most people have heard of is Albert Einstein. When someone hears the word “genius” it is his image that comes to mind. But Einstein was far from being anything like a typical physicist. He worked on *foundational* matters in physics—it doesn't get any more foundational than “What is space and time?” But most physicists do not, and Smolin encapsulates the mindset he grew up with in this tragic, yet all too accurate passage: “When I learned physics in the 1970s, it was almost as if we were being taught to look down on people who thought about foundational problems. When we asked about the foundational issues in quantum theory, we were told that no one fully understood them but that concern with them was no longer a part of science. The job was to take quantum mechanics as a given and apply it to new problems. The spirit was pragmatic; ‘Shut up and calculate’ was the mantra. People who couldn't let go of their misgivings over the meaning of quantum theory were regarded as losers who couldn't do the work.”(p. 312)

This is how the geocentrists treated Copernicus; as if he couldn't calculate planetary positions via epicycles, so he wasted his time inventing fanciful ideas about planets circling the Sun instead. This then is the crux of the matter—the kind of seer most likely to see what physicists have been missing for the last 30 years is also the kind least likely to get hired, let alone respected, in academia.

Early in the book (pp. 49-50) Smolin relates how his first job after getting his Ph.D. was at the Institute for Advanced Study in Princeton. He had hoped in some way to touch Einstein's legacy there. One of the few people still there from Einstein's days was Freeman Dyson. When Smolin asked him what Einstein was really like, Dyson couldn't help him. Dyson said that he, too, had wanted to meet Einstein, and even had set up an appointment. But prior to the meeting, he had obtained some of Einstein's recent papers on unified field theory, and upon reading them decided they were junk. Dyson skipped the appointment and avoided Einstein for the next eight years until the great man died.

Smolin says: “I could only say the obvious: ‘Don't you think Einstein could have defended himself and explained his motivation to you?’

“‘Certainly,’ Dyson replied. ‘But I was much older before that thought occurred to me.’”

The Trouble With Physics is Smolin's attempt to once again “only say the obvious.”

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Novelette: **THE LAST RESORT** by Alec Nevala-Lee

Both sides tend to see environmental issues in simplistic terms. But they're rarely that simple....

I.

The shotgun was not aimed directly at Helki, but its barrel was pointed in her direction, which was more than enough for her to take it personally. The man holding the gun, a tanned hiker whose cowboy hat bore a faded Yaqui emblem, looked at her with a pair of obsidian eyes. "You're the herpetologist?"

"I'm a snake doctor," Helki said lightly. "When I say that I'm a herpetologist, people sometimes get the wrong idea."

This was an old joke, one that she occasionally brought out at cocktail parties, and she had hoped that it would lighten the mood. As it turned out, none of the hikers even cracked a smile. Helki felt even more ill at ease than before, although she would have found it hard to explain why. Glancing over at Victor, who stood a few feet away, she could see that he was wary as well.

It was a few hours after dawn. Helki and Victor had been trudging through the forest, not far from where they had left the Land Rover, when, rounding a bend in the road, they had come across the three hikers. The bearded man in the cowboy hat leaned against the trunk of a lodgepole pine, the shotgun cradled loosely in his arms. A jeep and hybrid pickup were parked nearby. Two younger hikers were seated on the hood of the pickup, a boy and girl dressed in expensive outdoor gear. They seemed like college kids, in their late teens or early twenties, and both were watching her closely, as if wondering how far she could be trusted.

"We've been following the approval process," the man in the cowboy hat said, looking between Helki and Victor. "We knew that you were coming, but we didn't expect you so soon."

"I'm impressed that you even heard about us," Victor said, his voice friendly but guarded. Victor Murakami was one of Helki's oldest friends, and he cut an impressive figure in his Forest Service uniform, his tall, rangy presence making her feel more secure. "What brings you out here?"

"We came for one last look at the lake," the man in the cowboy hat said. "Soon all of this will be gone."

With the barrel of his shotgun, he gestured at the trees, a movement that seemed to encompass the entire forest, with its ranks of lodgepole and mountain hemlock marching up the hillside. At this altitude, beyond the fire zone, mature pines cast a welcome shade across the clumps of monkey flower growing on either side of the road. Further up, above the gray pillars of the trees, towered the eastern ridge of the Sierra Nevada, its wooded mountains still crusted with snow. It was a warm day in early spring, the overcast sky casting a chalky light across the woods. Except for the background murmur of birds and insects, the forest was silent.

The man's words, as well as the absence of any wool or leather in his clothes, made it easy for Helki to guess why he was here. Environmental groups had been protesting the proposed resort development for over a year now, and although Helki knew that their efforts were doomed to failure, their numbers inexplicably continued to rise. "You make it sound like the end of the world," Helki said. "The forest will still be here when this is all over."

The man in the cowboy hat shook his head. "The last round of appeals failed to make any difference. In a year, these woods will be nothing but ski resorts and second homes. It's only a matter of time."

One of the younger hikers, a blond kid with a goatee, spoke up. "You're a forest officer," he said to

Victor. "Instead of oak and pine, we're getting condominiums and parking lots. Are you proud of this?"

"My feelings aren't the point," Victor said, although Helki could tell that he found the question presumptuous. "I'm an ecologist. If the development is environmentally sound, I need to say so."

"But there's going to be a revised report. We saw it in the papers. That's why you're here today, isn't it?"

"It isn't clear yet," Victor said. "When the project was first proposed, we drafted an environmental impact statement. It's possible that it will need to be revised, but there hasn't been a final decision."

"And if you decide that a problem exists, will the development be ordered to cease?"

"Unfortunately, that isn't my call," Victor said. "It's up to the county commission."

The blond hiker sighed. "See, that's precisely the problem. Have you ever been to a meeting of the county commission? Half of the commissioners have ties to the resort industry. Another half own property that will double in value if this development takes place. They all have conflicts of interest, but they don't seem very eager to recuse themselves. If there's money to be made, a handful of snakes aren't going to make a difference."

At the mention of snakes, the girl made a face and turned to the man in the cowboy hat. "Russell, remember—"

The man in the cowboy hat gave her a sharp look, which silenced her immediately. Helki could tell that he held a great deal of sway over his younger companions, especially the girl, and that he was annoyed that his name had been revealed. "You've been to the lake," Helki said. "Have you seen any snakes?"

Russell pointed up the trail with his shotgun. "Over the ridge. You can't miss them."

"Not even if you try," the blond hiker said. "Listen, do me a favor. After you've seen the snakes, come back and let me know if they'll make any difference. If I thought that the county commission would take any of this seriously, I'd have asked them to come out here a long time ago, but I know better. They aren't bad people, maybe, but they lack imagination. They won't act until the day of reckoning. And when it happens, they'll say that no one could have seen it coming."

Helki wanted to challenge this easy cynicism, which expressed a lack of imagination of its own, but she knew that his vision of the future was essentially correct. Lake Molluk, a crater lake ten miles to the east, had already been transformed into a ski resort, complete with luxury condos and video arcades, and its owners hoped to do the same to Lake Yomigo, its undeveloped twin, which lay over the ridge ahead. You didn't need to be a radical environmentalist to have mixed feelings about this kind of development. Even if the resort turned out to be permissible from an environmental standpoint, from an aesthetic point of view, it could only be a disaster.

Victor made a show of checking his watch. "Helki, we really should be on our way."

"Helki," the girl hiker said, addressing her for the first time. "That's a lovely name."

"Thanks," Helki said, regarding her with a biologist's eye. The girl was slim, pretty, and could have been anywhere from fifteen to twenty. Helki was reminded of the time in her own life, not so very long ago, when she had been angry, idealistic, and too immature to understand the need for compromise.

Russell was regarding Helki with evident interest. "That's a Miwok name, isn't it?"

"That's right," Helki said, hoping that Russell would not take this as evidence that they had anything else

in common. She wondered again what he was doing here. If the young hikers were two peas in a pod, Russell was an anomaly. The shotgun, in particular, struck her as an incongruous element. Helki pointed to it. "Were you out here hunting, too?"

Russell grinned at this, as if sharing a good joke. "It isn't loaded. I carry it in case we run into *Homo sapiens nimrodamericanus*. Hunters leave you alone if they think you're one of them."

Helki only nodded. Looking more closely at the shotgun, she saw that a strip of white bandage tape had been laid along the barrel, a modification designed to aid sighting in poor lighting conditions. It was the sign of a man who knew how to use a shotgun as a defensive weapon, not merely for hunting or show, and it bothered her. She thought about asking to see a permit, but decided to let it go.

After exchanging a few more guarded words, the two groups parted ways. Helki and Victor continued up the hill, heading for the spur that overlooked the lake. As she walked away, Helki found, somewhat to her surprise, that she was furious. She didn't blame the hikers for feeling bitter about what was happening to the lake and forest, but it stung to be treated like one of the enemy. A quisling. Now that the encounter was over, Helki imagined herself saying all the right things, eloquently arguing that working within the system was the only way to make a meaningful difference. Deep down, however, she knew that such an argument would not go far with the hikers, no matter how convincingly it was worded.

They took a switchback trail that diverged from the main road, heading up the hillside. As soon as the pines had blocked the hikers from view, Victor spoke. "Did you see what was hanging from the truck's rearview mirror?"

Helki tried to remember, but saw only the vague image of a pendant. "No, what?"

"It was a little emblem, like something from a charm bracelet. A monkey wrench."

Helki considered the news in silence. Among certain environmental activists, a monkey wrench was a symbol of direct action. Usually this meant nothing more dangerous than protests and picket lines, but it could also mean blockades and fire bombs. "You think they're planning something?"

"Maybe." Victor glanced back, as if to make sure that they weren't being overheard. "There have been a number of protests over the proposed development. Arson. Tree spiking. That sort of thing."

"Should we report it?"

"I'm not sure yet. After all, there's no evidence that they're planning anything. All we know is that they're opposed to the ski resort, and there's nothing wrong with that." Victor smiled. "If anything, I envy their certainty. I wish that I had that kind of passion these days."

"It's a class privilege," Helki said. "It's easy to care about the planet when you've never had to worry about anything else."

Victor marched up the trail, which was sandy and laden with pumice. "I seem to remember that both of us were promising activists back in the day, and I wasn't exactly a trust fund baby. Neither were you."

Helki granted the point. "And what happened? I grew up, got married, and became a government consultant. My conscience is clear. But those kids were looking at me as if I were the worst kind of sellout."

"You learned to work within the system, that's all. I made the same choice." Victor gave her a rueful grin. "I don't think that it was just an excuse for cowardice. Of course, I could be wrong."

Helki knew that this remark concealed a deeper set of concerns. Victor often spoke of his mixed feelings towards the Forest Service, which was notoriously inclined to bend over backwards to cooperate with local development interests. Although he claimed to have come to terms with the political realities of his work, Helki suspected that he would leave for good one day.

Before she could ask him about this, however, she became aware of a rustling noise coming from beyond the ridge, a sound like the murmur of dry leaves. "Hold it," Helki said. "We're close."

They halted. The crest of the hillside was a few steps away, a row of trees outlined against the sky. Here the mountain hemlock had fallen back, leaving only lodgepoles and white pine, their bark the color of cinnamon where the trunks were exposed to the wind. Victor paused at the edge of the trail, one foot propped on a mossy stone. "So what do we do now?"

"We tread softly." Helki sat on a fallen pine beside the footpath, its scaly gray trunk like a monumental spinal column. Indian paintbrush covered the ground to either side, the dense clumps of stems topped with spikes the color of blood. From her pack, she took a pair of soft shoes. After changing out of her hiking boots, she removed two pillowcases from her pack and draped them over her arm.

They ascended the spur, which disclosed a spectacular view of the surrounding forest. In the distance stood the mountain itself, a lava dome complex on the southwestern edge of Long Valley Caldera. Despite the warm weather, its slopes were covered in a sparkling layer of snow. In the basin at the foot of the mountain lay Lake Yomigo, a limpid crater lake nearly a mile across, surrounded by a maze of use paths. Miwok legend regarded the lake as a haunted place, but in the daylight, it was nothing more than one of many gorgeous landscapes in this part of the Sierra Nevada.

For the moment, however, Helki saw none of these things, her attention fixed on the ground. The lee side of the hill ran three hundred yards down to the edge of the lake, its surface covered with fissured boulders. The slope was steep and uneven, a broad apron of gray talus and scree, and Helki had to work to keep her balance as she made her way towards the living, squirming carpet at her feet.

The ground was moving. It rippled and writhed in ropy lines, undulating in a sea of olive green. From where they stood to the edge of the lake, the hill was covered with thousands of slender bodies.

"Garter snakes," Helki said. For a long moment, she could say nothing else, her heart pounding with exhilaration. There were at least five thousand garter snakes on the hillside. They had been sleeping through the winter, their blood as thick as strawberry jam, and now they were emerging from brumation, gathering to reproduce and migrate. "Isn't it wonderful?"

She looked back at Victor, who had remained at the top of the hill. He seemed pale, with a forced smile on his face, as if he had not fully understood what they had come here to observe. "Yeah," Victor said. "It's great."

Helki was already scooping up handfuls of snakes and tossing them into a pillowcase. Their bodies were soft and cool, a curious blend of suppleness and rigidity. She handed a second pillowcase to Victor, who had picked his way carefully down the steep palisades of granite and loose stone. "I need to get a hundred snakes for marking," Helki said. "Be sure to get some females. You can tell them apart from the males because they're twice as long."

Victor picked up a snake, holding it gingerly behind the head. "Have you ever seen anything like this?"

"Not around here," Helki said, pausing to examine one of the snakes more closely. It was slender, eighteen inches long, with keeled dorsal scales. A yellow ribbon ran along its dark green back, a pale stripe on either side. "You need to go to Manitoba to see this sort of thing. At Narcisse, you'll sometimes

see twenty thousand snakes at a time, but I've never seen it in California."

As she spoke, she grew increasingly excited. She would need to review the literature to be sure, but she was fairly certain that this behavior was unprecedented in *Thamnophis elegans*. The snakes were forming mating balls, a hundred males clustering around a single female. After being impregnated, the female would escape, heading for her spring feeding grounds, and the mating ball would disperse, the males scattering in all directions in search of another willing prospect.

Helki saw that Victor was no longer collecting snakes. He was standing on one of the boulders, seized, it seemed, by an attack of ophidiphobia. Helki was amused by this, but also concerned. She knew that he had to keep him talking. "Admit it. This is more fun than a day at the office."

Victor nodded weakly, knelt, and managed to stuff a handful of snakes into the pillowcase that was writhing in his hands. "It beats dealing with the resort companies. At least the snakes don't have lawyers."

"Well, I don't know about that," Helki said. "We still haven't checked underground."

Helki finished filling her pillowcase. Taking a marker from her pocket, she removed the captured snakes one at a time, tagging each one on the belly with a purple stripe. After each snake had been marked, it was let go. As she worked, she kept a mental tally of how many she had released. Tomorrow, she would collect another sample, and by counting the number of tagged snakes that reappeared in the second lot, she could arrive at a rough estimate of the total population.

As Helki marked the snakes, her eyes kept returning to the mountain and lake. It occurred to her that the appearance of mating balls, which was unprecedented in this area, might have been caused by a drop in the average temperature. "What kind of weather have you been having?" Helki asked. "A cold winter?"

Victor handed her his pillowcase, which was only halfway full. He seemed glad to be rid of it. "No, it was unusually mild. Not a lot of snowfall. I can look up the records, if you like."

Helki pointed toward the mountain, the lower slopes of which were frosted in snow. "So this is artificial?"

"Not exactly," Victor said. "It's too expensive for the resort to depend exclusively on snowmaking, so they've developed ways of preserving the natural snowfall." He pointed to a wooden building on the far shore of the lake, close to the water's edge. "They installed a cooling station last year. It pumps cold water out of the lake and runs it through pipes in the mountainside, which lowers the ground temperature and keeps the snow from melting."

Helki was surprised by this. "I didn't realize that the slopes were already operating."

"They aren't," Victor said. "The resort owners don't want to start construction until they're sure about the location. They've been doing a dry run of the cooling system for a few months. They did the same thing at the resort at Lake Molluk. Before they installed the cooling system there, snow preservation was lousy. That's why the area wasn't developed until recently."

"What about environmental factors? It doesn't affect the ecology of the lake?"

"They've passed all of the regulatory hurdles. The system is a closed loop. When the water returns to the lake, it may be a few degrees warmer, but the overall temperature of the lake remains constant." Victor paused. "Do you think this has something to do with the increase in the snake population?"

"We have to consider the possibility." Helki looked at the snakes, trying to imagine what might have caused the increase in numbers. "You said that the cooling system was installed last year?"

"Yes, in advance of any other construction," Victor said. "It's the only major development in the area so far. Are you wondering if the snakes might have migrated here in response?"

"Maybe," Helki said. "If the cooling system disturbed their natural habitat, they may have been forced to relocate."

Victor scratched his chin. "You know, there's another possibility. Maybe I'm just being paranoid, but is it possible that these snakes were introduced into the environment on purpose?"

Helki finished marking and releasing the snakes, leaving only six specimens behind. "To stop the construction? I doubt it. If you want to rally the public against habitat destruction, you need something cute. Reptiles don't cut it. Snakes, especially, don't cut it. Believe me, I know."

From her pack, Helki took a plastic sweater box that she had lined with newspaper. Removing the lid, she placed the six remaining snakes in the box, which she had stocked with a homemade blend of gelatin and pulverized trout. As she watched the snakes, she was struck again by the jeweled perfection of their heads, the graceful engineering of their streamlined bodies. It was a shame, she thought, that so few people could appreciate such elegance.

"If only we had more time," Helki said, caught off guard by her own frustration. "Nothing we do is going to stop this development."

Victor was watching her closely. "It's been a long time since I've seen you so angry."

"I know," Helki said. "But this isn't why you hired me. I promise that my report will be completely objective."

"I never doubted that it would be," Victor said. "If it makes you feel any better, I hate this, too. I couldn't say anything to those hikers, but the last thing that the world needs is another ski resort. Just don't tell my wife—"

Helki smiled at this. The day before, at Lake Molluk, Victor's wife had immediately fallen in love with the resort, along with Helki's husband and daughter. Before leaving the hotel that morning, Helki had promised to come back in the afternoon, so that they could all hit the slopes together. She supposed that her family was outside now, savoring the beauty of the morning and the pleasure of fresh powder without giving more than a passing thought to their environmental cost. It must be nice, she thought, to enjoy such things with a clear conscience.

They climbed back over the ridge, away from the lake, until the den of snakes was out of sight. Helki carried the sweater box by its handle, swinging it gently from side to side. When they returned to the spot where they had met the hikers, she saw that the pickup truck and jeep were gone. She lingered for a second, looking at the deserted clump of pines, remembering how she had wanted to tell the hikers that working within the system was the best way to get things done. For the first time in a long while, she allowed herself to wonder if she might be wrong.

The same thing seemed to have occurred to Victor. Without looking in her direction, he cleared his throat. "I don't think that we need to report this encounter to anyone. What do you say?"

Helki took a moment to reply. "Are you hoping for some direct action? Or is it—"

"I didn't say that," Victor said, cutting her off. "I'm only suggesting that we leave it alone. If someone wants to take the fight outside the system, I'm willing to look the other way."

Helki felt a surge of affection for Victor, who, it seemed, had not entirely abandoned the ideals of his

youth, as quixotic as they might seem in the light of adulthood. "Me too. Let's leave it at that."

As she spoke, a muffled explosion came from beyond the ridge. Helki turned toward the sound. She assumed that it was noise from the construction taking place on the far side of the lake, but part of her wanted to believe that it was something more. "Our friends at work?"

"I'm impressed," Victor said, although he clearly didn't take her suggestion seriously. "They certainly—"

He broke off. A low roar, slowly gathering in volume, was coming from beyond the hill. At first, it was no more than a vibration, a tremor that Helki sensed as much through the soles of her feet as with her ears. As the roar grew louder, it rose to the level of thunder, although it continued to hug the ground. At its loudest, a few seconds after it had begun, it sounded as if a fighter plane were swooping low across the lake, which was hidden from view by the hillside.

Finally, the sound died, the volume diminishing as if someone were turning down the knob on a stereo. In the sweater box, the snakes were writhing in agitation. Helki looked at Victor. "What the hell was that?"

"I don't know," Victor said, his voice full of uncertainty. "Let's check it out."

They headed for the ridge, which would give them a view of the forest. In the silence that followed the thunder, the woods seemed unnaturally quiet. Helki felt a series of dry thumps at her side. Looking down, she saw that the snakes were throwing themselves against the walls of the box, as if trying to escape.

A moment later, as they reached the switchback trail that led to the crest of the hill, Helki paused. There was a strange smell on the breeze, like a faint whiff of rotten eggs. "Victor, hold on for a second."

Victor halted and looked back at her. She could tell that he was worried. "What is it?"

"Something's wrong," Helki was about to say something else, but was cut short by an acidic taste in her mouth. Her saliva had grown sour, as if she had swallowed a dose of bad medicine. "We need to get out of here—"

Even as she spoke, she grew disoriented, as if the ground had tilted to one side. All around her, the forest seemed to expand and contract. Her breathing became rapid and shallow.

Looking at Victor, she saw that his face was flushed. As she drew a surprised gasp at the sight, the first intake of air told her everything. There was something on the wind. A stiff breeze was blowing across the forest, and with every breath that she took, an invisible invader was passing into her bloodstream.

"Come on," Victor said. They turned and cut across the switchback trail, walking quickly, then breaking into a run, the toes of their shoes knocking up spumes of pumice and sand. Although Victor was normally the faster runner, Helki overtook him with ease. Something was terribly wrong, but the danger, if real, was internal and inescapable. It filled her with a freezing horror, a sense of being occupied by an unseen enemy. Her nerves were screaming. For the first time in her life, she had a sense of how it would feel to go mad.

She ran blindly, aware of nothing but the hole that seemed to grow in her chest with every lungful of air. As she neared where they had parked the Land Rover, she found that she could no longer hear Victor's steps. Turning, she saw him crumpled in the road, his hands clutching at the sandy soil.

The box fell from her hands, struck the ground, and broke open. The snakes began to slither slowly away, their tails flicking feebly against the dust. Although she barely had the strength to walk, she ran to where Victor had fallen, the woods seeming to press against her from all directions. She knelt at Victor's side, trying to shake him awake, but his eyelids only fluttered in response. Helki swore, hoping that the

sound would give her courage, but only a whisper escaped from her lips. All around her, the world was growing red.

She hauled Victor to his feet, his arm slung over her shoulders, and stumbled towards the Land Rover, feeling as if her legs were mired in mud. Her muscles protested, aching, as she willed herself forward one inch at a time.

As the forest grew darker, Helki felt the acid taste spreading through her mouth and throat, sharpening the smell of rotten eggs. She no longer remembered why she was trying to reach the Land Rover. It seemed like a senseless effort, pointless, when all that she wanted was to sleep—

Her legs scissored onward, more through momentum than conscious effort. The Land Rover trembled before her, as tantalizing as any mirage, and then she was at its side. Next to her, Victor groaned.

Helki's strength was all but gone, but she managed to open the back door and shove Victor inside. As she shut the door, reaching the driver's seat seemed impossible, but she forced herself to take the few necessary steps. Her fingers seized the door handle and yanked it open. She got behind the wheel. The sound of the closing door was like that of a safe swinging shut.

Helki stared at the driver's console, her sight failing. She couldn't remember what she was doing here. Her hands groped for her key ring, operating solely out of muscle memory, but when her fingers closed around the cool metal of the keys, she no longer recalled what they were for.

Her head fell forward, coming to rest against the steering wheel. In the last second before she lost consciousness, she saw something through the windshield, an image that followed her down into the darkness. The sweater box lay where it had fallen open, but the snakes were no longer moving.

* * * *

II.

When Helki opened her eyes, her first thought was that the sun was in the wrong place. She was slumped forward, her body aching from being in such an awkward position for so long. Her nose was a few inches from a pebbled surface, like the cratered expanse of an asteroid. As her vision cleared, she saw that it was the grain of the steering wheel. She was still in the driver's seat.

Helki forced herself to sit up. Her head was pounding, and she was painfully thirsty, her tongue adhering to the roof of her mouth. She had been lying on her right arm. As she shifted it gingerly, feeling as if a scrap of dead flesh had been grafted onto her shoulder, it flooded with pins and needles.

The air inside the Land Rover was stale. In the back seat, Victor was leaning to one side, his head resting against the window. His eyes were closed. Helki reached back and nudged him with her left hand. "Victor?"

Victor's head jerked upward, his hands rising in an automatic gesture of defense. He looked at her wildly. "What happened?"

"I don't know," Helki said. There were blisters on Victor's forehead, inflamed circles the size of pinheads. A glance in the mirror revealed the same blisters on her own face, as well as a red triangle from where her head had pressed against the steering wheel. She suppressed a crazy laugh at the sight.

Victor was looking around the Land Rover in confusion. "How did I get here?"

"I carried you," Helki said. "I got as far as the driver's seat, and I passed out. That's all I know."

Victor clutched his head. "You carried me? How long have we been like this?"

Helki pulled out her cell phone to check the time. As she did, she noticed a blinking red light on the display, which said that she had ten missed calls. Her sense of dread only deepened when she saw what time it was.

"It's four in the afternoon," Helki said dully. "We've been here for eight hours."

Victor stared. "You're kidding." He pulled up his sleeve to check his own watch, and was unable to speak for a long time. When he did, his voice was hushed. "What the hell happened?"

Before she could reply, Victor opened his door and climbed out of the car. Helki tried to stop him, afraid of the possible danger, but when he seemed to suffer no ill effects, she opened her own door a crack.

The smell of rotten eggs was gone. After a moment of hesitation, she opened her door all the way and got out, her shoes crunching in the dirt. The forest was still. No birds sang. The insects were silent.

"Look at this," Victor said, kneeling in the road. Helki limped over to where he was crouching, her legs weak. When she bent down to see what he had found, she saw that the ground was covered with lifeless insects. She picked up the fragile husk of a dragonfly. It was perfectly intact, but dead.

Helki went further into the woods. At the foot of a lodgepole pine, she found a dead bird, a woodpecker that had fallen from the branches. Other birds lay unmoving on the ground, thrushes and sparrows lying among the lavender asters. A squirrel had died with its paws clenched.

Victor was standing beside her, the color drained from his face. "We can't stay here."

"Wait," Helki said. She went back to where she had dropped the box of snakes, only fifty feet from the Land Rover, although the distance had seemed endless at the time. The box lay where it had fallen, the lid open, sheets of newspaper and shreds of food scattered along the ground. The six snakes were nearby. One had died inside the box itself, while four others had managed to crawl a few feet. The final snake had died two yards from the box, its body twisted and contorted.

Helki looked at the dead snakes in silence. Before she knew what she was doing, she was moving up the trail towards the ridge. Victor fell into step beside her. "Where do you think you're going?"

"The snakes," Helki said, her voice weak from thirst. "I need to see if they're okay."

As she ran forward, she noted further signs of devastation. More dead birds lay on the ground. Lifeless bugs crunched underfoot. When she reached the path that led to the top of the hill, she ran towards the spur. A minute later, the lake and hillside were at her feet. When she saw what was there, tears sprang into her eyes, but she wiped them quickly away.

All of the snakes were dead. The hill, which had once teemed with life, was covered in thousands of bodies, as inert as severed lengths of cord. Helki picked up the remains of a mating ball. The snakes were heavy and limp.

No scavengers had descended. Helki knew that crows should have appeared to pick out the livers of the snakes, gorging themselves on so tempting a feast, but nothing stirred on the hillside. No insects. No birds.

Victor's shadow fell across the ground before her. There was a pause before he spoke. "I'm so sorry."

Helki shook her head. "It's genocide. There's no telling if any of the snakes survived to carry on the

reproductive cycle.” She looked up at Victor. “*Who did this?* What reason could anyone possibly have?”

Victor said nothing, his eye caught by something in the distance. Following his gaze, Helki looked at the lake itself, and realized that things were even stranger than she had guessed.

Lake Yomigo, which was normally a deep blue, had turned red. Although the edges of the lake remained transparent, a crimson pool, the color of blood, had appeared at the center of the water. The sight, which reminded her of the plagues of Egypt, made her own blood run cold.

When she raised her eyes further, she saw disaster of a more everyday kind. At the far shore of the lake, the cooling station was in ruins. Although the fire, if there had been one, had gone out, the walls and roof of the station had fallen in. Fire trucks and emergency vehicles were parked nearby, paramedics and firemen moving in efficient formations. The sight was strangely comforting.

"We should drive over there," Victor said. "Maybe they can tell us what happened."

"Give me a second," Helki said. She picked up a pair of dead snakes, acting out of a vague sense that it would be wrong to leave them here. Victor watched, but did not lend a hand. As she gathered the snakes, a scrap of conversation echoed through her brain. She wanted to ignore it, but couldn't stop remembering what the blond hiker had said. *A day of reckoning*—

They were heading back to the road when the cell phone vibrated against Helki's hip. It was her husband, whom she had left behind at Lake Molluk. Remembering her ten missed calls, she answered the phone. "Jeff?"

His voice was full of anxiety. "Where are you? I've been trying to call for hours—"

"I know," Helki said. "Something happened here. I couldn't call back before now."

"Are you all right? There have been reports of an explosion at the lake. The police are calling it ecoterrorism. I've been trying to talk to the ski patrol, but they won't give me a straight answer—"

"Don't worry," Helki said, although her heart was pounding at the news. "I'll be back at the resort soon. How is Emily doing?"

"She's fine, but she wants to know where her mommy is. Why couldn't you call?"

Helki hesitated, not wanting him to worry. "It's a long story. I can explain everything when I see you again."

"All right, but don't stay out much longer," Jeff said. "We need you back here."

Jeff hung up. Helki exhaled deeply, missing him, the dead snakes heavy in her other hand. Victor, whose cell phone failed to get a signal, borrowed her phone to call his wife, who was also at the resort. As soon as she answered, he reassured her, in a mixture of Japanese and English, that they were coming back soon. When he was done, he hung up and returned the phone to Helki without a word.

As they neared the spot where they had parked, Helki silently reviewed the morning's events, hoping that she would remember something that would convince her that the hikers had not been responsible for what she had seen. Whenever she came close to persuading herself, she remembered the monkey wrench hanging from the rearview mirror. The signs had been there, and she had ignored them, or welcomed them, hoping that the hikers would engage in some minor act of vandalism that would force the resort to take notice. But if they had decided to go further—

This train of thought was severed as soon as she came within sight of the Land Rover. A police car had pulled up nearby, and two figures were standing next to the cruiser. One was a sheriff's deputy, his appearance calm and professional. The other man, wearing a fleece jacket embroidered with the logo of the ski resort, had his back turned, but Helki recognized him at once.

"What do you know?" Victor said quietly. He picked up the pace. "It's Frank."

Helki knew that he was not pleased by this. Frank Burton was the head of mountain operations at Lake Molluk. He was shrewd and friendly, but a company man to the core, and had cooperated only grudgingly with the Forest Service's environmental studies. When he saw them coming, however, the look of relief on his face seemed genuine. "Thank God," Frank said as they approached. "I was afraid that we were going to find another pair of bodies."

Victor went up to the two men, with Helki hanging back a few steps. "Bodies? How many have you found?"

"Twelve dead," the deputy said. "Mostly campers. All within five miles of the lake."

Helki was shocked by the news. On some level, she had been hoping that there would be no human casualties. "What was it?"

"Nobody knows," Frank said. "It looks like the victims just lay down and died." He regarded them curiously. "You must have been right by the lake when it happened. Are you all right?"

Victor quickly explained what had taken place, although he did not mention the hikers. The deputy frowned. "You need to be checked out. We have an emergency care team nearby—"

"Wait a minute," Helki said, tired of being in the dark. The two dead snakes were still in her hands. "Before we go anywhere, you need to tell us what's going on. We heard the explosion, but we don't know anything else."

"Isn't it obvious?" Frank asked. "It was ecoterrorism. Some kind of bomb destroyed the cooling station and killed everything within miles. God knows how many casualties we haven't even found yet—" He broke off, then forced himself to start from the beginning. "This morning, an alarm went off at ski patrol headquarters, indicating that there was a fire at the cooling station. At first, we didn't take it too seriously. There have been false alarms before—"

"What about the operating crew?" Victor asked. "Wasn't there anyone at the lake?"

"Not that early in the morning," Frank said. "It took us a while to assemble a team to check it out. At worst, we thought that we might be dealing with arson or vandalism, the sort of thing we've seen in the past. When we got close enough, we saw that the station was in ruins, but the fire had gone out on its own. We were about to investigate, but when we found dead birds and animals on the ground, it made us nervous about staying. So we called the sheriff's department."

"When we got the call, we sent out a few fire trucks," the deputy said. "They've got biohazard gear and equipment for detecting chemical agents. When we swept the region, we found nothing. No contaminants, no residue. As far as we know, the forest is clean. Except for twelve bodies and a ton of dead animals, there seems to have been no environmental impact at all."

"What about the red stuff in the lake?" Victor asked. "Do we know what that is?"

"We're doing tests," Frank said. "Whatever it is, it doesn't seem toxic. As of now, our focus is on finding witnesses and survivors. That's what we were doing when we came across your vehicle."

Helki was still trying to grasp the scale of the attack. The emotional core of her brain had closed off, as if her reservoir of feeling wasn't deep enough to respond to what had happened. "Do we have any idea who did it?"

"As far as we can tell, the bomb was detonated by cell phone, which is consistent with ecoterrorism," the deputy said. "Red paint was slobbered around the scene, which we've seen before. But the casualties? I've never seen anything like it. If it was a chemical attack, the agent has dispersed without a trace. Nothing in the bodies. Nothing in the air. No sign of how any of this was done."

"Maybe the point was to leave nothing behind," Frank said. "If I were an ecoterrorist, I wouldn't set off a weapon that would leave the forest uninhabitable. Maybe they've developed an agent that causes one round of casualties, then evaporates cleanly. The opposite of a dirty bomb. Green terror."

Helki knew that this was pure speculation, but it frightened her anyway. Looking at Victor, she found that he would not meet her eyes. She knew that they needed to mention the hikers, but forced herself to hold back. Before they said anything to the police, she wanted to be sure that they were on the same page.

"I need to get back to Lake Molluk," Helki said. "My family must be worried sick."

"You'll need to come to the crisis command center," the deputy said. "After you've been checked out, you can go." He headed for the cruiser. "Are you all right to drive? If not—"

"We'll be fine," Victor said quickly. "We were knocked out for a while, that's all."

The two men waited in the police car as Helki and Victor headed for the Land Rover. Climbing into the driver's seat, Helki sat for a moment behind the wheel, remembering their last desperate scramble for the car, an effort that had saved their lives, although she wasn't sure why. Finally, she started the engine and followed the police cruiser down the road.

The forward motion, taking them back to civilization, seemed to clarify her thoughts. Helki felt a purifying rush of anger. "*Why did they do it?* They acted as if they were the only ones who cared about the natural world, and now twelve people are dead. And the snakes—"

"I know. It's insane." Victor looked out at the pines. "Or maybe it was inevitable."

"Inevitable?" Helki found it hard to focus on the road. "It was murder. They planned it and carried it out. Maybe they didn't expect human casualties, but they must have known that animals would die."

"I'm not excusing it," Victor said. "I'm just trying to understand it. Environmental radicals have spent years attacking property. They spike trees and burn down ski lifts, and what happens? Nothing. It's all insured. If you torch a resort, the owners just build a new one. I can see why some activists might decide that outright terror was their only option. A last resort."

"But how can you not wear leather and then carry out an attack that kills thousands of animals? It doesn't make any sense."

"You remember what the deputy said. This was a clean attack. No trace of chemicals or toxins. If you were an ecoterrorist, you might decide that a few thousand casualties were acceptable for the sake of the larger cause, but you'd draw the line at permanent ecological damage. Maybe this was a test. They developed a clean weapon and released it in an isolated area to see if it dispersed. And if they were watching to see what the effects would be, they're probably pleased by the outcome." Victor paused. "So what do we tell the police?"

"I don't know," Helki said. "They'll want to know why we didn't speak up before. If we'd known what

the hikers were planning to do—"

"There was no way for us to know," Victor said. "Nobody could have foreseen this."

Helki didn't respond. Through the windshield, she saw a scattering of white tufts in the field ahead. It took her a second to realize that it was a flock of sheep that had been struck dead where it stood. The sheep lay close together, thirty or forty in all, like lumps of cloud that had fallen from the sky. There was no sign of the shepherd. Looking at the flock, Helki felt the prick of fresh tears.

A second later, she saw something in the forest beyond the field. She braked sharply. The vehicle lurched to a stop, sending them rocking forward in their seats. Victor was staring at her. "What is it?"

Helki turned off the ignition. Up ahead, the police cruiser stopped, reversed itself, and pulled up alongside the Land Rover. The deputy rolled down his window. "Is something wrong?"

"I saw something in the woods," Helki said. She pointed through the windshield, halfway hoping that what she had seen would be gone, but it was still there. "A pickup truck."

The deputy turned to look. A private road, barely wide enough for a single vehicle, ran along the edge of the field into the woods beyond. Across the entrance, a rusted chain stretched between two posts, a sign hanging from its sagging center: *NO TRESPASSING*. Three hundred yards further down, behind a clump of pines, stood the pickup truck, only its tailgate visible from the main road.

"We've seen this truck before," Helki said. "On our way to the lake, we passed some hikers in the forest. A jeep and pickup truck were parked nearby. When we came back, they were gone."

Frank was studying her face. "You think that they could have been a part of this?"

"It's possible," Helki said. She didn't elaborate, but when Frank turned to Victor for confirmation, he nodded.

"All right," the deputy said. He got out of the car, its door pinging softly, and knelt to examine the ground. A moment later, he rose. "Fresh tire tracks. They must have replaced the chain after driving through."

The deputy unhooked the chain and bore it off to one side. Climbing back into the cruiser, he eased onto the private road, driving between the posts. Helki followed, tires grinding in the dirt, her hands clamped tightly on the steering wheel. After two hundred yards, they halted. The pickup had come clearly into view. A woman was seated in the passenger's seat.

Frank and the deputy emerged from the police cruiser, their eyes fixed on something on the road. Helki set the parking brake and got out, followed by Victor. Through the pines, the lake was visible in the distance. Dead birds and insects lay on the ground, along with something else.

Ten feet from the pickup, the blond hiker was stretched out in the dirt, his face turned toward the sky. He was dead. His heels had dug shallow hyphens in the soft soil, as if he had convulsed on the ground before his death.

The girl was slumped in the cabin of the truck, her eyes closed. She was not moving. As the deputy ran up to the blond hiker's body, Frank approached the truck, not taking his eyes from the girl.

A bundle lay in the bed of the pickup, covered with a tarpaulin. To Helki's surprise, instead of going immediately to the girl, Frank reached over the side and pulled the covering away. Underneath, there was a jumble of tents and bedrolls. Fishing around, Frank found a soda bottle full of red liquid, which sloshed against the sides of the container when he shook it.

"Red paint," Frank said quietly. "The same kind that we found at the cooling station."

Through the cabin's dirty windows, which were rolled up, the girl remained motionless. Helki opened the door. As she did, she saw that the monkey wrench icon was still hanging from the rearview mirror.

At the sound of the door, the girl's eyes opened. She looked weakly from side to side, only her eyes moving, her head slumped against the seat. A low moan escaped from her throat.

Frank set down the bottle of paint and hurried over to the cabin. The girl stared at the newcomers, as if unable to remember if she had seen them before, but her eyes finally locked on Helki.

"Helki," the girl said weakly. At the sound of her name, Helki felt the hairs rise on the back of her neck. Out of the corner of her eye, she saw a surprised look on Frank's face as the girl murmured a string of incoherent words: "The fountain. Helki, you need to stop him. I didn't know. Lake Molluk—"

"Lake Molluk?" Helki asked. She felt a rush of fear. "What about Lake Molluk?"

The girl closed her eyes, head rocking, as if she were caught in a delirious dream. She spoke Helki's name again, then fell into unconsciousness. Helki took her by the shoulder and shook her, but the girl said nothing more. The message, whatever it was, would remain incomplete, but Helki had heard enough. All the while, Frank watched her closely, his eyes narrow with suspicion.

* * * *

III.

After calling for an ambulance, the deputy knelt by the blond hiker and began performing chest compressions, although the boy seemed beyond the point of saving. Helki and Victor helped the girl out of the front seat, laying her on the ground with her feet elevated. As they wrapped her in a blanket, she did not move or respond, breathing shallowly, her eyes jumping behind closed lids.

"Lake Molluk," Helki said to herself, watching as the deputy tried to revive the hiker. She wondered if the girl had been trying to warn her of a second attack. The first attack, as devastating as it had been, had been in an isolated location. The resort at Lake Molluk, by contrast, had thousands of people, including—

Helki pulled out her cell phone. Dialing her husband's number, she waited for it to ring, but the call died without going through. She was trying again when Frank plucked the phone from her hand. "We need to talk."

"Give me back my phone," Helki said fiercely. "I need to get my family out of here. You heard what the girl said—"

"I heard her say your name," Frank said. "She knew you. You need to tell me why."

Helki took a breath, forcing herself to remain calm. "We ran into three hikers near the lake. They may have overheard my name."

"Three hikers?" Frank's eyes were drilling into her face. "There are only two here."

"There was a third man," Victor said, coming up to where they stood. "His car isn't here now." He related what had happened with the three hikers, leaving out the details of their subsequent exchange over whether or not to report the encounter. "We thought that it seemed strange, but not urgent enough to report right away. Maybe it was the wrong call—"

Frank looked down at the unconscious girl. "So when you saw the hikers, they were coming back from planting a bomb at the cooling station. They didn't count on meeting anyone in the woods, but after leaving you behind, they decided to go ahead with the plan. One man went to Lake Molluk, maybe to prepare a second attack, and the two kids came here. When the bomb went off, they were caught in the blowback. Does that sound plausible?"

"I don't have enough information to say," Victor said. "Why are you asking us?"

"I just want to be sure that there isn't anything that you aren't telling me," Frank said. "If I remember correctly, you weren't too happy about the development at Lake Yomigo. Am I right?"

Instead of replying, Victor went up to the deputy, who was growing tired, and took over the chest compressions. The deputy rose, perspiring, and checked the pulse of the girl who was lying nearby. She was breathing, but still unresponsive. As Victor continued to perform cardiopulmonary resuscitation, the deputy went over to the truck and rifled through the glove compartment, coming up with some papers and two cell phones. Helki turned away, focusing on the body of the blond hiker. She could feel Frank's eyes on the back of her head.

When he had finished his search of the pickup, the deputy rejoined the group. "I've got identification and vehicle registration," the deputy said. "They drove here from Arizona. As far as I can tell, their cell phones were new and prepaid. No record of incoming calls. One outgoing call on the boy's phone. It may have been the call that set off the bomb." He trailed off, sensing the tension in the air. "Is there something that I should know?"

Frank tersely related what he had been told. When he was finished, the deputy looked at Helki. "What did the third man look like?"

"Tall and bearded," Helki said. "He was wearing a Yaqui emblem on his cowboy hat. Old clothes, no wool or leather. He had a shotgun with a strip of bandage tape along the barrel. His name may be Russell."

The deputy asked a few more questions about Russell's appearance, then relayed the description over the radio. "All units will be alerted," the deputy said when he was done. "If he's here, we'll find him."

"What about evacuating the resort?" Helki asked, afraid that they weren't taking the risk seriously enough. "If the second attack is anything like the last one, thousands of people are going to die—"

"Security is on high alert throughout the resort," Frank said. "We can't do anything else. If we evacuate without good reason, we're just going to start a panic." He fixed her with the same suspicious gaze as before. "Or is there something else that you'd like to tell me?"

"Nothing that you haven't already heard," Helki said, refusing to be intimidated. As she spoke, the ambulance drove up, lights flashing. Two paramedics got out, shouting questions, as Victor stood aside. After checking the blond hiker for vital signs, the lead medic shook his head. As the two hikers were loaded into the ambulance, the girl's eyes opened and came to rest on Helki's face. Helki remembered their wild expression long after the ambulance doors had shut.

Before leaving, one of the paramedics gave Helki and Victor a cursory medical exam. "You're good to go, but you'll need to report to a hospital for a more thorough checkup," he said when he was done. "We've seen acidosis in some of the survivors. You may need to receive further treatment."

Victor, who had lapsed into an exhausted silence, perked up at this. "Acidosis? Are you sure?"

But the paramedic was already turning away. After consulting with the deputy, the two medics got into the ambulance and drove off. Helki was left beneath the pines, unable to think of anything but the possibility of another attack. Nothing else mattered. She had to get back to her family.

In the end, Frank agreed to let them drive back to Lake Molluk, but insisted on coming along in the Land Rover, as if reluctant to let them out of his sight. Victor was standing to one side, apparently lost in thought. Helki nudged him gently. "Listen, we need to go—"

"Just a minute," Victor said. He turned to Frank. "I have a question. When you got to the cooling station, it looked as if it had caught fire after the bombing, but it wasn't burning, right?"

Frank climbed into the Land Rover. "That's right. The fire went out on its own."

"I may know why." Victor opened the trunk and rummaged around for a few seconds, finally emerging with a gas lighter, the kind with a long nozzle that was used to light barbecues. He headed for a fire pit a few yards away. The pit, installed for campers, was a shallow depression lined with bricks, about a foot below the ground. Standing over the pit, Victor pressed the button on the handle of the lighter. A yellow flame appeared at one end.

"Let's see if I'm right," Victor said. He lowered the tip of the lighter into the fire pit until the flame was below the surrounding ground. As Helki watched, the flame winked out immediately.

Victor pressed the button several more times. Although Helki could hear the ignition mechanism clicking, it refused to light again. When Victor removed the lighter from the pit and raised it a few feet above the ground, however, a fresh flame appeared as soon as he tried to light it.

"Carbon dioxide," Victor said. "It's heavier than air, so it sinks to the ground and gets caught in depressions like this. When carbon dioxide levels are high, it's impossible to light a flame."

Helki considered this new piece of information, which explained why the fire at the cooling station had gone out. She remembered the roar that she had heard after the explosion, and how she had been overwhelmed by panic when she tried to approach the lake. Finally, she remembered what the girl in the pickup truck had said a moment ago. *The fountain—*

The last piece fell into place. Helki knew what had happened. "A limnic eruption."

"Yes, I think so." Victor clicked off the lighter. "I wouldn't have believed that it was possible, but—"

Frank was leaning out the window of the Land Rover. "What are you taking about?"

"This wasn't an act of terrorism," Victor said. "The hikers blew up the cooling station, but they didn't mean to kill anyone. The deaths around the lake were caused by something else."

"We can explain it to you on the way," Helki said. "I'm not staying here for another minute."

They got into the vehicle and drove off, leaving the deputy behind. As Helki headed for the main road, she dialed her husband's number again, but there was no answer. Fear was pounding a steady drumbeat in her head, but she tried to ignore it, focusing only on taking the curves of the road as quickly as possible.

Victor was explaining the situation to Frank. "You need to understand that this entire area is geothermically active. Both Lake Yomigo and Lake Molluk were formed in the craters of dormant volcanoes. Over time, carbon dioxide seeping up through the ground can accumulate at the bottom of lakes like these. We're talking about millions of cubic feet of dissolved gas. Normally, it's dispersed by

seasonal turnover, but under certain conditions, the gas can build up until the lake is saturated. A disturbance can cause all of it to be released at once."

"It's like a bottle of soda water," Helki said. "Before you open the bottle, the carbon dioxide is dissolved in the liquid. When you unscrew the cap, the pressure is released and the gas comes out of solution. If the same thing happens in a crater lake, you get a cloud of carbon dioxide that can kill everything within miles. It's invisible and nontoxic, but it makes it impossible to breathe."

Frank seemed skeptical. "But what would cause the lake to release so much gas?"

"An explosion would have done the trick," Victor said. "The hikers planted a bomb to destroy the cooling station. When they set it off, the blast released the accumulated carbon dioxide in the lake. These two kids didn't know what they were doing, so they got caught right in the middle of it."

"It's happened before," Helki said, remembering a case study from her college years. "In Cameroon, there's a crater lake called Lake Nyos. It lies above a pocket of magma that saturated the water with carbon dioxide. The gas accumulated for years, and one day, it erupted, suffocating everything in its path. Villagers heard a noise like thunder, and when they went to see what was happening, they fell asleep and never woke up. A thousand people died that day."

"This explains why the fire went out," Victor said. "It also explains the symptoms. People who are exposed to carbon dioxide suffer from acidosis of the blood. They may hallucinate smells, like rotten eggs. In the end, they die of suffocation. Helki and I survived because we made it to the car and closed the doors. After a few hours, the gas dispersed enough for us to move around safely."

"If you're right, it must have been one hell of an eruption," Frank said. "Why didn't anyone see it?"

"We didn't see it, but we heard it," Helki said. "After the blast, there was a roar from the lake. The fountain would have been spectacular, up to fifty feet high, like a huge champagne bottle being uncorked. If other survivors come forward, I'm sure that we'll find someone who witnessed it."

"It may also explain why the lake turned red," Victor said. "An eruption this violent would have stirred up sediment at the bottom of the lake, including dissolved iron, which would have oxidized at the surface."

As Victor spoke, Helki finally saw the full picture, a movie unspooling in her brain as she drove down the mountain road. At the first tremor from the blast, a vibration had passed through the lake, pushing saturated water from the bottom towards the surface, where the pressure was too low to keep the gas in solution. Bubbles had formed, buoying the water higher and creating a column of carbon dioxide. The suction had drawn more water up from the base, forming a vast fountain. A cloud of death had rushed away from the shore, spreading inexorably across the land.

In the air, birds were beginning to appear again, descending to scavenge the bodies of the dead. "There are dozens of crater lakes in this part of the country," Frank said. "Why hasn't this happened before?"

"I don't know," Victor said. "In most lakes, the water is constantly turning over. The top layer is cooled by the wind, sinks to the bottom, and is replaced by the warmer water below. In the process, carbon dioxide is released. You only see buildup like this in tropical lakes where water temperature is too stable for turnover to take place. I can't tell you why it happened here."

Helki felt the germ of an idea pushing its way to the surface. "What about the cooling system? The water runs through pipes throughout the mountain and returns to the lake, a few degrees warmer than before. It could be enough to upset the convection process. A layer of saturated water would remain at the lake bottom, deeper than what you've been pumping out—"

Victor took up the thread. "The lake is sheltered by the hills, which would have impeded turnover anyway. Previously, the lake would have released small amounts of carbon dioxide on a regular basis, but if turnover was affected, these dispersals would have ceased."

"And this explains the snakes," Helki said, racing to catch up with the implications of her own hypothesis. "If the lake normally released carbon dioxide in limited amounts, it would have filled the fissures in the hillside, making it impossible for animals to survive there. When the gas began to build up in the lake instead, it created a vacant niche. The snakes were the first to take advantage of it. This explains why they formed dens and mating balls. When the conditions were right, these behaviors appeared for the first time."

"But there's one thing that I don't understand," Victor said. "If carbon dioxide levels in the lake were rising, somebody should have noticed it. It couldn't have been overlooked for so long. Unless—"

He broke off. Frank had gone pale. "What is it?" Helki asked, alarm bells going off in her head.

"We ran a study before installing the cooling system," Frank said haltingly. "It indicated that lake turnover would be affected. At worst, we thought that the problem would only affect organisms within the lake itself. We were sure that we could find a solution eventually, but we were afraid of delaying construction. We thought that we could address the ecological issues later. So we buried it—"

"But this was a time bomb," Victor said, his voice trembling with anger and disbelief. "The lake was bound to blow up eventually. It could have been a storm, a construction accident. Any number of things could have set it off."

"And what about Lake Molluk?" Helki asked. "Could the same thing happen there?"

Frank nodded reluctantly. "We've had a cooling system in place for years. Our studies there showed the same thing. Lake turnover is affected. We haven't checked the carbon dioxide levels, but—"

"—but Lake Molluk is a crater lake," Victor finished. "The lakes are twins. That's why both were chosen for development. If someone sets off another bomb there, the lake could explode."

"We need to warn Russell," Helki said, floored by the full implications of what they were saying. "You understand? *He doesn't know what the explosion will do.* From his point of view, he's just attacking resort property. He has no idea what will happen if a bomb goes off."

"There must be a way to get in touch with him," Victor said. "If there isn't, we need to go public. Call the media. Tell them that the lake will explode if anyone detonates a bomb."

"That's only going to start a panic," Frank said, his air of skepticism gone. "A mass evacuation might set the lake off on its own. Besides, if we advertise the danger, there's no telling what kind of lunatics we could draw. If all it takes is a single bomb—" He wiped the sweat from his face. "I need to talk to the owners. They'll decide the best course of action."

They arrived at Lake Molluk. After passing a security checkpoint, Helki pulled into the parking lot, from which she could see into the village that had been built at the base of the mountain. It was impossible to look at the scene without imagining what would happen if the lake erupted. A cloud of invisible gas would rise from the lake, surging forward at forty miles per hour, impossible to evade or outrun. Skiers would suffocate where they stood, tangled up in their equipment. Horses harnessed to carriages would fall to their knees, dragging their reins down with them. The resort would become a graveyard. A necropolis.

Frank seemed to be envisioning the same scenario. When he spoke again, his voice was subdued. "I

need you to keep this to yourselves for now. If word gets out, we won't be able to control the outcome. Give me an hour."

"One hour," Helki said. "Fine. But in the meantime, we're leaving with our families."

"I understand." Frank looked back at Victor. "If we make it through the day without an eruption, what happens?"

"The lake can be degassed," Victor said. "If you sink a vertical pipe to the bottom and start pumping water to the surface, the water will continue to rise on its own. The pressure from the gas will push it upward, and the carbon dioxide will escape harmlessly. It's been done successfully in Africa." He paused. "Of course, the best solution would be to stop lake cooling altogether."

Frank did not reply. They got out of the Land Rover and headed for the hotel at the center of the village. As they walked in silence, they passed groups of skiers, families, and resort staff, all going about their business with no idea of the danger. Helki wanted to take them aside, one at a time, and warn them of what could be coming, but knew that it would sound like madness. In the crisp mountain sunshine, even she found it nearly impossible to believe.

When they reached the ski patrol's headquarters, Frank went inside without a word. Helki and Victor went into the hotel across the street, which had been designed to resemble an alpine chalet. Clusters of guests were lounging in the lobby, which was very warm, thanks to a log fire blazing in the corner. If the lake erupted, the fire would go out at once, extinguished by a blast of carbon dioxide, the first and only warning that something had gone wrong.

"He's right, you know," Victor said. "We can't go public without causing a panic. We need to tread softly." He touched her arm. "Don't wait for a call from Frank. Just get your family out of here as soon as you can."

"I will." Helki gave Victor a hug, then watched as he headed towards his wing of the hotel, glad that they had both survived. Entering the nearest elevator, she pressed the button for her floor, looking forward to seeing her family again. When the elevator opened onto her hallway, she went to her room, where she used a key card to unlock the door. As she did, she realized how exhausted she was.

"Helki?" Jeff's voice came from inside the room as she opened the door. "Is it you?"

"Yes, I finally made it," Helki said, glad to hear his voice. She closed the door behind her. "I'm sorry I—"

She broke off. Jeff was seated on the sofa, watching the news. He was tall and handsome, still athletic in his early forties. Next to him, Emily, their daughter, was reading a children's book. At the age of six, she had the best qualities of both parents, with her mother's dark coloring and her father's grace.

Helki saw these things only in passing, her eyes caught by the third man in the room. He was seated in the armchair in the corner, his large hands clasped across his knees. It was Russell.

"Hello, Helki," Russell said, regarding her calmly. "I'm glad that you made it back."

Emily dropped her book and jumped into her mother's arms, asking where she had been. Helki replied distractedly, unable to take her eyes from Russell, who was looking amiably at her husband.

"Russell has been assisting the search and rescue effort," Jeff said. "We were trying to figure out where you might have gone after I called. I was worried when you didn't call back."

"I couldn't get through," Helki said, her daughter's tiny arms still clasped around her neck. She saw that

Russell had shaved his beard. Instead of the faded clothes that he had been wearing that morning, he was dressed in a ski patrol uniform. A duffel bag lay at his feet. It was large enough for a shotgun.

"Cell phone service can be unreliable in the mountains," Russell said, watching Helki intently, as if daring her to say something. "I'm not surprised that you weren't able to get a signal."

"That's why I came back." Helki turned to Jeff. "We need to get out of here now."

Jeff took Emily from her arms. "Is something wrong? Does this have something to do with—"

"Just trust me," Helki said. "Pack our things. I need to speak to Russell for a second."

Her husband looked as if he wanted to say more, but instead, he set down Emily, who ran into the adjoining bedroom. Jeff followed, leaving the door slightly ajar. Helki heard him take down their suitcases.

Russell rose from his armchair. Without looking at Helki, he went to the balcony and slid open the glass door, leaving his duffel bag behind. Helki kept an eye on it as she followed him outside. On the balcony, the resort was spread before them like a gingerbread village, the mountain in the distance, its slopes covered in carefully tended snow. Russell rested his elbows against the railing, looking out at the setting sun. He seemed in no hurry to begin the conversation.

Helki soon grew tired of the prolonged silence. "What exactly are you doing here?"

"I came to see you," Russell said. "When I heard my description over the radio, I figured that it was time to go. I was about to slip away when your husband asked me if I knew what had happened to you. It must have been the uniform." He shrugged. "When I realized who he was, I came up here. Such coincidences are always meaningful. Besides, I have something for you."

Helki was afraid to ask what this meant. "If you do anything to hurt my family—"

"I have no intention of hurting anyone," Russell said. "Except to defend myself."

"With another bomb?" When Russell didn't reply, Helki told him what had happened to his companions, explaining the conditions at the lake and the disaster that might ensue if another bomb went off. Russell listened to her theory in silence, offering no sign of what he was thinking. When Helki had finished, she repeated her question. "If there's another bomb, you need to tell me."

Russell reached into his pocket. Helki drew back instinctively, but when his hand reappeared, it was holding nothing but a cell phone, which he set down on the railing. Helki remembered how the bomb at the lake had been detonated. "Is that how you're going to set it off?"

"It doesn't matter," Russell said. "If you're really afraid of what I might do, you'll let me walk away."

"You wouldn't set off another bomb," Helki said, not sure that she believed her own words. "If the lake erupts—"

"It wouldn't be my fault. According to your theory, the lake could erupt at any time."

Helki was amazed by his coldness. "One of your friends is dead. The other is in the hospital. Doesn't that mean anything to you?"

"They were good soldiers," Russell said. "After we ran into you by the lake, I wanted to call everything off, but the boy insisted on going ahead. They were supposed to call me when they were done. When I

didn't hear from them, I knew that something had gone wrong."

As she listened, Helki kept her eye on the cell phone, wondering if she could make a grab for it. Russell seemed to guess her intentions, and without making a point of it, he took the phone and moved it to his end of the railing. "Our plan was to destroy the cooling station, which would have delayed construction for a few months," Russell said. "But if you're right about the lake, I can get the resort to do whatever I want. All it takes is one phone call."

"If you're willing to do it," Helki said. "If you're ready to become a real terrorist."

"This isn't ecoterrorism," Russell said. "Ecoterrorism is deforestation and pollution. People like you aren't going to change this." He turned back to the view of the mountain. "I don't expect you to understand. What I'm doing won't be appreciated for a hundred years—"

Helki wondered if Russell was really as cold as he claimed to be. He seemed to feel no guilt over the deaths that he had inadvertently caused. Perhaps, she thought, he was so used to contemplating the extinction of entire species that a dozen deaths, or even a thousand, seemed meaningless by comparison. If so, then his brand of compassion had turned him into a monster.

"The snakes are dead, you know," Helki said. "The population may never be able to recover. We were seeing behaviors that had never been witnessed before. Now they've been lost forever."

When Russell turned back, she saw that his eyes were damp. "It isn't what I wanted, but there was no alternative. People need to be shocked into action. If you hate me for it, I don't blame you. But if I didn't believe that my actions were somehow necessary, this would be the worst day of my life."

His words reminded her of what had brought him here in the first place. Russell was a fanatic, perhaps even dangerous, but he lay at the far end of a continuum that included Helki herself. She could reject his methods, but not his cause, especially when the alternative was a virtuous sense of helplessness.

It occurred to her that a man like this, so ready to take extreme measures to save the world, might be willing to save it with an idea instead, if he were convinced that the idea had the greater chance of success. "If you want to send a message," Helki said, "there's a better way."

Without reflecting too deeply on what she was doing, Helki told Russell about how the resort had covered up the results of its own study. It had built the cooling system in spite of evidence that lake turnover might be affected, and by doing so, it had created the conditions that had led to the eruption. "Take it public," Helki concluded. "I've given you the outline of the story. You can do the rest. People may not understand the science, but they'll understand the lie."

Russell had listened to her account without speaking. "Why are you telling me this?"

"Because you were right about me," Helki said. "I could never go public. I've made too many compromises. You're outside the system. If you want to send a message, this is your best chance. I'd rather see you do it this way."

There was a tap on the glass door that led to the balcony. Jeff was standing in the next room. "Helki, we're ready to go."

"I'll just be a moment." Helki turned to Russell. "Do we have an understanding?"

Russell looked at her for a long moment. Finally, he nodded. "Yes, I think we do."

He left the balcony, taking his cell phone with him. Helki found herself wondering if there had been a

bomb at all, or if it had been just another ruse. As she walked Russell to the door, she felt that something important had just been decided, although she wasn't sure what it was. "Remember what I said."

"I will." Russell turned away. Helki watched as he walked down the hall, then closed the door, drained. She wanted nothing more than a few hours of sleep, but knew that rest of any kind was a long way off.

Jeff was watching her with concern, their daughter in his arms. "He forgot his bag."

Helki followed his gaze to the duffel bag next to the armchair. Before she could talk herself out of it, she knelt and opened the bag. Inside, twined together like a caduceus, were two garter snakes. As the light fell across their bodies, they raised their heads, eyes gleaming like bright jewels. Helki picked up the larger snake, a female, and felt the cool body twining smoothly in her hands. Thousands had died, but these two had endured. It wasn't much. It was enough.

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The story so far:

*In the still winds before sunrise every morning, those who lived in Jemez Pueblo could hear **Nascha Redcliff** do her angry sing. The woman would climb to the top of Bear Rock in the desert far west of the village and its cultivated fields. Then she would beat on the rock with her medicine stick and scold the sun she called Glittering Man up from the darkness. Once the reluctant orb peeked over the mesas to face its taskmaster, Nascha would charge the sun with ending all evil in the universe, complete with an extensive list of objects, institutions, and individuals qualifying as evil. She would recite their crimes and issue her horrific prescription: Death. In all cases, death.*

Some of the Christians in the village believed she was evil. Some of those who followed the more traditional Navajo religion believed she was a witch. One of the local bloggers referred to her as “the idiot.” The rest of the villagers believed she was insane. Nascha believed what she believed, nevertheless, and there was nothing anyone could do.

*When Nascha's child was delivered by a midwife in the hogan she shared with her husband, **Niyol**, she declared Glittering Man as wholly inadequate to end evil in the universe. She now passed the task to her newborn infant. Her husband abandoned both her and the infant that night, pausing only long enough to name his son **Gordon** after Flash Gordon as a bitter joke: Flash Gordon, you see, defeated evil and saved the universe. Before sunrise the next morning, Nascha and her baby son were atop Bear Rock scolding Glittering Man into the sky and reciting the list of evildoers, their crimes, and calling for their deaths.*

Growing up for Gordon was the loneliness of the outcast, interrupted by fights with other students, fights with police and school officials, and unremittingly more bizarre sessions with his mother. The lone bright moment came with the news of the first successful experiments at spanning time. Time travel: someone had actually done it. The excitement and promise, though, had been immediately swallowed by the overwhelming tide of international scientific, political, environmental, and especially religious hysteria against this form of transportation and investigation. Timespanning was regulated almost into nothingness, becoming something that had no relevance to Gordon's life.

*When he was eleven, after yet another fight in school, he vowed to run away and start over again anywhere as anything. He chanced upon a respected elder, **Hosteen Ahiga**, who the more disrespectful of the pueblo children nicknamed “Iron Eyes.” This old man told the boy of his mother's madness and that there was nothing anyone could do for her except be there—a task too demanding for Niyol. Iron Eyes suggested to Gordon that he might be stronger than his father.*

*Over the next seven years Gordon continued following his mother to Bear Rock every morning, listening to her hate, powerless to ease her pain. The boy would meet with Iron Eyes and listen to the stories of the Dina, the Navajo people, and what it is to be a man. He heard about the Holy People and especially **Coyote**, the Trickster who led the unwary down paths into terrible trouble in hopes they would learn why they should consider actions before taking them.*

One night during the school year when Gordon was eighteen, Nascha died in her sleep. Before night came again, Gordon's mother had been buried and he was on a bus to Albuquerque to join the Army. In his hands he held a hand-tooled leather belt with a silver buckle Iron Eyes had made for him. Both the leather and the buckle showed the head of Coyote, one eye closed in a mischievous wink. Five weeks later, in Army basic training, Gordon learned that Iron Eyes had died just short of his ninety-sixth birthday.

In testing it was learned that Gordon had a unique facility for learning languages. The Army wanted to use this skill. An eighteen-year-old warrior needed to do war, however, and war to a mind as young and angry as Gordon's had nothing to do with talking, listening, or interpreting. After completing infantry training he entered the Sniper School at Fort Benning and thereafter served in several wars in Africa and the Middle East, training foreign snipers and achieving an astonishing number of kills in his own right.

It was while his unit was fighting in support of the Septemberist Student Movement in Iran that he met Phil Andreakos, his new spotter who he learned to love as a brother. Andreakos at times amused himself weirding out new troops by showing them the clumps of horsehair he tied with rawhide and claimed were enemy scalps he and his Navajo brother had taken from fallen enemies. Phil would then sing the nonsense Chant of Fulla Bull: Ha te, makka me te hey, ya ya ... Affectionately, Gordon referred to his spotter's memory as "Scalper of Dead Horse."

A year after Andreakos was killed in battle, Gordon was released from an Army hospital, and the war ended. He left the Army and drifted around the Middle East and North Africa until he signed on as a bodyguard connected with an Egyptian archeological dig at the base of a red sandstone escarpment known as Site Safar in the Western Desert near the Libyan border.

***Dr. Ibrahim Taleghani's** usual assistant, **Harith Fayadh**, being injured, the archeologist requested that Gordon join his exploration of a site four hundred meters down and 139,000 years in the past. The evidence of the human settlement at the base of the red sandstone escarpment could be explored through timespanning without risking the introduction of anything that might affect the present. The village, its people, and the entire region would be destroyed and completely buried in a cataclysmic event that would occur at a knowable point in time. Whatever timespanners did in the period shortly before the event would be irrelevant to the future, except for the information they could bring back, Dr. Taleghani explained. That was how he managed to get permission to make the Timespan.*

In complete violation of the world government regulations and his agreement governing his use of the Timespanner, however, Dr. Taleghani intended exiting the vehicle, as well as meeting and talking with the villagers. Once he had done that he would return to the present with one of their number. Being caught up in the adventure, Gordon agreed to accompany the archeologist and to act as bodyguard, linguist, and translator.

Simplistically, Timespanning involved employing sufficient power to hitch rides through existing time on the edges of alternate dimensions, entering and exiting this mode through temporal windows. Taleghani's trip would be the farthest reach into the past ever using this technology, which occasioned a ceremonial sendoff at Site Safar peopled by military, scientific, and political personages, all playing to an international battalion of reporters.

*Dr. Taleghani planned that when the vehicle operator, **Mehmet Abdel Hashim**, returned with the Timespanner empty, the authorities would realize the theoretical leverage the travelers had by being back in that time. Hence, they would authorize the expected pickup in three weeks to prevent the travelers from "turning the wrong grain of sand," that is, introducing some small difference in the past that could be projected into the future, wreaking significant changes in the present. Once retrieved from the past with their "Squanto" in tow, however, Taleghani hoped the novelty of their passenger would overcome the official outrage over his violation of Timespanning regulations.*

The three entered the capsule, spanned the 139,000 years, determined the exact moment when the giant meteor slammed into a nearby mountain, observed the structures in the village before the

event, and prepared to enter the window to that past. As they were maneuvering through the window, though, some powerful unknown force slammed into the capsule, its hull cracked, and Gordon blacked out.

* * * *

He awakened in extreme pain, his head having been injured. The air was freezing cold and smelled of wood smoke. When he opened his eyes Gordon saw he was in a lean-to facing a fire and that he was being cared for by a woman in her twenties wearing a beautiful fur suit. Her complexion was tannish-sandy caramel, quite fair, her hair straight, pinkish brown in the firelight, and braided with little white dried flowers. Her face was roundish, her dark, almost Asian eyes separated by a very Roman-looking nose. He learned her name was **Pela** and that she already knew his name: "God'n." Gordon also learned that both Taleghani and Hashim were dead and that Pela had buried them. In addition, the Timespanning vehicle was crumbling as he watched. Everything metal, from the capsule hull to his silver belt buckle, appeared to have lost its metallic properties and had turned to powder. Two pieces of equipment that survived were the locator, allowing a rescue vehicle to find him, and the shockcomb, a weapon using Timespan technology that needed to be reset every so often otherwise it would pucker itself out of this dimension taking with it everything within a twenty-five centimeter radius.

Gordon began the task of learning Pela's language and recovering from his injuries, which seemed to have left him seeing two shimmering figures which appeared to come and go but could not communicate with him. Ghosts? Hallucinations? Beings from that other dimension? He didn't know. Talking with Pela, he learned why she had been sitting on top of that particular hill in the middle of an early winter night. She had been there for many days sitting toahmecu—god waiting. At the instruction of a shaman named **Tonton Annajaka**, Pela had been waiting for Tana, wolf-goddess of maidens and widows, to end her loneliness by replacing her dead husband with a man. Enter Gordon Redcliff.

After a couple of more days recuperating and learning the language, Pela approached Gordon as to his intentions. Was he "thinking for her?" Was he the gift for her from Tana?

Gordon thought about it, reviewed his life and relationships, aware that he never really belonged anywhere. In a matter of a few months, the meteor would hit Black Mountain, the radiant energy and shockwave killing almost everything within twenty days ride from the peak. What chanced to remain alive would then be buried in the flood of melted snow, mud, and debris that would fill all the valleys and bury all the hills. Before then perhaps a rescue Timespanner would come for him. Perhaps not. In addition to that, he felt a great deal of affection toward this woman who had saved his life. Pela wasn't looking for a proposal. The custom was to think about it.

He informed her he was "thinking for her." Then, after a tender and tearful moment, Pela began screaming the happy news down to the village. The village women yodeled back their congratulations, their thanks to Tana for their sister, and their prayers and good wishes. Then they yodeled the news on to the ends of the village and beyond. The calls went on and were relayed for almost an hour. Long after Pela fell asleep, Gordon remained sitting before the fire, still catching occasional glimpses of the shimmering images, waiting for the secret visit from the village he was sure was coming.

* * * *

***III**

The came long after moonset. Motionless in the shadows, the figure stood near the trailhead examining Gordon. He kept his gaze upon the figure as she moved nearer the fire. Her dark hooded garment

brushed the ground and was made from rich sable. Within the hood was a woman's face, her age hidden by the paint she wore. The right side of her face was black as soot. The left was colored burnt orange. "You know me," she stated at last, her voice thin and reedy.

"Tonton Annajaka," Gordon answered. "You sent Pela to sit toahmecu praying for a man to share her life."

She nodded.

Gordon raised his eyebrows. "This face of mine not same face you sent up this hill, Tonton Annajaka."

The woman's eyes narrowed for an instant. "Different," she said, giving him the word for "not same." She touched her left thumb momentarily to her tongue, and waved her fingers at her right temple. "Pela's call to village say your name, God'n." She gestured toward his trousers and boots. "God'n from where?"

"Hard question," he said as he held out his hands toward the fur he had placed to his left, indicating an invitation for the naticha to sit.

Tonton hesitated a moment then walked around the fire and sat cross-legged upon the fur facing him. She reached out her hands, bent forward, and placed one hand over Gordon's heart and the other over his eyes. He could suddenly smell a sharp odor of death. Tonton Annajaka lowered her hands and sat back, her eyes wide. "I *know* you, God'n, from old dreams of storm to come."

"You see much, Tonton Annajaka."

"I would understand what I see."

He laughed. "This is my prayer, as well. The spirit I ask answers with fog."

"You talk in fog *and* brambles, God'n Redcliff."

He glanced down, thought for a moment, and said, "I come from after now. That is the truth I have."

The naticha moistened her lips, let her gaze slip from his face, turned her head, and looked back at Pela in the lean-to. The widow was sitting amidst her furs, her face ashen, her gaze fixed on Gordon. Without looking away from him, Pela nodded in quick respect to Tonton, and said, "Forgive Pela, God'n, for hearing talk not mine."

He reached back and took her hand. "If I talk where you can hear, the talk is yours."

She moved to the edge of the bed of cedar boughs and sat kneeling, holding Gordon's hand to her face. "Pela understand true? God'n born after now?"

"Yes."

Pela turned to Tonton. "Tana bring God'n to me from after now?"

The naticha studied Gordon for a long time. At last she said to him, "How far after now you born, God'n? *Bean-by-bean*."

He smiled at the term for "exactly." Reaching back to his right, he took his leather backpack from where it rested at the edge of the bed and pulled it next to him. He took the locator from the bag, checked the date, and placed the locator back in the bag. With a piece of charcoal from the fire, he began building a number upon one of the stones from the fire circle. First, one thousand, multiplied by one hundred and thirty-nine on the left, then added to one hundred and fourteen on the right.

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□XXX*III X□ □ XIII

"This many summers," he said, "two moons, twenty-one days from now."

The naticha studied upon the number Gordon had written while Pela looked at Gordon, her eyes frightened. He took Pela's hand and faced Tonton.

"I saw great storm coming, God'n," said the naticha, a slight tremble in her voice. "When Itahnika gave me my eyes, I first see it. You bring this storm?"

"No," he whispered, his eyes closed.

"But you see it," she insisted. "You know it."

Gordon sighed. "I have seen this storm, Tonton," he answered. "I know it is coming."

Tonton stared into the fire for a moment. "You talk with Tonton more?"

"Whenever you wish, naticha."

She looked at him as he raised a hand, palm facing down, and passed it once across the space between them. "We speak no more of this until we talk more."

"Yes, naticha."

She looked at Pela. "About this, speak no more."

"Yes, naticha."

Tonton rubbed out the number Gordon had written upon the stone. She then stood and walked silently from the fire.

Pela wrapped her arms around Gordon's left arm and rested her head against his shoulder as the naticha was swallowed by the shadows. He pulled the bearskin cover from the bed and wrapped it around both of them. They sat that way, watching the fire, until Ekav touched the goddess of the night sky birthing the new day.

* * * *

X

After a breakfast of yams and rabbit, Gordon visited the graves. He squatted between them, wondering if the two shimmering images he saw were Coyote's fulfillment of his prayer for his two dead companions. Had the spirit world been touched by that other dimension producing a couple of interdimensional ghosts?

"Perhaps I walk in dreams," he said to the quiet as he stood. "We go to the village today, doctor. I'll see what I can learn." Out of the corner of his eye he saw a shadow move just into the cedars. Whatever it was, it left in a hurry. Gordon stood and walked to the edge of the trees, his eyes instinctively checking the new snow for tracks finding wolf, squirrel, rabbit, birds, and the impressions of human feet too small to be his and too large to be Pela's. The impressions were smooth, moccasin-like. Gordon silently followed the human tracks to where their distance increased, showing the visitor running. Likely they belonged to Pela's designated gift from Tana.

He saw the shimmer of distorted light edge from behind a wall of existence. "Do you understand me?" he

asked.

The image seemed to lift an appendage made of the same distorted light. "Are you carried by something from a dimension we touched?" Half suspecting he was hallucinating, Gordon watched as the thing seemed to wave again. There was, however, no proof that he was crazy. "If your spirit can travel between times as well as dimensions," he said to the shimmer, "tell Harith perhaps my mission really is simply to see what happens next." He turned and headed back to the fire where Pela was packing.

After they were both loaded with Pela's furs, tools, and what remained of her provisions, they began making their way along the path to the village. On the way Gordon noticed several little homesteads of sod and rock, domesticated horses, goats, even a cow. All of the animals had heavy coats. In one place they passed there was a bin made of woven willow branches half-filled with grain that looked like barley. No evidence of wheeled vehicles.

As they approached a tiny sod house tucked into the side of a bank beneath an overhanging rock flanked with banks of juniper, a man who looked to be in his thirties came from the door curtained with patched animal skins. The fellow wore what looked like a suit of Pela's furs, although his were dark brown. On his neck he had a striking necklace of blue beads with one large fluted gold bead in the center. The man stopped, Pela and Gordon put down their bundles, there were introductions, and the meaning of the man's name was Kom Beadsigns, born to Cleft Mountain Clan. Relating the mother's clan was for Gordon's benefit. Pela told Kom of her toahmecu, her gift from the winged wolf. With downcast eyes she told about Gordon's dead brothers.

Kom touched his tongue to the pad of his left thumb and nodded sadly at the possible marriage's terrible cost. "How little the spirits know us," he observed. "Five deaths in a sickness, two more in a hunt—good men—another with flints after hot words." Then his face brightened and he related that his son Ta Avi's man-raising ceremony was that evening at the clanhouse. He said that there are places at the fire that could stand filling.

Kom Beadsigns touched a small bundle to his forehead and said to Pela, "Kom grateful for fine suit Pela you make my son." He handed her the bundle, which Pela took and touched to her own forehead in thanks.

After he had bid farewell and offered his wishes that the spirits' wisdom should gift them in their thinking for each other, Kom returned to his house. Pela had Gordon hold his palms together. Using them for a table she slowly unwrapped the bundle. There were hundreds of colored beads in it, some of glass, some of bone, some stone, some gold, some cut from something resembling porcupine quills. They were black, gold, turquoise, red, green, blue, purple, brown, yellow, and white.

"God'n," she said as she rewrapped the beads and grinned widely. "I make you such a shirt." She laughed, looked at him with tears in her eyes, and laughed again. "You show me Coyote?"

He pulled the belt from around his neck and showed her the face of Coyote that Hosteen Ahiga had hammered into the leather. She placed her right palm against Gordon's heart and said, "Coyote kind to you?"

"Kind?" Gordon raised his eyebrows. "Coyote is the Trickster. He teaches through mistakes and pain." He had never thought of Coyote as kind. He smiled. "Coyote kind enough to let us meet, Pela." He placed a hand upon her shoulder and squeezed. "Coyote kind enough."

"No man have such a shirt," Pela said. She squeezed Gordon's arm, laughed, they hefted their bundles, and continued toward the village.

* * * *

XI

Thinking for someone required preparation. As it began, Pela and her relatives and women friends could not be bothered with an idle male underfoot. Gordon was not supposed to be there in any event, so Pela asked the sister of her dead husband, Bonsha, to bring Gordon to attend Ta Avi's man-raising ceremony. Bonsha was portly, unusually tall, her suit of Pela's furs worn with the fur in and beautifully intricate red, black, and yellow beadwork out. Her face had heavy dark features taken to easy frowns and easier smiles. At that moment, her face frowned.

"God'n, how many summers you have?" bluntly asked Bonsha.

"Thirty and eight," he answered.

Her frown deepened as she brushed her right cheek with the back of her right hand. "You have a boy's face."

"From where I come, some men do not have hair on faces."

Her eyebrows went up. "It is a choice?"

"For some. For some not."

Bonsha's frown grew deeper still, and then she shrugged and smiled. "Pela say you gift from Tana. Pray Tana make you useful, kind, and respectful as well as gifted, God'n."

"I will, Bonsha."

"I make oil lamps," she informed him. "And God'n?"

Gordon thought on it. "I am looking."

The clanhouse was a very large kiva-looking structure with a single east-facing door curtained with symbol-covered skins. The walls were made from vertically arranged tree trunks patiently trimmed, scraped, carved, fitted together, and wrapped with vines. Joints were tied with dried rawhide, gaps filled with dried mud and grass. The building towered above nearby buildings, but was only a single great room, the center of the floor sunken in three circular levels, the concentric tiers paved with flat stone making the room resemble a theater in the round. The center of the roof was supported by four wooden columns, each column made from a single tree-trunk, the wooden surfaces displaying the marks of endless chipping and scraping with flint edges. Light was provided by ceramic oil lamps in niches around the wall and hanging from the roof supports by thongs. Gordon glanced at Bonsha and pointed at one of the lamps. Bonsha smiled widely and nodded. "My work," she said proudly, sweeping a powerful arm indicating the interior of the clanhouse. "All of them."

She seemed to waiting for a response from Gordon. He studied Bonsha's face for a moment, then held his hand out toward the lamps. "Your gift to clanhouse?"

Many smiles from Bonsha as she secured credit for her gift and at the same time gestured the gift's unimportance. Gordon looked toward the center of the space. Heat was provided by a fire pit in the center of the floor, the smoke exiting from a hole in the center of the roof. Men, women, and children occupied about half the tier seats, the children occupying the top ring, the farthest from the fire. There was a buzz of conversation among those there—friends and relatives getting reacquainted. Bonsha guided Gordon down to the lowest tier. In several groups there stood eleven men and five women. Before she introduced Gordon to them, Bonsha explained to him those on the bottom tier were all gifted in that they had either reached or surpassed their thirty-second year. The men would sit separately from

the women in this particular ceremony because upon the conclusion of the rite, the gifted men would take Kom Beadsigns' son up the cliff to the men's ledge to spend the night beneath the sky getting Ta Avi acquainted with the society of men and to introduce him to Wuja, white bear god of men, fatherhood, and the hunt. After introducing Gordon to the gifted, Bonsha returned to attend to Pela's preparations.

Gordon turned to the nearest man with a question. "We are to spend the night on the ledge? In the cold?"

"Ta Avi, born in winter," said the man, a pea farmer named Riff. He shook his head and lifted a hand and dropped it in resignation. "Bring plenty furs."

Abo, a mucker, tugged at his own gray-streaked beard. "Your face, God'n. Where is your man hair?"

Once again he explained, half-wondering if his eventual tribal name would be Baby Face Redcliff.

As Gordon sat in the center of the arc of gifted men, a slender young man in raggedy furs brought him some hot tea in a cup made from hollowed wood. The boy had curly black hair, intense grey eyes, and a face whose expression marked him as outcast. Gordon thanked the boy, who held his gaze for a moment, then turned and climbed the tiers to the uppermost ring. Gordon sipped at the tea, which tasted pleasantly like licorice. One of the gifted men named Nubav offered Gordon a tiny white root from a pouch he carried. Gordon expressed his thanks, but declined not knowing what it was. When he glanced around at the growing crowd, Gordon noticed the boy who had given him the tea was studying him. The attention in the hall turned to another side of the ring.

Ta Avi, son of Kom Beadsigns, sat on the top ring on the east side along with other children. Ta Avi's furs were decorated with colorful dried flowers and magnificent abstract beadwork. His father came down the tiers and sat in the gifted ring, his face covered in smiles. He greeted Gordon and thanked him for honoring his son. Soon a large man sat to Gordon's left. He almost resembled artists' conceptions of Neanderthal Man—heavy brow, low forehead, shaggy beard and hair—except for the well-done suit of furs he wore. They were heavier than usual, white with what appeared to be random streaks of gray and blue color, which would function outside on the snow as camouflage. He wore similarly colored fur-lined laced moccasin boots. Gordon nodded at the man's furs. "Pela's work," he said.

The man nodded. "Pela my wife's sister." He placed his hand against his chest. "Pela only take three winter bear skins for making wraps. They keep me warm when the winds howl across the ice and game make me travel far, yet leave me free to throw spear or swing club. Ghaf, hunter." He extended his hand, grabbed Gordon's wrist, Gordon took Ghaf's wrist, and they shared a single bone-crushing shake. "Good woman, Pela," Ghaf said. He placed his open palm over his own heart. "I wed Pela's sister, Lolna. Two sons, Taghaf and Ru."

He nodded toward the south and made a rising gesture with his right hand. Two boys stood, the younger one on the top ring, the older on the ring just below. Both of them were clad in bear-hunting camo. Ghaf's genes mixed with Lolna's appeared to have advanced his children from Neanderthal to Cro-Magnon.

"They are fine-looking sons," said Gordon.

Ghaf nodded and his sons resumed their seats. Ghaf pointed at the fire pit. "The one placing the flour cakes: their mother and Pela's sister."

Lolna was clearly related to Pela. She had the same dark almond eyes and brownish hair, the same round face and straight nose, her hair a lighter brown worn in a ponytail. She concentrated on her cooking. Ghaf had a thoughtful expression on his face as he licked the pad on his left thumb and studied his wife.

"Something wrong?" asked Gordon.

Ghaf shrugged, wiggled a finger at Gordon, and shrugged again. "It is life." He continued studying his wife.

More adults and children entered. There were pea, bean, and mushroom growers, herb gatherers, herdsmen, fishers, chicken and duck growers, sod cutters, muckers, mat weavers, and even two men who were competitors of Pela's in the local garment trade. There was, of course, the entire guild of bead cutters and casters from the local clans, some even from Yellow Claw and Black Shoulders lands far south, Big Tree and Cleft Mountain in the west. The bead sign makers and their families wore their finest necklaces, bracelets, and beadwork. Deals for beads, materials, and tools were being made against the circular wall, outside the tiers.

At the sound of a wooden drum struck twice, the room silenced, some of those still standing took places in the tiers, and all eyes turned toward Ta Avi. The young man stood and with a strong voice expressed his desire to live as a man among men, seeking the wisdom of those willing to share it. He nodded toward Ghaf and resumed his seat upon the top tier.

The hunter licked his left thumb, lowered his hand, and said to all, "Manhood is not the power, joy, and magic it seems to the boy. Nor is manhood the pain, disappointment, and dreary burden it seems to the man."

He received grunts of approval for his words from around the circles, and Ta Avi Beadsigns studied upon the words, nodded, and looked at a Gifted One with gray streaked black hair and a much grayer beard. He was a fisher named Yoliv. The man licked the pad of his left thumb and said, "Tomorrow is full of questions. A father makes children early and often against life's uncertainties. Keep love warm and generous when you're young. There is time enough for sleep and sore backs after the gray and the true love come."

Yoliv received laughter and grunts of approval for his words from around the circles, and Ta Avi Beadsigns studied upon the words, nodded, and looked at Gordon. All eyes turned in Gordon's direction and he returned the looks, surprised that he, a stranger, had been invited to contribute wisdom of his own. After a moment he smiled as he remembered a story he had heard from Hosteen Ahiga.

"One day a boy came to a very wise man and said to him, 'Old man, I am confused. I do not know if I am ready to become a man. There are so many things I do not know.' The old man nodded and said, 'Confusion marks you as a man. Back when you thought you had all the answers you were still a boy.'"

Gordon received substantial grunts of approval for his words from around the circles, and Ta Avi studied upon the words and nodded, and nodded again, but with a smile.

* * * *

XII

Late that night, high above the village on the men's ledge, Gordon, Ta Avi, Ghaf and a few of the other gifted gathered before fires, ate, huddled beneath furs, told stories, offered advice, and answered Ta Avi's questions about manhood, women, marriage, trade, child rearing, the gods, and the hunt while they awaited Ekav's appearance above the eastern horizon. It had long ago been that each boy entering manhood would have to single-hunt and kill a great bear, but Wuja had passed along that Walking Man and Walking Woman's descendents had been successful, far outnumbering his own. Bear killing as a rite, he said, was for a time when all men were needed for the hunt. The Great White Bear charged each livelihood other than hunters to establish its own rite for manhood. For Ta Avi Beadsigns it was to contribute something new to the craft of bead making. He showed the gifted men his contribution. With

fingers burned from drops of molten glass, Ta Avi showed the gifted his beautiful necklace of red glass beads veined with gold, glass and metal fused together, no two exactly alike. "I have done this with yellow glass, green, and blue, as well."

All of the gifted, including Gordon, placed orders for Ta Avi's new beads. It was judged by the gifted on the ledge that night that Ta Avi had "slain his bear."

The temperature dropped sharply, there were three fires against the cold, Ta Avi excused the gifted who needed to seek shelter, and soon only Ghaf, Gordon, and the bead maker's son looked out over the village toward Quona, the moon, as it illuminated the glimmering white tower of distant Black Mountain.

"You are hunter," Ghaf said to Gordon, holding a finger to the corner of his right eye.

"I have been hunter of a kind." Gordon shifted his gaze from the mountain to Ghaf. "I was a warrior."

"You hunted men," Ghaf said as he studied Gordon's face. "Now in your summers, God'n, what will you do? That Pela will not stand an idle man around the house." All three of them laughed.

"Maybe hunter or fisher. What game do you hunt, Ghaf, along with winter bear?"

Ghaf gave him the word and drew the picture of a deer. "Deer is good. Antelope."

"What was your most exciting hunt?" asked Ta Avi.

The hunter threw up his hands. "Ah!" Ghaf bent forward, smoothed the snow, and drew in the snow a picture of an elephant or woolly mammoth. He put in a very small hunter next to the creature. "Running Mountain they call it in Big Snake Country," he said. "Long ago my father took me to join with Black Shoulders hunters down into the Big Snake, a land filled with angry stinging insects, birds that blind you with their colors, and serpents that crush and eat a man whole." He licked his left thumb and shook his head. "We told hunt story at fires for many summers after that. Two Black Shoulders hunters trampled, running mountain bellow like thunderstorm. My father, Ijev Ni, brought down mountain." He grinned. "His son Ghaf got in a poke or two with his spear. So much meat we shared with everyone. Black Shoulders People keep tusks for carving and medicine, bones for building. They show us how to cut and dry meat for keeping. We pack five strong horses with dried meat to bring back to village, more on our own horses. No one hungry that winter." He grinned widely showing a healthy set of teeth. "Best hunt."

Ghaf leaned forward, put two more sticks on the fire, checked to his left and saw Ta Avi yawning. "Big day for Kom's young man." He held his right hand, palm open toward Ta Avi. "May Ta Avi's way always be clear, woman always loving, children healthy and respectful, and you deserving of it all."

The new man nodded his thanks and said, "May you always have hunter's eyes, Ghaf, and some of my years for your gifts to me and to the clan," answered Ta Avi.

Both the hunter and the bead maker pulled their furs about themselves, leaned back against the cliff face, and closed their eyes to sleep. The only sounds were the crackling of the fire.

Gordon tucked his fur around his legs, put another fur around his shoulders, pulled his hat down over his ears, leaned back against the cliff face, and looked at the moonlight reflected from Black Mountain. He pulled over his knapsack, held it between his knees, reached in, reset the shockcomb, and checked the charge. Eighty-eight percent. On the locator he could see the dim reflection of the readout, but there wasn't any point in looking at it. He already knew how much time was left. He closed the bag, moved it close to the fire to recharge the instruments, then leaned back and looked to the shadows.

He saw the reflection of a pair of yellow eyes far to his right and turned his head a bit more. The eyes

came closer, the dark shape of the thing carrying them outlined by the reflection of the fire on the red cliff behind it. "Wolves are Coyote People," he said to the creature. "Welcome, Sister." There was meat next to the fire and Gordon reached out and picked up a piece with a bone in it. He was going to throw it to the animal at first, but instead he held it out. "I came a long way to feed you my dinner, Sister."

The animal came closer, and it was a wolf with a luxuriously thick coat, gray above the eyes and in the ears, mostly white below. The eyes were unblinking. Gordon extended the hand holding the meat, the animal backed away slightly, then returned. It took another step and another. With each step its gaze at Gordon's eyes wavered not a millimeter. Closer the muzzle of the animal came to Gordon's hand, closer still. Its tongue licked at the meat, brushing Gordon's fingers. The wolf took the meat, carried it away a few steps, then settled down to eat, its powerful jaws crushing the bone.

Gordon looked to see Ghaf's hand stealing toward his stone knife. He said to the hunter, "I have invited my sister to eat with us, my friend. Attacking her would be inhospitable."

"I hope those furs Pela made you don't belong to anyone your sister knows," the hunter quipped as he fell back to sleep chuckling.

Gordon looked over to the wolf and she was licking her front paws, the meat gone, the bone splintered and clean. He watched her until his eyelids grew heavy and he slept.

In his dream the wolf spoke to him. She said, *"Nascha is at peace now. Our mother is healed of her sickness and now walks in Beauty. All of them walk in Beauty."* He saw his mother, Hosteen Ahiga, and Phil Andreacos together in a world of green and blue, soft lights and gentle winds.

He awakened and the wolf was gone. Ghaf the hunter and Ta Avi still slept. Sitting cross-legged in front of Gordon was Jatka, the boy who had brought him tea in the clanhouse.

"Why does your face have no hair?" asked Jatka. "Do you cut it?"

"The people I come from don't grow face hair."

"Not even gifted?"

"No. Answer me a question, Jatka. You seem older than Ta Avi. Why do you still sit upon the high tier?"

"I have no one to feast me up to this ledge, God'n. No parent to offer me to the clanhouse."

"What happened to your parents?" asked Gordon.

Jatka glanced down, then back at Gordon. "Both dead. Tchama, my mother, was Black Mountain. A singer. She died in childbirth."

"Your father?"

"Also a singer. He was Yellow Claw." Jatka looked into a shadow. "When I had ten summers, he tried to kill me." Jatka looked back at Gordon. "He died with my flint in his neck."

After a long silence Gordon asked, "Did he blame you for your mother's death?"

"Every day." The boy looked into his shadow once more. "Some villagers blame me for my father's death. He was very popular, a great singer."

"Do you miss him?"

"I miss having a father."

"Jatka, my father left us the day I was born. My mother was Coyote Pass People. She was sick until she died."

"You took care of her?" asked Jatka.

"Yes. She walked in bad dreams but many in my village thought she was a witch and feared her. Because of that I was not a part of life. There was a Gifted One who spent time with me, though. I loved him."

Jatka shrugged, stood, and looked down at Gordon. "I just wanted to know why you have the face of a boy."

Gordon nodded. "Are you a singer?"

"No. I do things around the village, mostly for Tonton Annajaka. In return she teach me about herbs, roots, and powders. Thank you for speaking with me." Jatka turned and walked toward the western end of the ledge, vanishing into the shadows. A pair of unblinking yellow eyes looked back at Gordon.

"Is that the path you would tease me onto, Coyote?" he asked as he closed his eyes and snuggled into his furs. "What would your lesson for that be, I wonder?"

Jatka had been more respectful than Gordon had been at his age when he had gotten into Hosteen Ahiga's face. To belong nowhere, caught between fear, scorn, and indifference, condemned to loneliness and to carry the guilt of his father's death. Perhaps Coyote was showing the boy how much he could bear without breaking.

He wondered if Ibrahim Taleghani had thought for even a second about how he would keep himself sufficiently detached from the people he found at the base of this cliff to make it possible to leave them to their fate. Or had they not been people at all to his mind? Perhaps to the scientist they were only subjects from textbooks, theories, drawings of heavy-browed, dull-witted Neanderthals hunting, eating, grunting, killing, and making little Neanderthals.

Gordon pulled the furs more tightly about his neck and closed his eyes against the sight of the mountain. As he drifted back to sleep, Gordon reminded himself that—even if Dr. Taleghani spirit was watching with the aid of another dimension—the scientist's regard or lack of it for these people no longer mattered. Gordon's feelings did.

* * * *

XIII

At the sound of loud shouting, Gordon jumped up, wide awake, the sunlight hurting his eyes. It was Ghaf doing the hollering. The hunter was on full yodel down to the village, bringing news of their night on the ledge with their new man, Ta Avi Beadsigns, who cut beautiful red-and-gold beads and would earn enough from last night's trading to set himself up smartly. Ta Avi, who bravely slept right through a visit by God'n's sister, a female great wolf who ate from God'n's hand and licked his fingers and left them attached to his hand all the same.

After Ghaf had finished reporting the news, Ta Avi walked over and looked at the paw prints in the snow at the west end of the ledge. When Ta Avi returned to the fire, he squatted before Gordon and asked, "Do you command wolves?"

"I command no one, Ta Avi. I have many brothers and sisters, though. Wolves are Coyote People." Gordon saw the ones who had left the ledge as the night grew colder now returning to claim their places

next to the living legends of the sleeping bead maker and the wolfman. One of them, an old shaggy-headed mat weaver called Doven, ended the ceremony by making a prayer to the sun. He took barely warm ashes from the edge of a fire, washed his hands and arms in them, then took a smoking brand from the fire, turned and began making marks on the cliff wall. He began with what looked like a large numeral 6 followed to its right by a smaller *o*. Doven continued writing, from left to right, until there were five lines of characters, each line apparently separated into words. Once written, Ta Avi began reading the prayer out loud.

"Ekav, in the name of Wuja, god of men..."

It was a prayer that listed the functions and responsibilities of manhood as individual, husband, father, exchanger of value, producer, and contributor to the common defense. It stated that Ta Avi, under the supervision of the gifted and the Great Bear, had fulfilled the requirements and asked the sun god for his blessing. Ta Avi and the gifted then left the ledge as Doven once again scrubbed his hands with ashes, Gordon watching him.

"Doven," said Gordon to the mat weaver, "what is that sign?" He pointed at the 6."

Doven stood, shook the ashes from his hands, smiled, and nodded. "Sign of Ekav." He pointed at the sun's edge peeking over the eastern horizon. "Sky traveler, bringer of light and life, healer, father of crops, father of all clans." He retrieved his piece of charcoal, went far to the left of where he had written his prayer, and drew another 6 on the wall and pointed to his ear with his left hand. "Also is *eh* sound sign." To the left of the 6 he drew what looked like a *T* with the right half of the crosspiece missing. "Sign of Pash, goddess of forests. Also is *p* sound sign." To the right of the 6 Doven drew a chevron with the point downward. "Sign of Loka, guardian spirit of *ehlodomak*." It took some signing and drawing pictures in snow, but Gordon learned *ehlodomak* was the physical underworld of caves and caverns. To the right of Loka's *v* sign Doven drew a short horizontal line—a dash. "Avina's sign," he said. "Avina is goddess of river. Sound sign *ah*."

Doven drew a line beneath all four signs from left to right. "Pee-eh-el-ah. Pela." He grinned at Gordon. "Pela," he repeated.

Gordon found two sticks, added them to the fire, and moved some of the cooked meat from the night before close to the heat to warm it. Finished with that, he stood next to the mat weaver. "If you have the time, Doven, I would learn all the sound signs."

Doven touched his left thumb to his tongue, shrugged, and said, "There is little else for this gifted to do until the reed bogs sprout in the spring." He held out a finger, let it droop until it pointed down, and then laughed.

As Ekav climbed into the sky, they shared the meat, Doven made the signs, and Gordon learned his alphabet, the gods, their sound signs, and tried not to think about the mountain at his back. Before he had left the ledge, Jatka was back carrying a message from the naticha. "It is time," was all he said.

* * * *

Tonton Annajaka's dwelling was past the cliff at the northeastern edge of the village, deep among tall cedars and dug into the side of a rocky hill. A single window filled with stretched translucent skin, and a dark leather and branch door in the sod wall at the end of a path, marked the house's location. A thin ribbon of smoke came from the rocks and brush above the dwelling. Tonton Annajaka was standing in the open doorway dressed in a simple deerskin long shirt and moccasins. Her thin white hair was wrapped with a wide black deerskin band. "Come, God'n," she said. "Best to pull the thorn quickly." Tonton stood back from the door and Gordon entered.

It was a dark cave-like room, all but the east-facing wall of sod and the packed earthen floor formed from the hill's rock. The north wall was crowded with leather-and-branch shelves filled with herbs, rocks, and powders contained in ceramic bowls, some with lids. Tonton seated Gordon on a leather cushion atop a rocky shelf. She sat upon a bed of furs facing him, both of them warmed by the west wall and the small wood fire at its base. The fire and the light coming through the scraped skin in the window added to the light provided by the fish oil lamp tucked into a rocky niche near Tonton's bed. The smoke from the fire went up through a crack in the overhanging rock above.

"Now, God'n, you tell Tonton Annajaka about coming storm." She brought her fierce blue-eyed gaze up and fixed it to his face. "Tonton will see if you believe your words."

And he told her all that he knew about the great thing that fell from the sky long ago, covered the surrounding land with glass, and built Black Mountain. He told her of the age of ice and of the great glaciers on Black Mountain and its flanks, more ice covering the highlands and the plateau to the mountain's south. He told her of the meteor to come, that it would shatter the mountain, the blast immediately killing everything within a straight walk of at least twenty suns' distance. He told her of the great heat that would melt the ice and snow on and around the mountain as well as the frozen ground beneath, and of the great flow of mud, rocks, and trees that would fill Avina's Valley almost to the men's ledge. All the peoples of the Black Mountain would die. More floods and ice, then drought and sandstorms would come, filling the valley almost to the top of the cliff, burying all evidence of Red Cliff's people and all they ever were.

The naticha remained still for a long time, her face a mask as she studied upon the things Gordon had told her. She looked startled as she glanced away from the space to Gordon's left. He turned and could see nothing there. Looking back, he saw her staring at him. "Then do I believe what I say?" he asked.

"What you say, you believe, God'n," She said in a quiet voice. Her expression was eerie as she said, "Two ghosts, God'n. Two ghosts you have. *They* believe what you say. A third ghost, in you..."

He looked again then saw the distorted light patterns, one on either side of him. For a split second he caught a glimpse of a shimmer just above his own hands. Tonton leaned forward and pointed a finger at him. "Tell me *why* they believe this!" Her eyes narrowed. "And if you believe this, God'n, *why you not run!*"

Time travel, parallel dimensions, one hundred and thirty-nine thousands of summers of human evolution, accomplishment, destruction, and the dangers inherent in turning a single grain of sand. "Ibrahim Taleghani, one of the spirits who believe, told me before he died that turning that grain of sand—placing all the human history we know at risk—was unthinkable. If he were alive, he would not run. He would stand here and die with your people."

He couldn't read Tonton's expression as she went to her shelves of herbs and bent to her potions and powders. Tonton took a blackish substance, placed it in a ceramic bowl, added a pale yellow liquid, mixed it with a wooden spoon, poured a bit of it into her left hand, rubbed it into her palm, and turned to Gordon. "I would talk with your ghosts."

Gordon almost began a sarcastic comment that ended abruptly as the naticha's left palm suddenly opened facing him. An orange mist filled his vision and the universe twisted on its end and went dark.

* * * *

"*God'n? God'n?*" He felt a hand shaking his right shoulder. He opened his eyes and Tonton Annajaka's rock ceiling wowed in and out, orange mists at the edge of his vision. He had a headache that could chase down, kill, and eat Running Mountain single-handed.

"Drink this, God'n."

He turned his head to the right. He was on the earthen floor of the room. Jatka's face was looking down at him. The young man was holding out a wooden cup. "Drink this. Chase head pain."

Gordon pushed himself up until he was sitting, took the cup and sniffed at its contents. It smelled like mint. He drank down the warm brew. As he lowered the cup, his headache diminished. Gordon handed back the cup to Jatka. "Where is Tonton?"

"She cross river."

Gordon frowned. "What did she say?"

"Tonton say for me to take you to Ghaf's tent for Temptations. You take long time to open eyes. I get you tea for head pain. Almost dark now."

"Nothing about why she crossed the river?"

"Ghosts talk to her."

Gordon waited until the headache was almost gone, then floundered around for a bit trying to stand. With Jatka's aid, he made it. Once the room became steady, Gordon looked at the boy and asked, "Temptations?"

* * * *

XIII

That night Gordon, the gifted, relatives, and well-wishers assembled in what functioned as Ghaf's town house, a large tent of oiled leathers lined inside by bearskins. The edges of the recently expanded floor space were crowded by cedar-bough beds covered with leathers and furs, also added recently in preparation for guests attending the Temptations who might be staying over. In the center of the space beneath the smoke hole was a fire pit at which Lolna and some of the other women prepared food.

After making his greetings, Ghaf led Gordon before the guest of honor, Mahu, Clan Father. He was a strong-looking fellow who looked to be in his early forties. His brown beard had twin gray streaks down from the corners of his mouth. Fierce dark brown eyes peered over an aquiline nose.

The Clan Father stood and gripped Gordon's wrist and gestured toward a place next to his in the ring. They sat. Mahu was on Gordon's left and Ghaf seated himself on Gordon's right. Ghaf said to Gordon, "How many suns you know Pela?"

"Six," Gordon answered.

"Not long," said Mahu shaking his head.

"Is that time enough," asked Ghaf, "to know another?"

"Not time enough," answered Gordon. "That will take a lifetime."

The hunter nodded approvingly at the answer. Mahu leaned more closely to Gordon and said, "Pela good woman." Then Mahu shrugged and shook his head. "Pela no *afutebbe*."

Gordon mentally searched though the vocabulary he had pieced together, his head still clouded from Tonton's little hypno preparation. The "afu" sound was a fertility prefix. "Tebbe" was apartness, unjoining. Together they meant virginity. Pela was not a virgin.

"Then Pela is truthful," he said.

Mahu touched his thumb to his tongue, and nodded to his left where sat a woman in furs. She had dark hair, a pleasant enough face, and a big smile. "This Shantonna."

Gordon nodded at her. "Shantonna, I greet you."

Shantonna turned to her left and pushed a young girl of perhaps twelve or thirteen around in front of Mahu facing Gordon. "Anista," introduced Mahu. The child wore white furs and had an angelic face with a tiny nose and large brown eyes framed by black hair woven with yellow dried flowers. "Anista *afutebbe!*" declared the Clan Father.

Gordon looked at the girl, unsure what he was supposed to do next. Anista grinned shyly, turned, and hid her face behind her mother. Shantonna pulled the girl out from behind and grinned widely as she held her in Gordon's view, turning her around like a prized pumpkin. "Anista," said Gordon, "how many summers have you?"

The girl looked up at him with huge brown eyes and held up ten fingers, then three.

Gordon rubbed his chin and studied her. "My summers," he said, then held out all ten of his fingers once, twice, then three times followed by all but two of his fingers. The girl's eyebrows climbed for the sky.

"Your face is a boy's," she protested.

"I am old and can never have a beard unless I cut off your hair and use that," he said. "I am honored to meet you and I wish you a long healthy life, a strong young handsome husband, and many children and grandchildren. I am thinking for Pela now and have no thoughts to spare for others." He looked at the girl's mother. "Save your daughter, Shantonna, for one more worthy."

Relief showed on the girl's face. Shantonna's, as well.

Mahu scratched at his beard and faced Gordon. "Thirty and eight summers?"

"Yes."

"No beard?"

"No."

The clan leader studied Gordon, concentrating on his face. The inspection complete, Mahu held a hand against his own chest and said quietly, "Thirty and nine." He then made a yoni sign with his right hand and a phallic sign with his left. Upon a rather graphic joining, the clan leader looked up at Gordon, a question on his face.

Gordon grinned. "Yes, I do."

Mahu looked around, gesturing with his hands to include the known universe. "Who?"

The most recent who was the artist in Port Elizabeth, but that was two wars and several years ago. "No one," Gordon admitted. "For long time. No one."

Mahu's eyebrows descended in an instant of disappointment, then he smiled sympathetically, nodded, and patted Gordon's back. "Mahu, just so. Many summers. Just so." He wiggled a finger at Gordon, ending the gesture with a droopy finger.

Gordon frowned. "That doesn't mean *I can't*."

Mahu humored Gordon with a nod and another pat on the back.

A man seated behind Mahu leaned forward and said to Gordon, "Shagiv. I make tent." Gordon nodded at him. "Once I saw Pela speak angrily to her first husband, Iveleh," he confessed.

Another man behind Gordon said, "Pahit, thread maker. Twice I hear Pela curse Ekav." He pointed up. "The first time she cursed the god was when Iveleh's ashes were brought back from Yellow Claw country. The second time was when Iveleh's brother, Jidah, died of the blacksores."

A man behind Ghaf said, "Tayem, I run hunting dogs. Know that Pela has almost thirty summers. She can bear you no children."

Gordon waited to see if there were any more remarks to be made against Pela. When there were none, he said, "Thank you for your guidance. From you I see that Pela is experienced, accomplished, loves and feels loss deeply, and is fearless in addressing the gods when they wrong her. From you all I see I have chosen well."

Mahu grinned widely, nodded at Ghaf's wife, and the Temptation ceremony continued with a feast of goat, tea, and something resembling hardtack which when softened in the tea was quite sweet. Mahu said, "Keila," then he pointed across the circle. Gordon looked where the Clan Father indicated. There was a place across from Gordon that was empty. One of Mahu's wives, a plump sandy-haired woman in her early thirties wearing the leather long shirt, placed a beaded leather cushion in the empty place, glanced at Gordon, covered her face in embarrassment, faced her left palm at Mahu, and went to the fire pit to join in the cooking. "Keila," repeated Mahu. "My first wife. Keila first daughter of Kag Ati, Clan Father Cleft Mountain. Keila's mother dead. Kag Ati took three new wives to replace her." He looked around the circle at the company. "Kag Ati not here." Mahu pointed out his two other wives, both dark-complexioned younger women with black hair and dark eyes. "Suna and Min. Twin daughters of Nol Pindaak, naticha of Yellow Claw Clan." He gestured toward a man in a black leather hooded long shirt who wore a necklace of blue beads. Nol Pindaak nodded back at Mahu's gesture and pushed back his hood, revealing a weathered dark face with large dark eyes. He sported a long black beard salted with gray. Nol Pindaak gestured to a quite slender woman in furs sitting to his left.

"That is Funa Son, Nol's only wife, mother of Suna and Min. Mahu continued introducing the notable personages attending the ceremony. When he was concluded, he asked if he could look at Gordon's leather knapsack. Gordon handed it over and Mahu nodded his thanks as he held the pack in his lap and studied the finish on the leather and especially the stitching. "I have never seen such work. Who made this?"

"L.L. Bean."

"Where is this—"

"Mahu!" called a deep gravelly voice. The Black Mountain Clan Father looked up, grinned and waved. Gordon saw a man in heavy dark furs on the other side of the fire pit near the eastern entrance wave back. "Kag Ati," said Mahu.

The Clan Father of the Cleft Mountain Clan was taller than usual, heavily muscled, and with a face burned dark by sun, wind, and snow glare. He had an ugly scar from the outside corner of his left eye straight down to his chin line, the result of a knife fight in which—according to Mahu—he slew the previous Clan Father. Kag Ati wore his dark brown furs about his shoulders over whitish leathers and was the only one in Ghaf's tent who carried a weapon: one of the obsidian-toothed clubs. Kag Ati

looked at Gordon, switched his weapon from his right to his left hand, kissed his own right palm, touched the palm to his forehead, and held the hand out in Gordon's direction. Gordon nodded in return.

Wooden drums began beating, the instrumentation provided by two men near the door. Just as suddenly as it began, the drumming stopped. Pela's ex-sister-in-law Bonsha came in the eastern entrance and stood to the left of the opening. Then Pela entered, being led by a tall man in his forties with thick black hair streaked with gray. Deep blue eyes were capped with arched black eyebrows.

"Lekiv is lawminder, my good right arm," said Mahu. "He takes the place of his great friend Cualu, Pela's father."

Gordon wasn't listening. His attention was filled with the sight of Pela in her white leathers sewn with turquoise, black, and golden beadwork up from her hem and cuffs. Her hair was done up in a gleaming auburn pile upon her head, the affair held in place by a half dozen long white bone combs, their ends capped with gold beads. At the sight of her, the women began singing.

* * * *

Come, daughter, come. See who awaits.

This man who refused all to be your gift.

Come to your place in the ring,

honor Tana,

watch your husband-to-be,

see who his eyes seek.

Daughter, you are still free.

* * * *

The drums beat again and the men began singing.

* * * *

Look son, look. See who comes.

This woman who refused all to be your gift.

See her take her place in the ring,

honor Wuja,

watch your wife-to-be,

see who her eyes seek.

Son, you are still free.

* * * *

Gordon's eyes sought only Pela, and every time he looked at her, she was looking back at him, her face radiant, her eyes filled with love and wonder. In fact, he was so caught up in looking at her he realized that he had forgotten to reset the shockcomb. In a pause in the festivities, he picked up his bag, held it between his knees, reached in and triggered the reset. He glanced in and saw the readout. Thirty-one minutes to spare. It brought back to him the impending hammer of reality. He looked around at the

gathering. One important face was missing. Gordon leaned toward Mahu and asked, "Clan Father, where is Tonton Annajaka?"

Mahu lowered his cup, licked his left thumb, and repeated Gordon's visual search as though he expected to find the shaman of the Black Mountain Clan there. "She should be here." The Clan Father frowned, looked again, then slowly shook his head. "When I saw her earlier she looked not right. Perhaps she is ill. Take no offense at Tonton's absence, God'n."

"Where was she going, Mahu?"

"Cross river." He frowned at a memory. "She say she go to look at nightmare." He waved a hand in dismissal. "Mystical talk, the way natichas do." Gordon nodded and looked down at his hands resting atop his leather knapsack. Mahu leaned over and whispered into his ear, "What you know about Tonton's nightmare?" The Clan Father leaned back and pointed at his own ear.

Gordon whispered into Mahu's ear, "I am the one who told her the nightmare. She wants to test it." Gordon frowned as the words left his mouth.

"You have question," stated the Clan Father.

Gordon nodded. "There are things about me no one here knows but me. For this reason no one can warn Pela of them in making her decision. Is it permitted for me to tell her these things now?"

"No." Mahu thought for a moment. "But you may stand outside next to the large tree and take the air. It is smoky in here." He leaned forward and said to Ghaf. "It is smoky in your tent."

"Unhealthy and too warm," said Ghaf. "I must see to making changes."

Shantonna pushed her daughter toward Pela's side of the ring. "See if the air is any better on that side of the tent, Anista," said her mother.

Mahu nodded toward the tent's entrance. "Perhaps you should get some air, God'n."

"My thanks, Clan father. I will." He stood, stepped through the guests, and went to the entrance of the tent. Once outside he walked to the large tree and stood there in the still air, the torch beside the entrance to Ghaf's tent burning brightly. Automatically Gordon's gaze searched the shadows. Yellow Eyes was there, monitoring how his plaything walked the trail he had chosen. In the shadows, as well, was someone else: Jatka.

He heard footsteps whispering in the snow behind him. "It is cooler out here," said Pela. "I can breathe."

Gordon turned and looked at her. Her back was toward him. He turned back and they stood with their backs to each other. "Omiva, goddess of the night sky," Gordon said to the night, "there are things the one I am thinking for doesn't know about me. No one here but me knows these things. I would have you tell Pela so then she can decide if she is still my gift."

"I am listening, Omiva," said Pela quietly. "What would you say to me?"

Gordon told the night sky of the thing that built Black Mountain and the coming thing that one day would take the mountain and the peoples near it. He told her of the coming flood that would bury the village, the valley, Shayvi's Hill, and all she knew. Gordon told Omiva about the many men he had killed and about the capsule. He told her about moving through time, about why he and his two companions had come to her village, and how he knew what would come.

When he was finished, he folded his arms across his chest and bowed his head.

Pela said, "Great Listener, Mother of Stars, with all God'n knows, all he saw, all he did, and all he fears, is there room left in his heart for Pela?"

"Yes," he said in answer to Night's question. But Night had one more question.

"Omiva," addressed Pela, "If people from beyond now come for God'n, will he go with them?"

"Only if Pela comes with me, goddess of night. Only then."

"Then he is my gift, Omiva, and I am his."

But there was still one shadow remaining. "Night Goddess," said Gordon, "I would like to regard Jatka as our son and raise him to manhood."

Pela laughed sweetly. "Some will say God'n has a woman's heart, Omiva, to go with his boy's face."

Gordon laughed and shook his head. "If that is the worst ever said about Gordon Redcliff in this life, Goddess of the Night Sky, it will be a happy life."

"If he agrees, then, Omiva, Jatka will be our son." Pela turned until she stood beside Gordon, still not looking upon him.

"Jatka," Gordon said to the shadows. "Come here." There was nothing but silence. "I am brother to a great wolf, Jatka, and can see in the dark. I see you now."

Jatka came from behind a large cedar on the far edge of the path. He walked until he was two paces from them and stopped. "I was only watching the people go in, listening to the songs and drums. I did nothing wrong."

"You did nothing wrong, Jatka. Tomorrow morning at the clanhouse Pela and I will marry. We ask you now: will you stand with us and be our son?"

Stone-faced, Jatka stood there looking between Pela and Gordon. "What do you mean?"

"Will you stand with us?" asked Pela of the boy. "Will you become a part of our family? This is what we want. At the same time we will feast you to manhood."

"What will I have to do?"

She pointed at Jatka's ragged furs. "New coverings. You can't stand with us looking like that."

"Do you have something to present to the gifted upon the Men's Ledge?" asked Gordon. "Can you slay your bear?"

Jatka nodded, his gaze downcast. He was silent for a moment, then elevated his gaze until he was looking into Gordon's eyes. "Why?"

"I too grew up outside the embrace of my people," said Gordon. "It gave me an angry heart and a lonely life. I see you where I was. I make you the offer I wanted then."

"I killed my father," he cried.

Gordon placed a hand upon the boy's shoulder. "Jatka, I will never give you cause to kill me."

Jatka looked up into the night sky, his eyes touched with tears. "Yes." He looked at Pela and Gordon. "We will be a family."

"Then I have had enough fresh air," said Pela, taking Jatka by the arm and turning back to Ghaf's tent. "I want to announce your coming-of-age ceremony." They walked to the tent and entered, leaving Gordon alone beneath the stars.

He saw the reflection of a fire high in the sky, the light flickered in the distant treetops. It took him a moment but Gordon realized it came from the top of the cliff. Tonton Annajaka was back from her hunt. The conclusions she had reached had moved her up to her special place to consult with her gods. A rising breeze stirred up the snow on the ground into moving ribbons of haze that formed and vanished to be replaced by others as they crossed the path. Gordon turned his steps toward the cliff.

* * * *

X*

He climbed the trail in the dark, sensing his way by sound, touch, and the motion of the air as he had been trained in sniper school. On the last of the steep places above the men's ledge, Gordon felt the hammer stone-carved steps to Tonton's place. They were slick with ice and he climbed them soundlessly to a stand of cedars atop the sacred cliff. Pausing at the edge of the trees he looked up to where the naticha knelt before her fire, her back toward him. The wolf that had licked the fat from his fingers the night before sat motionless beside the trail. Gordon nodded once at the wolf and faced Tonton Annajaka's back. "Naticha," he said, "may I approach your fire?"

"You move silent as fog, God'n. Please come to my fire and sit." Her voice was strangely calm.

Gordon came forward and sat to the naticha's left. Her vantage point allowed her to look out over the village and toward Black Mountain. The wolf came and sat to Tonton's right. The naticha smiled at the wolf. "My invitation, of course, extends to sister of God'n."

Tonton returned her gaze to the mountain and looked up at the few stars bright enough not to be washed out by the moonlight. "I sit here many nights—no fire—and watch stars. In ancient belief, God'n, stars are hearts of dead ancestors who watch over their families and peoples here below. Now stars are prayers of men and women. Each time a star falls, Omiva answers a prayer." She looked at Gordon. "What were you taught?"

Gordon thought back to Nascha, his mother. "I was taught stars are the shattered dreams of warriors."

"Who taught you this?" asked Tonton.

"My mother. Her view of most things was different from the Dina—The People. Most believed my mother to be a witch." He smiled. "There was a wise old man, Hosteen Ahiga, who told me my mother was sick." He tapped the side of his head. "He also told me some of the ancient belief of the Dina."

"I would hear it," said the naticha.

"In the creation, the holy people—the gods—put out a great blanket that contained all the stars, the sun, the moon, and the rest. Then they proceeded to discuss at length where the sun should go. When they were done they placed the sun in the sky. They then discussed at even greater length where the moon should go. When they had at last agreed, they placed the moon in the sky. Then, one at a time, they began with the stars." Gordon looked at the wolf. "Coyote, though, became tired of the endless debates, grew impatient, bit onto a corner of the blanket, and shook his head, flinging the rest of the stars into the sky." He faced Tonton.

Tonton looked from the wolf to Gordon. "And what are the stars now?"

"More suns," he answered. "Balls of burning air very far away, many like Ekav, many bigger, many smaller. Some of the points of light are huge gatherings of stars so far away they look like single stars."

Tonton slowly faced the direction of the mountain. "I cross river today and climb to top of Shayvi's Hill. I go to graves, look at damaged trees. On ground I find strange beds and green dust, bits, and pieces of time boat." She was silent for a long time.

"In his home I also find man I sent to Shayvi's Hill to become husband to Pela. Fisher, forty and one years, name of Baltok." She tapped the side of her head. "He too is sick, God'n. Not sick when I sent him across river. Baltok stayed in woods, watched Pela for three days, making up mind. He say he prepared to present himself as Tana's gift to Pela then heard a sound in the night air like fifty trees being broken at same time by hands of frost giant. Then a strange scream and the sky fill with blinding colors. At the center of the light was your time boat falling from sky. Baltok thought Zama was after him to pull him down to the darkness."

"Perhaps he is not as sick as you think," offered Gordon quietly.

"When I find Baltok he is at his house by river filling his pack. After he speak to me he fled for Yellow Claw country."

"That's even closer to the mountain than Red Cliff," said Gordon.

"It is the difference between raindrops if we are all to die."

Gordon studied the flakes of snow as they vaporized above the fire. "Back in your dwelling, Tonton, you asked me why I do not run."

"Yes."

"Why do you not run? Why do you not warn the people?"

She stared into the fire, gave a single laugh, then leaned forward, picked up a stick and threw it into the flames. A shower of sparks climbed into the night sky and died. "You have seen all my magic, God'n. I make you sleep, I talk to ghosts, I convince an old fisher to pretend to be gift of Tana. Eat too much meat, I make you something move your bowels." She fixed her gaze on him. "Itahnika gave you eyes thousands of summers long. You move through *time*. You appear in flashes of light like crack of thunder. Wolf eat from your hand, you know our tongue in days. Much magic. Yet *you* stay here and die to protect future you have seen only a little of yourself."

She sighed. "God'n, do the deaths of the Black Mountain clans protect nothing but good?" She waved her hand at the night sky. "Beyond now is there nothing bad that the lives of these peoples and the lives of their descendents might make better?"

Gordon took a long time to answer. "Those future summers are not all good. They are filled with ignorance, disease, want, cruelty, pain, and death. They are also filled with knowledge, discovery, kindness, courage, healing, beauty, and life. You are right: I have seen only a little of this future and know of only a little more. What I have seen and what I know others have seen have been this same mix of death and life. That I was a hunter of men speaks for the time in which I lived. That I learned to love others and to admire the work and creations of others also speaks for that time. I know much of what is to be. Would it be made better if the peoples of Black Mountain survive the great storm? Maybe it would be made worse or make no change at all. I don't know. What you call my ghosts are just as

ignorant. There are things they value above all else, though. They are things that might never be if we change things now."

"What things, God'n?" asked the natcha.

"Gods, saviors, and prophets. Tribes, nations, monuments, talismans, and rituals."

"Are their gods real or did the peoples of the future imagine them?"

Gordon grinned. "A very good question, natcha."

"Does beyond now have an answer?"

"Thousands of thousands."

"I think your ghosts tell me they can't make you understand them. Something wrong with your head."

He held his fingers on the scabbed over wound. "My injury."

"Are they ghosts, God'n?"

"I don't know."

Between the clouds above the mountain Gordon saw a meteor streak into the atmosphere and burn itself out in a half-second display. "A prayer has been answered, Tonton," he said. "I wonder whose."

The distant sounds of wooden drums reached them from somewhere north of the cliff. It was joined by sounds resembling those of pan pipes. Singing joined the music. Gordon looked at Tonton. "What is that?"

"You are being called to the Love, God'n. The peoples of Black Mountain are there to guide you into your marriage with Pela." The natcha stood and faced him. "See if there might be something in it worth saving for the times to come."

* * * *

X*I

The Love was held back in the north hills beneath the stars in a snowy clearing surrounded by giant cedars. There was a large fire for light and warmth and a group of seven men on the fire's east side beating with sticks upon hollowed logs working up a rhythm that, as Gordon sat among the gifted upon a winter bearskin, was joined by the pan pipers and the voices of thirty or so young girls and boys. The girls were from as young as six or seven up to in their early twenties and they circled the fire in a deliberately suggestive yet humorous dance. These were the unmarried girls dancing for their older sister's good fortune, and for that special pair of eyes in the surrounding audience of bachelors.

In a moment the young girls were replaced by another set of dancers. "Married," informed a man to Gordon's left who introduced himself as Aukis. He was a pointmaker and he pointed out his bride of eleven years, Tijin. The wife of Aukis was a formidable woman who danced as though she were killing mice with her moccasin-boots. Aukis held seven fingers up and grinned. "Four boys, three girls," he said proudly. "We put youth to good use."

Out of curiosity Gordon wiggled a finger at him and Aukis shrugged and nodded. Something caught the man's attention. He looked up and pointed toward the dancers. Gordon looked and Pela was joining the dancers. The dance this group did, erotic as it was, described the cycle of life. As Pela and the married

women swayed and turned they played out courtship, lovemaking, pregnancy, birth, growing, age, and a death surrounded by loving friends and many descendents.

He glanced down at the pack he was using for an armrest, remembering as he did so to reset the shockcomb. He held the bag between his legs, opened it, and checked the weapon. It was within three hours of puckering itself out of existence. Gordon reached in, reset the shockcomb. When Mahu asked for another look at the pack, Gordon handed it to him and decided to make a gift of the pack to the Clan Father as soon as he had a replacement. Then Gordon watched Pela dance until Ekav brushed the eastern sky with pale yellows and rose.

At a signal from the drums the ceremony became a moving affair as Mahu stood and led the way down from the hill toward the clanhouse. After all the feasting, talking, and dancing of the previous two ceremonies, the wedding itself was somewhat subdued. The clanhouse was filled with well-wishers. Mahu's brother led Pela before a recently installed totem of Bel, which was a fearsome looking thing, a twisted oak log about thirty-five centimeters in diameter with branches for arms and a face formed from its bark with obsidian for eyes and milky quartz splinters for teeth. Gordon found himself next to Jatka, who was wearing a new set of leathers that were stylish indeed with diamond-shaped red beadwork on the shoulders and on his fur cap. He had a bundle beneath his left arm. He held it out to Gordon.

"You are to put these on," said Jatka.

"Where?"

Jatka nodded at someone and soon Jatka and Gordon were inside an area walled with pelts held up by Gifted Ones. As he stripped to his waist, Gordon asked, "Who does the totem represent?"

"Bel, god of *tiwineh*."

With a few probing questions, Gordon determined *tiwineh* meant *agreements*, and among the agreements under Bel's jurisdiction was the institution of marriage. *Tiwineh* was also their word for honor, which to the peoples of the Black Mountain meant saying what you mean and meaning what you say.

Gordon looked at the deerskin shirt Pela had made for him. On its back in beadwork was the head of Coyote from the center of Gordon's belt, just the way Hosteen Ahiga had worked it into the leather, wink and all. He put on the shirt and it fit perfectly. He faced his new son. "How do I look?"

"Like a man."

Gordon picked up his pack and stuffed the furs that he had taken off into the bag. Facing Jatka, he said, "Let's begin."

Jatka muttered a word, the pelts came down, and Gordon and Pela stood before the god of contracts and a new arrival, Tonton Annajaka in full makeup. Pela took Gordon's head in her hands and drew him toward her until their foreheads touched. Pela said to him, "I am your gift and you are my gift." Gordon repeated the vow, then looked at Tonton as he reached out and placed his hand on Jatka's shoulder. "This is our son, Jatka," he said. Pela placed her hand on Jatka's other shoulder, saying, "This is our son."

Jatka placed a hand on Pela's arm and said, "This is my mother." He placed a hand on Gordon's arm and said, "This is my father."

"Let it be so," said the guests.

From a tiny white leather pouch of grain, Tonton took a pinch of grain and placed it in Pela's mouth, then

another pinch of grain in Gordon's. She reached between them and placed a pinch of grain in Jatka's mouth. She pulled the drawstring on the pouch and handed it to Gordon. To the three of them she said, "Before all the clans and peoples of Black Mountain, may you be filled with love, respect, and honor the rest of your days together." She paused as she closed her eyes and trembled slightly. Opening her eyes once more, she said, "In the name of Bel, I seek for your health, fertility, and prosperity."

Gordon said to the naticha. "We would bring Jatka into manhood now."

Tonton looked at Jatka, placed her right palm on his left cheek, and said, "I am happy for you, Jatka. Do not forget Tonton Annajaka."

"I will stay and study with you, naticha," he said, glancing at Gordon. He nodded back. Jatka looked at Tonton. "I want to keep studying the herbs and powders. I have no sight to become naticha, but when a back hurts, I maybe can ease a pain."

The naticha smiled and removed her hand from Jatka's cheek. "Climb the tiers to your childhood, sit, and select your gifts," she said.

As Jatka climbed to the top tier, the Gifted Ones seated themselves along the bottom tier. Even Tonton Annajaka took her place among the women. It was a man-raising that granted all who attended for Jatka with wisdom from all the gifted, including the women. The gift he asked from each was the most important thing he or she knew. It was a question Gordon had once asked Iron Eyes. When his turn came, he passed on to his son Hosteen Ahiga's answer. "To learn from your own mistakes is intelligence; to learn from the mistakes of others is wisdom." Tonton Annajaka's gift was, "Any moment may be your last; fill it with what you would remember for eternity."

The gifted men took Gordon and Pela's new son to the Men's Ledge to spend the night beneath the sky getting Jatka acquainted with the society of men and to introduce him to Wuja, white bear god of men, fatherhood, and the hunt. Another feast, another dance, and more music. By the time Pela and Gordon reached Pela's house, the afternoon had become evening and the serenading had begun.

Gordon awakened the next morning, memories of his wedding night warring with the abrupt end to everything he knew was coming. He stretched and wriggled into the most comfortable bed he had ever slept in. Bear robes on a thick bed of cedar boughs. The smell of the cedar was a perfume that permeated everything. He opened his eyes and looked up. The roof was made of poles covered with thatch. The circular wall was built of heavy sod reinforced by cedar poles. The floor was made of flat stones set in dirt. The fire was in a fireplace made from stones, sod, and dried mud.

He was full of food from the night before, he was well rested, and unashamedly satiated in almost every respect. His talk atop the cliff with Tonton Annajaka the night before nagged at him, though. Of the different peoples on earth at that moment, what gave the Black Mountain peoples any less of a right to a future? Chance? The hand of some indifferent god? The random path of a rogue meteor? Perhaps it was that same god who had sent Gordon back to correct an earlier mistake.

What, then, was at risk if these clans escaped the coming devastation? Television? Nasal decongestants? Pizza? Bach? Thousands of years of religious wars? He sighed and rubbed his eyes, pushing all of it from his head as he heard something. After a moment he glanced to his right, then his left, wondering where Pela was and what had awakened him. She wasn't in the main room and she wasn't in the attached smaller room in which she made her furs. It sounded like a man's voice, though. It was Ghaf yodeling from the Men's Ledge.

Throwing the fur covers aside, Gordon got to his feet, pulled on his new fur pants and boots, his Coyote shirt, bearskin poncho, and hat. Moving aside the heavy fur curtain that covered the opening to Pela's

house, he stepped beyond the thick sod walls, out into the cold morning air and listened to the hunter's call to the village. The night in men's company had been passed, Jatka had slain his bear with a magical potion of his invention that eases soreness in aching muscles, which really works, said the hunter in an aside. Prayers had been made, and Jatka was now a man.

Gordon looked around at the village houses. He seemed to be the only one listening to the hunter's news. The men and women of Red Cliff were down by the river standing on the north shore silently watching a tree. Gordon squinted and saw that someone—his bride—was high in the branches, singing out her own news. He could just make it out: the wedding night described blow-by-blow. Gordon felt his face grow hot, took a few steps forward, listened, then laughed and moved a few steps more.

He reached a large house with walls of wattle and daub and saw Mahu standing in the doorway listening intently to Pela. "God'n my gift from Tana," she yodeled and again she went on to describe, touch by poke, the consummation. "Thirty and eight!" she shouted like a crowing rooster. "Thirty and eight!" She made the signs with her hands and the yoni's companion no longer drooped. As she went on, elaborating on her theme, Gordon glanced back and saw Mahu and the Clan Father's first wife Keila looking back, wide-eyed, mouths open. Behind him he heard running and turned to see, fresh from his recent appearance atop the Men's Ledge, Hunter Ghaf running toward him, a most intent expression on his face.

"Oh, hell," said Gordon. "Now everyone'll want to know how I did it." He made tracks for Pela's place.

* * * *

X*II

"God'n? God'n?" called Pela from outside the door.

"Yeah, yeah," he muttered. Pulling the door curtain aside, he saw piled before Pela's door what he expected: game, beads, dried fruit, jerked meat, yams, presents of leather and wood and shaped flint, each one carrying a mark. In a semi-circle beyond their gifts stood Gifted Ones, men and women, waiting for their miracles. Pela looked around at the wealth and said, "God'n, they want—"

"I know what they want," he said. He held out his palms facing the gifts. "Take them back, I beg you. Take them back. There is nothing I can do."

Mahu pushed through the supplicants, all his wives in his wake. "God'n," he said, "you make me strong." Mahu placed a brace of fine hunting spears in a prominent place among the gifts. Behind the Clan Father his three wives nodded eagerly.

Gordon held his hands out, "And if I can do nothing, Mahu?"

The father of the Black Mountain Clan faced Gordon. "Ask Wuja. Ask your Coyote. Try."

After a deep breath and heartfelt sigh, Gordon nodded. "I will try," he said to the Clan Father. "No promise, Mahu." To Mahu's wives and the others assembled in front of Pela's door he said, "No promises."

Gordon was inside Pela's house shaking his head in despair when Jatka pushed the curtain aside and leaned through the door. "Father, did you hear Ghaf's call? I am raised to manhood."

Gordon went to the door, placed a hand on Jatka's shoulder, and said, "I am proud of you, Jatka. Come."

Jatka entered and gestured with his head toward the door. "Why all the gifts, Father? What do they want?"

"My son, the medicine man," said Gordon, "what can be done to make the men strong again?" He wiggled a droopy finger at Jatka.

"Nothing," he answered apologetically. "Nothing that I know. Tonton has no answer." He pointed with his thumb toward the door. "Is that what they all want?"

"Yes."

"Why ... did you and Pela—last night, did you?" and Jatka formed the familiar hand configuration representing successful copulation.

"Yes."

Jatka's eyebrows arched as he held his hands out to his sides. "*How?*"

"That *is* the question," answered Gordon.

* * * *

Over the next few days, as Gordon pondered the things that determine male potency, he learned the news of Pela's wedding night had raced across the snows by foot, fire, and horse to all of the clanhouses in the lands surrounding Black Mountain. In a few days more, Gifted Ones from Big Tree and Cleft Mountain came into camp. Representatives of Many Horses and Yellow Claw clans made their bids for the return of youth, as well. Black Shoulders and Big Snake emissaries arrived days later, offering prayers to Wuja that Gordon had not run out of whatever magic potion it was.

Pela's house became surrounded by desperate men and women in their thirties and forties demanding that Gordon reveal a secret that, apparently, was a secret even to him. Still, he could find nothing that explained why men so young became so thoroughly impotent. They ate the same and did the same as the younger men. Jatka wondered if it was the plan of Wuja. Once a man has fathered enough children, the plan has been fulfilled and there is no longer any need for virility. Everyone knew Wuja's plan and had, up until now, accepted it. Gordon, however, appeared to have found a loophole.

Finally, when even younger men began showing up, their arms filled with gifts, hoping for some way to escape fate, Gordon put some nuts and jerked meat into his pack, declared to all a need to commune with Coyote, and then climbed the cliff trail to find a place where he could think. It was a huge cliff with many trails, many ledges, and many niches cut by ancient winds and waters. As he explored the high cliff, he took care not to be observed from the village or from anywhere else. The object was solitude.

The place he eventually found he almost missed. Its entrance was hidden from below by scrubby cedars and by brush and snow choking the narrow opening. Two places he could see where the brush had been tied into bundles. Two more places he saw where the snow had been pushed up into the opening by hands. The snow had been swept to remove such finger marks, but inexpertly. He could see light through the brush, so the space beyond was not a cave. Standing back against one of the thin cedars, he looked up at the cliff wall. In a moment he found sufficient handholds to scale the four-meter high wall to the next ledge, the cedars hiding him from below.

Once on the ledge, he noted an overhang that sheltered both the ledge and the space beyond the brush-filled opening. The surface of the ledge where he stood had also been swept, removing foot impressions, but also the snow. He studied the place. It was a good perch for a sniper, he thought. There was one escape route through a cleft in the side of the overhang and another deep in back of the overhang. It was a natural chimney. When he checked it out he found it led up through the rock to a spot on the south face just below Tonton's special place on the cliff's top. Back behind the cedars, he looked over the village and the southern hills. He had a clear field of fire covering both sides of the river. With the

proper weapon he could wipe out a sizable portion of the village. He nodded to himself. What he couldn't do was restore male virility.

He pulled a piece of jerky from his pack along with the locator, gnawing a bite off the former and noting the remaining 165 days on the latter. Could Harith convince the Temporal Span Authority to send another vehicle back? Doubtful. Even if they did come back they probably wouldn't have half a ton of Viagra with them. He looked down into the space behind the filled entrance to see what was there. It was a roughly teardrop-shaped area the size of a small house with the filled entrance at its small end. The floor sloped gently toward the opening and was covered with human tracks.

Gordon lowered himself down the wall and studied the tracks. Different sizes, all smaller than an adult's. Charred sticks from old fires and more recent fires. There was something else there, as well: the thoroughly chewed remains of a certain kind of white root. He took a piece of charcoal and wrote on the wall, "Ekav knows." He then removed all other traces of his passing, climbed down the cliff trail, and returned to the village seeking his son the medicine man.

* * * *

Jatka was at Tonton's cleaning out her fireplace, the naticha away in the eastern forest collecting oak moss. "Have you found your answer?" Jatka asked as he offered Gordon a corner of his own bed tucked in among the shelves.

"I want you to help me find the answer," said Gordon. "Explain to me the Gift of Many Summers."

"White stingroot. It grows along Avina's banks and its juices end most pain." He pretended to lick his thumb. "The Gifted Ones hold root in fist and rub scraped end with thumb. Then lick thumb."

"You ever try it, Jatka?"

He earnestly shook his head. "No. Ekav the Healer reserve stingroot for gifted in years."

Gordon nodded slightly. "Is it remembered why the sun reserved the stingroot for only the gifted? The young also have pain."

"It is forbidden," was all the answer Jatka had.

"Do the young sometimes break the ban and use the root in secret?"

Jatka shrugged, glanced down, and nodded. "At times. If caught they would be punished, family disgraced, terrible things."

"More than they know, my son." Gordon nodded in satisfaction. "Thank you for your help, Jatka. I'm going to test an idea. If I am correct, you will have earned a third of the gifts the people have been piling outside Pela's door."

"If you are wrong, Father?" asked Jatka.

"We may have to move."

The Clan Father was outside his door watching the new snowfall on the river, the ice white beneath the frozen crystals. The flakes were fine and dry, drifting before a slight breeze. Mahu nodded at Gordon, then faced the west as he touched his thumb to his tongue. "See that coming, God'n. Little flake storm. Snows come hard now, deep and cold. Sweep tomorrow if we want to walk, then winds fill in paths and we sweep again." He held the edge of his hand level with his waist. "This much each time maybe. Sometime more. Bears come down from north to steal children and fatten up before they sleep."

Seeing Gordon's alarmed expression, Mahu grinned and slapped Gordon's shoulder. "Happen once many winters ago in legend. Keeps little ones minding their mothers." Mahu remained with a hand on Gordon's shoulder. He raised his other hand and wiggled his finger, a question on his face.

Gordon held ten rigid fingers straight up in the air.

Mahu's eyes widened as he raised his left hand, thumb extended, to give it a lick, but Gordon reached out and caught Mahu's hand.

"In your hand, Mahu. What?"

* * * *

The Clan Father frowned. "Stingroot," he answered as though only a fool would not know what he was holding. "Gift of Many Summers. Good for aching bones. Chase away tired, make strong." Mahu opened his palm, revealing what looked like an icicle radish. The skin on the wide end had been scraped off and was gray from repeated rubbings by Mahu's thumb. He thrust his arm forward. "God'n try?"

Gordon took the root from Mahu's hand and immediately his fingers began tingling, warmth moving up his arm, easing then eliminating the remaining pain in his head and shoulder. He sniffed it but the root was odorless. He tossed the root toward the river.

"No root," said Gordon. "It is the root that is stealing your gift of youth. Put the root down. Become strong again." He held up a stiff index finger.

Mahu looked at Gordon as though he had just lost his mind. "Root *good!*" he protested. "Father of Mahu taste root. Father's father!" Mahu pointed at himself as if to say his father's use of stingroot and his own existence refuted the connection between impotence and using the substance.

"Your father taste the Gift of Many Summers when young or old?" Gordon inquired.

Mahu wrestled with the truth. "Thirty-two summers. Then taste root. Young forbidden to taste root." He held his hands out. "Root *feel* good!"

"Clan Father, this is the answer I have for making you strong."

"Stingroot Ekav's Gift!" Mahu protested. He looked down at the gathering snow, leaned back against the wall of his house, cocked his head to one side, grimaced, and shook his head. "You have sore muscles, ache in joint?"

"Yes."

"What you do?"

"For some aches there is medicine. For others I say 'ouch.'"

"Root *always* make better," insisted the Clan Father.

Gordon smiled. "Your wives, Mahu," he said. "Think of them."

"Certain are you, God'n?"

"No. But I ask you to do what you asked me to do, Mahu: try. Do without the root. See what happens."

A haunted look in his eyes, Mahu took a small leather pouch from his waist, opened it, stared into the leather bag. "I cannot ask you to do what I would not do myself," he said. "I will try." He then emptied

the pouch on the ground. Turning away, Mahu walked up to his dwelling, entered, and shut the bark and leather door behind him. Five of the pale white stingroots lay in the new snow.

"One day at a time, Clan Father," Gordon said quietly to the closed door. He turned to go home.

* * * *

X*III

Whoever's rooster it was made the first announcement the next morning. Next came a swooshing sound. "Much snow last night," whispered Pela into Gordon's ear. She put her hands above the covers and acted it out in pantomime. Sweeping. Her neighbors were using brooms to sweep clear their paths. Shortly thereafter came a third sound: a trio of female voices doing that curious screaming-singing yodel. Mahu's wives, Keila, Suna, and Min, were spreading the news about what a few hours away from stingroot had done for their husband.

"That didn't take long," remarked Gordon. He dressed, grabbed his pack, and followed Pela to Mahu's house. The three wives were in the snow dancing with their brooms and yodeling out the news. Mahu had gotten sick, complained about aches and pains, then very early in the morning came a great uprising. Driven by desire, the Clan Father had managed to overcome his aching joints three times.

As Gordon was about to return to Pela's house, he saw a delegation from Cleft Mountain with Kag Ati in the lead stop in front of Mahu. He watched as Mahu stood in the falling snow and talked to Kag Ati, gesturing and explaining the miracle. Soon the remainder of the miracle seekers and clan delegations—some hundred or more—were gathered to hear Mahu talk about strength, weakness, and the Gift of Many Summers. Some of the men emptied their pouches of the root while others waved their hands and growled in protest.

"Root make *strong*, not weak!" Kag Ati insisted.

A few others joined the Cleft Mountain Clan Father in voicing similar sentiments until Mahu held up his hands for silence. "Mahu now strong at thirty and nine," he said. "I throw away Gift of Many Summers and am strong. I hear of Jatka's juice to rub away aches. Maybe I try that. No more stingroot." He copied Gordon's gesture of ten rigid fingers thrust up into the air. "Think," he encouraged them. "Try. Then decide."

The men who had dumped their root pouches went to their huts and tents to await the miracle, while some of those who did not dump their pouches noted the location of the discarded roots for later retrieval out of Mahu's sight. The young men, not enough summers to have tasted the root, absorbed what they had heard and seen. They returned to their huts to think and to enjoy the miracle they had not yet lost. Those who were too young and who used the root nevertheless listened in horror and went their separate ways to decide upon priorities. Kag Ati turned his massive head and glared at Gordon for a long moment. Abruptly he pivoted and walked west to where his horses were tethered. Soon he and his men rode across the frozen river into the hills.

* * * *

By noon the next day the snowfall had stopped and Ekav filled the sky with glorious light. Pela and Bonsha went down to the river's edge to watch the fishers stone-drop holes in the ice. Others in the village were sweeping their paths, still others brought in wood, while others went to Mahu's wives to learn of the benefits of abstinence from stingroot.

While Gordon observed the village activity, he felt hungry and reached for his pack as he walked through the cedars along the riverbank to join Pela watching the fishers. As he passed a large tree, his attention on the inside of his pack, something smacked the right side of his head, the universe shattered, and he fell

into mind shadows.

* * * *

Three things moved into Gordon's awareness. First, he was securely bound, hands behind his back, his fingers numb and cold from diminished circulation. Second, his upper torso was propped up against something rough, the knob of a broken branch poked uncomfortably in his back. Third, he had a headache that could flatten Black Mountain all by itself. Blood was crusted beneath his right ear, as he opened his eyes to a smear of light and dark, fuzzy silhouettes around a fire, some moving, some not. It was night. Men and women in a circle around a fire in a clearing, horses tethered just beyond, their backs warmed by furs, the frozen vapor of their breaths filling the line with mist. Also beyond the circle of people were their skin shelters looking like teepees.

Gordon lifted his head and looked. Perhaps eighty men and women with a few children around the fire. The men nearby wore heavy furs with untrimmed seams and carried toothed clubs and spears tipped with long, symmetrical flint points. Only one familiar face: Kag Ati, Cleft Mountain Clan Father. He was on a raised dais seated upon a bench covered with furs. Next to Gordon was another man who was tied and guarded. Gordon could see his face but didn't recognize him. Aside from Kag Ati, there was no one he knew. Gordon felt a moment of relief. Pela and Jatka were safe.

Kag Ati was going through the things in Gordon's pack. A huge black dog sat at his side next to three young females, presumably Kag Ati's new wives. They were before a leather shelter that looked like a teepee with a rounded top. The youngest wife, not even in her teens, was wearing Gordon's spare briefs on her head. The middle wife, no older than eighteen, was wearing his socks on her hands like mittens.

One of Kag Ati's hunters squatted in front of Gordon and smacked the back of his hand against Gordon's chest. "Chayma Azi," said the hunter. He was a young man, barely twenty.

"Pleased to meet you," said Gordon. "I am the captive."

"He is awake, Clan Father," called Chayma to the fire. The clan leader looked up from the pack.

Kag Ati stood. Holding Gordon's pack by its straps, he walked through the path created as his people made room for him to pass. He stood over Gordon. "God'n of the Red Cliff," said Kag Ati. "Strong at thirty and eight."

Gordon moistened his lips and said, "Kag Ati of Cleft Mountain: Clan Father and thief."

Kag Ati's mouth fell open in surprise. "Tied like an animal, you insult me?"

"If you are going to kill me, I have no reason to be polite."

"What about less pain? Is that a good reason?" shouted Chayma Azi.

"A good reason," said Gordon, "but not reason enough."

Kag Ati shook his head at Chayma and motioned for the guard to return to the fire, which he did. The Clan Father held out the pack with one hand and tapped the side of his head with the other. "I know." He let the pack hang from its straps at his side.

The clan leader squatted before Gordon, the pack between them. Gordon could see the shockcomb was on top. "I know God'n's secret." He pulled a stone knife from his belt and held it in front of Gordon's eyes. "You make Kag Ati strong." The Cleft Mountain Clan Father leaned close to Gordon. "With root, ah? Kag Ati stay with Gift of Many Summers and you make strong."

"How do I make you strong, Kag Ati? If you keep using the root you stay weak. Ask Mahu."

Kag Ati held up the pack. "This!"

"What of it?"

"Think Kag Ati fool, God'n? Before you went to Pela's bed, ah?" Kag Ati's heavy eyebrows went up. "At feast? I see you. I see Mahu." He held the pack in his lap. "You hold pack here. Pela sings. Mahu hold pack here. Mahu's wives sing."

Gordon looked at the pack, vaguely remembering that at the Temptations he had held the pack between his knees while he reset the shockcomb. Mahu had held the pack in his lap while he examined the bag's stitching. Kag Ati had been there and had witnessed both events.

Kag Ati smashed the back of his hand angrily into Gordon's face. "Make strong!" he demanded. "*With root! With pack! Now!*" The clan leader held his knife and drew the needle point down Gordon's left cheek, leaving the blood to bead up from the razor cut. He then held the point at Gordon's throat. "I kill you, God'n," he warned.

"I must see in pack," he said to Kag Ati. If he could get his hands on the shockcomb, he could vanish or bury Kag Ati beneath a ton of rock. "I need to see in pack. Untie me."

Kag Ati frowned suspiciously. "You clever, God'n. I hear about Coyote. Trickster, ah? Maybe God'n trickster." He held out the bag in front of Gordon's face. "See what you see, then you make Kag Ati strong."

Gordon looked into the bag. Eleven minutes left on the shockcomb reset. The face of the locator was flashing which could mean anything from the locator's charge running low to Harith managing to find a replacement vehicle and being in the area looking for him.

"Now you make Kag Ati strong?" The clan leader held up his blade, let the needle sharp point dance dangerously close to Gordon's eyes. "I keep root." He brought his lips close to Gordon's left ear. "I not get strong, God'n, I bring my people to Red Cliff and kill them all. You think on Pela, now. You think on your new son."

Gordon closed his eyes and nodded. "You see the way Mahu held the bag? The way I held the bag?"

"Yes."

"Hold the bag that way, Kag Ati. Hold it and wait."

The Clan Father stood, holding the bag in both hand. "Everything in here I need?"

"Everything you need."

"Kag Ati not get strong, God'n, I fill Red Cliff with blood, ghosts, fire, and shattered bones," he warned. "Believe me."

"I believe you." Gordon looked away from Kag Ati into the shadows beneath the cedars. He saw the reflection of yellow eyes watching him. No joke too old for the Trickster, thought Gordon. *Go down this path, Kag Ati. Learn why you should not have gone.*

"*The path is your own,*" came a distinct voice into his head. He looked again and saw the light distorted between himself and the fire. The voice had spoken in Arabic.

"*Taleghani?*" he thought, calling with his mind. "*Can you understand me, doctor?*"

"Can you understand me?" he whispered out loud.

"*Now you can understand me,*" the voice in his mind answered. Then the voice said, "*Of what use is a terminal lesson, Gordon? Look to Bel.*"

Back at the fire, Kag Ati was on his platform. By one hand held Gordon's leather pack high above him. "This the true magic of God'n. All in here. His tale how old men become strong by putting down Gift of Many Summers—" He swung his free hand in a gesture of dismissal. "Ha!" he bellowed.

Gordon listened as some of the crowd joined Kag Ati's sentiment with laughs and jeers. Some remained silent, though. Gordon lifted his head and studied those he could see. Some frowns, some whispers. Some knew stingroot was the problem because they had put it down and had become strong again. They were intimidated, however, by the vocal displays of those who didn't want to part with their drug, particularly that of the Clan Father himself.

Look to Bel, the ghost had said. If he existed, Bel, god of agreements, truth, and honor, was watching. Even if he didn't exist, Gordon's honor did and was at peril. He had lied to Kag Ati. The lie seemed a bigger mistake than dying at the hands of an ignorant addict. Coyote watched; Coyote always watched, and now he had help from another dimension.

Gordon struggled to his feet and shouted over the heads of the people. "Kag Ati," he called. "What is in that bag will not make you strong. Putting down the Gift of Many Summers will make you strong. Using stingroot is what makes you weak."

As dead silence filled the clearing, one of the guards came to knock Gordon back to the ground. The Clan Father called, "Bring God'n here."

Two guards led Gordon through the closest side of the people's ring, to the right of the fire, and before Kag Ati. "Manga Hadjat!" called the Clan Father to other guards. "Bring the natcha!"

In a few moments the other prisoner, shaman of the Cleft Mountain People, was dragged before the Clan Father. Manga Hadjat's hands were bound behind him, his face bruised, old blood crusted in his moustache and furs. Gordon could see from the looks on the faces around the fire that many were shamed by Manga's treatment. Kag Ati brought down the hand holding the bag. Holding it in front of the natcha he said, "This is the strength of God'n. We keep root! Say it. *Say it!*"

"I tell you only what I know," said the natcha quietly but with a tone that seemed to Gordon as though Manga had already accepted his own death. "My oath before Bel, Clan Father, was to bring you truth—bring the people truth—that all may live, prosper, and walk in peace and joy."

"What of this bag?" demanded the Clan Father.

"I know nothing of it, Kag Ati. I do know that putting down the Gift of Many Summers returned my gift of youth, that doing so has brought back the strength to several in this party." He stood upright and looked around at the faces. "I know some of those who put down the root and became strong." He turned slowly and settled his gaze on the Clan Father who looked at Gordon and held out the bag.

"And you say, God'n?" demanded Kag Ati.

"What's in that bag will kill you, Kag Ati. It won't make you strong"

"You say everything I need is in here, God'n."

"I lied." He glanced at the naticha. "Truth," he said. "I was afraid and I lied." He looked at Manga. "I live easier with myself by saying truth, Clan Father." He looked back at Kag Ati. "What is in that bag will kill you."

"Magic makers," Kag Ati said disgustedly. "Seers of things to come. Ha!" He nodded to the guards and both Gordon and the naticha were forced down to the hard packed snow. When Gordon looked up again he saw Kag Ati standing upon the raised place before his fur covered bench. He held the bag aloft and said, "I show you all truth! The truth of strength! The truth of Kag Ati!" He sat upon the bench, placed the bag in his lap, and waited. Half a minute, a minute, and Kag Ati's frowning face frowned more deeply. He licked his left thumb then stared down at the bag.

"It will kill you, Clan Father," Gordon repeated quietly. "I know this."

Ignoring the warning, Kag Ati opened his knees and pulled the pack deep into his crotch. "God'n wrong," the Clan Father said confidently. All waited for one minute, two, then for a split second it looked as though Kag Ati were holding an illuminated silver beach ball in his lap. Then ball, pack, the Clan Father's genitals, inner thighs, a good bit of his abdomen, as well as his hands up to the wrists were gone. Mercifully his horrible screaming didn't last long.

Once Kag Ati lapsed into unconsciousness, the only sounds came from the huge fire as the burning wood hissed and popped. Still looking at the Clan Father's bloody dead form, Gordon said to the guards, "Cut me free and release the naticha." He looked at the closest guard. "Now."

As though released from a spell, the guards bent to the tasks of releasing Gordon and Manga Hadjat, their eyes stealing momentary glances at their leader collapsed upon the bench, his horror of a wound facing the people. Gordon walked over and climbed up the step to Kag Ati's bench. Bending over he checked for a pulse in the Clan Father's neck. Nothing. Kag Ati was dead.

* * * *

X*III

As they watched the men of the Cleft Mountain heap the wood on Kag Ati's funeral pyre, Gordon looked to his left. Manga was watching the fire. "Manga," said Gordon, "who will lead the Cleft Mountain people?"

"You killed him, God'n. If the gifted agree, you are the new Clan Father."

"I did not kill Kag Ati. I tried to keep him alive and failed. He died at his own hand because he would not listen to your truth or mine. Let the gifted of the Cleft Mountain people choose your Clan Father. They know the people best. Together they know the best for them." He turned and saw the guard who had cut free his bonds standing with five other guards. They were separate from the others, all looking down, their weapons on the snow. Some women and children a few paces off were gesturing and silently trying to get the attention of the guards to wave tearful good-byes. "What is that?" Gordon asked Manga.

"They are all hunters. Kag Ati made them his personal bodyguards when he became Clan Father and threw Gru Amti and his guards into the flames. They expect to be forced to join Kag Ati in the fire."

Gordon went to the guard who had cut him loose. "By what name are you called?"

"Avak Tav, new Clan Father."

"I am not Clan Father. Manga will explain that. My name is Gordon. Avak Tav, can you find the way to Red Cliff?"

The guard frowned. "I am not to die?" He held a hand out to the other guards. "God'n, we are not to die?"

"Not by my hand," said Gordon. "You are all hunters," he said to them. "Be hunters again. We will need many hunters for what is to come."

"I guide you to Red Cliff," said Avak Tav. "May I tell my family?"

Gordon nodded and motioned to the guard who had first addressed him with a slap on his chest. "Chayma Azi," he called. "Gather up all here who can ride and have the horses prepared. The riders will need food to carry. They will go a long way. Food for the horses, as well."

As Chayma Azi left on his mission, Gordon saw his spare underpants hovering just beneath his gaze. Looking down, he saw Kag Ati's youngest widow. "Are you my husband now?" she asked, her eyes very large and filled with fear.

He looked up and behind her were the former Clan Father's remaining two widows. More fear but no tears. He bent to the youngest one and said, "By what name are you called?"

"Misa," she said. "Misa Hado. Do you want the headdress back?"

"No. You may keep the headdress. Come with me, Misa." He turned her by her shoulder and they walked to where the other widows stood. Zibi Na at twenty-two was the eldest. The widow standing next to her, Tuieh, was eighteen. They were both quite beautiful. He regarded the trio and said, "I will be father to you all. Feed you, make shelter, help you learn skills, in time find good husband for each."

Zibi Na reached out and touched his arm. "You be husband." Raven haired, slender, delicate features, eyes of tourmaline green. It was the Temptations all over again.

Gently he removed her hand from his arm. "Father, Zibi Na. Father or nothing. Choose." He looked at the other two. "Choose."

Chayma Azi came and apologized for interrupting. "I have the riders together. Others are preparing the horses."

"Good. My thanks and I'll speak to the riders in a moment." He turned to the three widows. "Well?"

"Can we keep Runner?" asked Misa. Kag Ati's big black dog peeked out from behind Zibi Na. He looked like a cross between a black Lab and an Irish wolfhound. A shaggy black shadow with one yellow eye open on the right. His left eye had been injured sometime in the past and was missing, leaving the animal with a permanent wink. *Sometimes, Trickster, a new joke.* "Welcome, brother," he said to the dog. "Keep Runner," he said to Misa as he laughed and followed Chayma Azi to where the riders were gathered.

* * * *

Early the next morning, Avak Tav and Gordon led a small column of riders down the North Trail, past Ghaf's tent into the village. Gordon pulled up his mount before Pela's house and sent Avak Tav to see Mahu and to ask him to call a meeting of whoever could attend at the clanhouse. Pela stepped from the door, her expression changing from joy at seeing Gordon alive, to distress that his head was bloodied, then to confusion at the number of additional wives he seemed to have acquired.

He explained to her Kag Ati was dead, he was responsible for the death, and that the three females were Kag Ati's widows "If you will have them, Pela," he said, "they will be your stepdaughters."

Pela's expression transformed by slow degrees into one of wonder as she looked up at her husband. "Tana has been good to me," she said as she placed a hand on Gordon's knee. "Two moons ago I was Pela Fur Maker, childless and alone. You come, God'n, now I have husband, son, and three daughters. We must have a bigger house."

Gordon dismounted and saw Jatka running toward him from the east village. He put his left arm around Pela's shoulders and held her tightly to him. When Jatka arrived, breathless from running, Gordon placed his right arm around his son's shoulders. "There won't be a bigger house," he said to them. "Not here. We must leave Red Cliff. All of us must leave Black Mountain Country."

* * * *

XX

Every place was taken in the clanhouse, each one sitting upon a tier had one or two others standing behind him, the great circular wall crowded with more standing. Gordon stood in their center from the edge of the sunken fire pit. Among the faces were Tonton Annajaka, Gordon's eldest daughter Zibi Na, Avak Tav, and Pela. In addition were his two other daughters, one on the children's tier, the other standing next to his son on the adult's tier. Ghaf, Kom and his son Ta Avi, and Tonton Annajaka were there. Tonton nodded at Gordon and he nodded at Mahu. The Clan Father stood and told of putting down the Gift of Many Summers and the difference it had made to him and his wives. He called for others to attest to what he had said. There were others among the gifted who rose to speak on this subject.

Next Gordon had Avak Tav and Zibi Na describe what happened at Kag Ati's camp, the disagreement as to what would happen if the Clan Father placed Gordon's bag in his lap, how Gordon was shown to be telling the truth once again, and the terrible result.

Finally Gordon told them about an obscure dusty oven of a place in the western desert of a great nation where a brilliant teacher who studied the past wanted to see what was at the bottom of a red sandstone cliff. He told them of Ibrahim Taleghani's possession of a miraculous machine that would peel away years by the thousands and bring them back in time. He told them as well of the fears the teacher had should someone go into the past and turn over the wrong grain of sand—how it could possibly change everything in the future. He told them about the crater that was once a great mountain and how it would be smashed, filling all of the lands of Black Mountain Country with fire, earthquake, and flood. He spoke on how this destruction made it safe to travel back in time to look at them for they would no longer be alive to affect the future. He saw looks of horror on some, skepticism on others. Gordon nodded at Pela.

Pela stood and described the night she met Gordon and buried his two companions. She described the lights, the sounds the vehicle made as it came to rest in the cedars, then crumbled to dust. She described the clothes they all wore—no furs—and she spoke the Arabic words Taleghani had spoken to her. There were fewer looks of skepticism. Pela resumed her seat and Tonton rose to speak of her inspection of the site, what she had found, what Gordon had told her, and what Gordon's ghosts had told her. She spoke of Baltok, the man she had sent to Shayvi's Hill to meet Pela, what he had said he witnessed. When she sat, all was silent.

Gordon rose again. "From Kag Ati's camp I sent riders who witnessed what happened at the Cleft Mountain camp to go to all the clan houses in Black Mountain Country. They will assemble the people there and tell them what we have just told you. Those who would live must make preparations, pack provisions, and leave. The snows get heavier and the going will be slow, so we must leave soon. Red Cliff People will join with Big Tree and Many Horses and strike north away from the mountain. Cleft Mountain people will head west. Green Meadows and the plains clans will strike east. Yellow Claw, Big Snake, and Black Shoulders will go south. All clans will bring their adopted clans and any peoples they

find along the way with them away from the mountain."

Ghaf the hunter stood. "This can't be true."

"I have gone to a lot of trouble to show I speak truth," answered Gordon.

"Here I know all the woods and streams, the game, the seasons—"

"We need you, Ghaf," said Gordon. "We need our hunters more than ever for guides, for food, and for skins that shelterers and furriers can use to protect us on our journey."

Mahu stood and turned to look at the old hunter. "We must last the winter, old friend, and the snows are just beginning. We need you and the other hunters to show us how to walk on snow, build shelters from ice, where to dig to find fodder for the animals, and to keep us heading away from the mountain.

"We can't make horses walk on snow, or cows, or pigs," protested Ghaf.

"We can pack the snow," said Gordon. "I will show you how."

Ghaf looked at Gordon. "How far must we go?"

"I don't know. We may not be able to get far enough away in time. I hope we can."

"Why did you not tell us sooner that we might have gotten an earlier start?" shouted a young man from the second tier across the fire pit. Several other voices muttered agreement.

"Would you have believed me?" Gordon asked. "Without the secret of the Gift of Many Summers exposed, without all who saw how Kag Ati died, would any of you have believed me?"

"I find it hard to believe you now even so," shouted another voice.

Tonton Annajaka stood and walked around the fire pit until she faced Gordon. She held a clenched hand out to Gordon and opened her fingers, revealing a small heap of sand upon her palm. "I believe you, God'n." She looked around at the faces of her friends and neighbors. "I have seen this terrible storm coming since I was but a girl. Before the year is out, it will be here. If we are to live we must leave." She looked back at Gordon. "But what of turning the wrong grain of sand? If we should travel far enough, if some of us should survive, what of your own time?"

"This is my time," he answered quietly. "Perhaps it will make no difference. Perhaps one of your descendents will build a terrible weapon that will end all life. Then, perhaps we will bring into being something better."

Gordon took Tonton's hand, turned it, and emptied the grains of sand into his own palm. He looked up and studied the faces looking back at him. Raising his hand, he threw the sand in a wide arc up into the air. As it fell to the floor stones he took Pela's arm and left to gather their children and begin packing.

The lead horse pulling their heavily loaded travois left fifteen days later following the path made by the huge roller the woodworkers, harness makers, and thatchers completed at Gordon's direction to be pushed by six horses. After another four days more horses arrived from the east. In another three days, all who would leave Red Cliff were traveling north. There were a few left behind, reported Jatka: some young ones and some old ones stayed. After all, as everyone knows, the Gift of Many Summers only grows along the banks of Avina's Valley west of Red Cliff. They could not be certain of a supply in the north.

* * * *

Many are the tales of danger and adventure as the Black Mountain people struggled north through the winter storms to escape the coming sky fire. Some of the very old, some of the very young, died from the cold. Some died when food grew scarce, some died when the winter bears became more hunter than prey. A large number of the Big Tree People rebelled at the hardships and turned to go back to their forests at the base of Black Mountain. Some of the Black Mountain and Many Horses Clans joined them. Most continued north.

The night Avak Tav and Zibi Na wed, a thousand stars fell. The late evening sky filled with fiery streaks from the east close to the horizon. They were so many all felt that their prayers had been answered. As they burrowed into their shelter of ice and fur that night, Pela said to Gordon, Jatka, Tuieh, and Misa that she was to have Gordon's child. Her prayer had been answered.

It was many days later, the day sky clear and windless, the air warming and the planters beginning to talk of land and seed, when a few of the remaining members of the Big Tree Clan said that it was far past the time Gordon said the mountain would explode. Gordon was on his horse listening to them when Jatka pointed out to all of them a tiny bright fire in the sky that quickly became a tiny sun of its own. Gordon called for all to dismount and try to control the horses, but few did. They watched in awe as the fire streaked below the southern horizon, causing a great brilliance in the entire sky that hurt the eyes.

Gordon was still calling for the riders to dismount and control their horses when a wall of sound hit them all, driving man and beast alike down into the snow. A breath of hot air warm enough to make the snow sticky came from the south, paused, and was replaced by an icy wind sucked from the north to feed a giant gray tower of ash and steam that climbed above the southern hills. Some watched in awe while others chased down the horses and livestock. "There will be a shock through the ground," Gordon called, urging others to spread the warning. "The ground will lift and shake like a dog—" And the earth rose, shook, cracked, and fell, tossing about men, beasts, rock cliffs, and giant cedars like straws in the wind.

When earth again became earth and snows continued to melt from the warmer air, what animals that could be recaptured were under control, and the dead and injured tallied. Most of those who had left Red Cliff had survived. Now there was a land to find and Bloody London to rebuild.

* * * *

XXI

As the snows melted away, they found a fertile land of red cliffs. On a hill with good water and in sight of the sea to the north, they built their shelters and corralled their animals. From flying over it in another existence, Gordon recognized that distinctive place on the coast. In one of the infinite futures of the universe it would someday be called Tobruk, the best natural harbor in North Africa. In spring, the crops all in the ground, the homes going up, Pela gave birth to a baby boy. Custom had the boy unnamed for its first moon, allowing the father to select a name that would honor the child as well as honor his and Pela's hopes for the child. It was during that time when Avak, Jatka and their scouts returned from exploring the deserted harbor on the north coast. They returned with strange objects that looked like burned stones and were incredibly heavy for their size. One of the hunters, a muscular lad of nineteen born to Big Tree Clan and for Black Shoulders People, Silis Ti, took one of the burned stones to Gordon who was in his partially built home holding his baby wrapped in fur while Pela slept.

Jatka and Avak were with Silis and Jatka said, "Father, look at what Silis found."

Gordon looked at the stone in the hunter's hand, shifted the baby until he could hold it with one arm, then held the stone with the other. He grinned. "Remember, Jatka, when we were on the trail north from Black Mountain, the night Zibi and Avak wed and so many stars fell."

"I remember."

"This is one of those stars."

"Very heavy to be a prayer, Father. Heavy even to be a stone."

"They are all over the ground, on the beach at the harbor, and more in the sea," said Avak. "What is it made of?"

"I told you once about iron. That is what this is mostly. You say there are more of these?"

Silis laughed. "Thousands. Umtok could build himself and everyone else a fine rock home and have stones to spare."

Avak said, "I don't think he could lift any of those big ones."

Gordon hefted the stone and handed it back to Silis. "The three of you take an extra horse each and bring back as many of these as the beasts can carry. If you do, I will make each of you a new knife."

"A flint for so little a task?" said Silis. "I'll leave now."

"Not a flint, Silis. I'll make you a knife of iron. Perhaps even one of steel. It will take awhile to make the blades." He looked at Jatka. "I must make a lot of charcoal, build a furnace, figure out how to force air in it..." Gordon let the sentence trail off as he frowned.

"What is it, God'n?" asked Avak, a tone of concern in his voice.

"Something that never crossed my mind before. What came first, the *anvil* or the hammer?" Seeing the confused expression on both of their faces at the new word, Gordon said, "Never mind. You three go and get the stones. Jatka, take an additional horse and bring back the biggest and heaviest of the burned stones the horse can carry." He frowned as he thought. "I'm going to need wood. Lots of wood."

As the three left to assemble the horses and supplies they'd need for their journey, Pela came up behind Gordon, took the child from him and rocked the baby in her arms. "Have you found a name?" she asked.

"I have."

"Then you must tell everyone," she chided.

Gordon Redcliff climbed into a high tree and yodeled at the top of lungs that he had news. "Today I name my son and he is called Iron Eyes."

Others passed it along, even though the name seemed a bit odd. Gordon climbed down from the tree, looked into the face of his child, placed his hand on the child's shock of obsidian black hair, and said to him, "We'll do copper and bronze ages when you get a bit older."

Pela grinned widely as she looked to the east. "Look, God'n!" She raised a hand and pointed. "Oh, look!"

He turned his head and in the distance he saw a female great wolf coming their way. "Be on your best behavior, Iron Eyes," Gordon whispered to the child. "Your aunt is coming for a visit."

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Reader's Department: **THE REFERENCE LIBRARY** by Don Sakers

Science fiction has often been called a literature of ideas. That's not to say that ideas are all that make a good sf story. The perfect sf tale (which is about as rare as the perfect gas) would combine great ideas, outstanding characters, intricate plotting, superbly drawn backgrounds, transcendent themes, and sublime writing.

Obviously, certain stories do a better job on some of these elements than on others. In the sf world, there's a tendency to look kindly on stories in which stunning ideas or magnificent backgrounds predominate, and to have less patience with tales where a mediocre idea takes back seat to compelling characters or lyrical prose.

This month we start with two books that are very definitely idea-dominated stories.

* * * *

Hylozoic

Rudy Rucker

Tor, 336 pages, \$25.95 (Hardcover)

ISBN: 978-0-7653-2074-2

Genre: Singularity/Transhuman

Series: Postsingular 2

* * * *

Reading a Rudy Rucker novel is like entering the dreams of a more-than-slightly mad genius, or going on the Alice in Wonderland ride in a theme park designed by the likes of Stephen Hawking. There's no fighting it or making sense of it; just relax and enjoy the ride. You're in the hands of a master.

By the end of *Postsingular*, the physical world was infected by nano ... constructs (one can't really call them machines) called *silps*, which imbue every object with consciousness, personality, and a form of telepathy. At the same time, human beings gained a number of abilities, including telepathy, teleportation, and integration with the worldwide emergent intelligence Gaia, affectionately known as the "Big Pig."

And that was all in the prequel.

Hylozoic picks up shortly thereafter, in this newly awakened world. "Hylozoism," according to a helpful epigraph, is a doctrine that "every object is claimed to have some degree or sense of life." None of this, by the way, is magic: it's all nanotechnology, quantum entanglement, and the emergent properties of molecular computers.

The cast of *Postsingular* returns in *Hylozoic*. Newlyweds Jayjay and Thuy, along with their friends, have turned their lives into a hit 24/7 telepathic reality show called *Founders*. As the book opens, Jayjay and Thuy are putting up a cabin in the woods—a process that involves gaining the sympathy and co-operation of the silps that control rocks, trees, the ground, and a petulant local stream. When all is right, the couple (with a little help from their friends) teleport their already constructed cabin from San Francisco to the prepared spot in the woods. Then everyone parties late into the night.

Except, of course, Jayjay, who follows a sentient pitchfork down a surreal beanstalk ten tridecillion levels into subdimensions, where he discovers an alien entity that promptly takes control of his mind.

It seems that Earth, in becoming a postsingularity world, has attracted the attention of all kinds of alien beings from various planets, dimensions, and other-universe branes. Some aliens are helpful, some are amused, some want to make what profit they can off of Earth, and others are really malevolent. It's not at all easy to tell which is which, but Jayjay and Thuy are going to have to if Earth has any chance of controlling its own destiny.

Along the way there's the painter Hieronymous Bosch (who just might be an avatar of yet another godlike alien), an enchanted harp, runes of power engraved on individual silicon atoms, and adventures on a parallel Earth called the Hibrane ... and then it starts to get *truly* weird.

If you've never read Rudy Rucker before, by now you're probably shaking your head and furtively looking around for the egress. So, undoubtedly, were the hapless Victorians who first followed Alice down that rabbit hole. And you know how much fun *that* journey turned out to be.

Rudy Rucker is this generation's Lewis Carroll, and if you can have enormous fun if you relax and put yourself in his more-than-capable hands. Rucker plays with the frontiers of quantum physics and cosmology with his tongue firmly in his cheek and a manic grin on his lips. Don't think about it too hard; like any good dream, the whole thing falls apart once you try to makes sense of it. Just sit back and enjoy the ride. And above all, keep your hands inside the car at all times.

* * * *

Buyout

Alexander C. Irvine

Del Rey, 319 pages, \$14.00 (paperback)

ISBN: 978-0-345-49433-7

Genre: Psychological/Sociological SF

* * * *

Buyout is a different kind of idea-dominated story. In *Hylozoic*, the ideas fly fast and furious, breeding and mutating before your eyes like so many unruly microorganisms. *Buyout* is a more classic, more familiar form in which the author brings one big idea onto the stage, then builds a whole show around it. In this case, the idea is social rather than scientific, and probably even more plausible today than when the author started work on the book.

In the all-too-familiar California of 2039, the prison system is overloaded and taxpayers are going broke paying to house and feed the hordes of life inmates. So here's the idea presented by Scott and Jocelyn Krakauer, an entrepreneurial couple who have made their way up through the world of finance to the highest levels of the insurance business: the life-term buyout. Prisoners serving life without parole are given the choice to be executed, in return for a payment of several million dollars to family, friends, victims, or charities. The deal winds up being cheaper for taxpayers, and allows a murderer to take care of his family, ease the suffering of victims' survivors, and do some good for society. As Scott and Jocelyn present the notion, it's a win-win situation.

Enter Martin Kindred, middle-aged insurance salesman for a failing company, in a deteriorating marriage. Scott and Jocelyn choose Martin as their point man, the one who will sell eligible prisoners on buyouts. If he takes the job, Martin will become the public face of the life-term buyout. In return, Martin will receive substantial bonuses for each buyout deal he closes. If Martin declines the job offer, he'll be unemployed.

Opinions in Martin's family vary. His wife is against the idea. His father and brother, former and current

cops respectively, are in favor of buyouts and support Martin's choice to take the job. His best friend Charlie, a private eye, is doubtful about buyouts ... and also concerned that Martin won't be able to handle the pressure. In fact, Charlie takes on a job with Martin's company so that he can help his friend.

At first, things are fine. Half a dozen buyouts go well, and Martin makes a good deal of money. There is some resistance in society, most notably a fringe group called Priceless Life. Yet all is not well; Martin's marriage slides toward divorce, his school-age daughters show signs of stress, and Charlie gets more worried.

Then a famous film producer is sentenced to life in prison for killing his girlfriend, and he agrees to a life-term buyout. Suddenly, Martin is in the bull's eye of publicity.

In the wake of this case, Martin finds himself of the trail of a mystery. For buyouts are not as simple as they seem ... and Martin and Charlie soon uncover a conspiracy leading to personal danger and the requisite surprising revelations.

The suspense/conspiracy story gives the book a workable plot. Martin, Charlie, and the others are credible characters. But the real test of an idea-based novel is how well it does at exploring the main idea.

All in all, *Buyout* does a fairly good job of investigating the ramifications of its main idea. Life-term buyouts raise a number of moral, philosophical, and legal questions, and Irvine examines many of them. How to go about establishing life-term buyouts, the best candidates for the first buyouts, handling negative publicity—Irvine rings the changes on the idea in a satisfactory way. And at the end of the book, the reader is left with plenty to ponder.

One test for an idea-based novel is whether a reader is still thinking about the idea a week or two later. *Buyout* passes that test.

* * * *

Flinx Transcendent

Alan Dean Foster

Del Rey, 398 pages, \$26.00 (hardcover)

ISBN: 978-0-345-49607-2

Genres: Animal Companions,

Galactic Empires

Series: Humanx Commonwealth,

Pip & Flinx 15

* * * *

Alan Dean Foster made his name by writing movie novelizations. There was a time when just about every sf or fantasy movie that hit the big screen was accompanied by an Alan Dean Foster novelization. (One of my all-time favorite cartoons appeared in 1984, when the unlamented DeLaurentiis version of *Dune* was released and Frank Herbert was still very much alive. The cartoon shows a Hollywood producer on the phone, *Dune* posters on the wall behind him, and he's saying, "But Frank, baby, Alan Dean Foster writes *all* our novelizations." But I digress.)

Anyone who uses those novelizations to dismiss Foster is making a big mistake. There's a reason he was the go-to guy for novelizations: he's a great storyteller. And nowhere is his storytelling ability better demonstrated than in his decades-long saga of Pip and Flinx.

Flinx (Philip Lynx) is a redheaded, green-eyed human with psi abilities; his companion Pip is a miniature telepathic flying dragon. Across fourteen previous books Pip and Flinx have had various adventures throughout Foster's larger universe, a multi-species hegemony known as the Humanx Commonwealth.

This time around, Flinx is on his biggest mission, working to prevent a threat called the Great Evil from destroying ... well, everything. To foil the Great Evil, Flinx and Pip will have to travel across the Commonwealth and even beyond the universe, revisit elements from their past, and convince disparate and hostile species to work together. Along the way there are plenty of wonderful sights to see and action enough for any summer movie blockbuster.

In a well-constructed series, any particular book can be read out of sequence. That's certainly true of the Pip and Flinx books. If you've never had the pleasure, or if you've missed some volumes along the way, don't be afraid to dive into *Flinx Transcendent*. Foster gives you everything you need to follow the story.

For the reader who's followed Pip and Flinx all along the way, this book is even more of a delight. All the strands of Flinx's life come together (he even revisits the Tar-Aiym Krang from the very first book) delightfully.

The Humanx Commonwealth, and the Flinx series in particular, is a great example of the multi-culture, multi-species galactic society that *Star Trek* thought it was portraying. Fascinating aliens, diverse planets, exotic cultures—they're all here. In fact, in this book Flinx himself states what could very well be the overarching theme of the whole Humanx Commonwealth universe. Another character speaks wistfully of a time “when people were confined to one world and believed it constituted the whole universe ... [t]hey never had to worry about the survival of a civilization composed of dozens of star systems and species.” Flinx disagrees: “...they also worried that shape, or smell, or language differences or belief systems were important. They didn't know that all that matters is sentience and sensibility.”

Flinx Transcendent is billed as Flinx's last adventure, and it does wrap up things in a satisfactory package. If it truly is the last Flinx book, readers who have come to know and love the duo will be disappointed. But I wouldn't worry: if there are two things you can count on in science fiction, they are the fact that no one ever really dies, and no popular series ever really ends while its author is alive. And sometimes, not even then.

* * * *

The Solaris Book of New Science Fiction,

Volume Three

Edited by George Mann

Solaris, 406 pages,

\$7.99 (mass market paperback)

ISBN: 978-1-84416-599-5

Genre: Original Anthology

* * * *

Solaris and George Mann continue to provide a venue for some very good science fiction. Volume Three contains fifteen stories ranging from steampunk to love stories to alternate history to good old dystopian futures. The contents page is heavy on Brits, which may say something about the state of American sf (or maybe about the ease of transatlantic communication). Among the Big Names are Alastair Reynolds, Stephen Baxter, Paul Di Filippo, Ian Watson, and Ken MacLeod.

Among the standout stories are Alastair Reynolds' "The Fixation," which is a fascinating take on alternate universes, and John Meaney's "Necroflux Day," which shows us a fully realized society that's neither past nor future but just *different*. (The nearest comparison I can come up with is to Cordwainer Smith, not on the basis of style or substance but mainly for pure uniqueness.)

Reviewing this anthology for *Analog* readers is a snap. I'm going to assume that if you're reading this column, you like *Analog*. If you like *Analog*, you'll like *The Solaris Book of New Science Fiction, Volume Three*. It's as simple as that.

We can all hope that Mann is hard at work on Volume Four. n Copyright © 2009 Don Sakers

Don Sakers is the author of *A Rose From Old Terra* and *Dance for the Ivory Madonna*. For more information, visit www.scatteredworlds.com.

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Reader's Department: **BRASS TACKS**

Dear Mr. Schmidt,

I absolutely loved your editorial in the May 2009 issue of *Analog!* You hooked me from the first line and didn't let go to the very last. Voting and elections are such contentious issues in the U.S. but I think you hit the nail on the head: too much is at stake to just give up.

Thanks!

Rachel Bexell

Coon Rapids, MN

* * * *

Dear Stan,

Either "A Story, With Beans" left out some background on the "People of the Book" religious enclave, or author Steve Gould has committed a Biblical boo-boo.

The story establishes, early on, that the sectarians rely on Bibles (and very few other books) purchased from the outside world. Soon after, though, we learn that the first chapter of the sectarian's holy book tells a story about ten plagues.

However, the Biblical account of the ten plagues does not appear in the first chapter (or even in the first book) of the Bible. In fact, the ten plagues do not appear in any one chapter of the Bible at all, as the Bible takes several chapters to tell that story. (The first plague appears in Exodus, Chapter Seven. The second through fourth plagues appear in Chapter Eight. The fifth through seventh appear in Chapter Nine. The eighth and ninth appear in Chapter Ten, and the tenth appears in Chapter Eleven.)

Either Mr. Gould wishes to convey that the sectarians' version of the Bible discards Genesis, discards the first six chapters of Exodus, and conflates the next five chapters of Exodus into one—or (more probably) Mr. Gould has committed the authorial sin of not actually checking a source before citing it.

Kate Gladstone

Albany, NY

* * * *

The author replies...

All perfectly possible interpretations.

* * * *

Dear Dr. Schmidt,

In the May *Brass Tacks*, you reply to Fred Bushnell's comments on *Rocks*. You've got it a bit wrong. Pure gravity doesn't cause a decaying orbit since gravity is a conservative force. The decaying orbits we are familiar with are of satellites in near circular orbits about the Earth. During all or part of the orbit the Earth's atmosphere causes friction (a non-conservative force), which causes the orbit to gradually decay.

A rock approaching a planet from a distance will be on an elliptical or hyperbolic orbit. Usually it will be deflected by the planet's gravity but just fly on by. If it comes close enough to enter the planet's

atmosphere it may be captured by the planet. What happens then depends upon its mass. If it is small enough it burns up. If it is larger it (or part of it) will reach the surface of the planet without significant commotion. If it is really massive, it will shove the atmosphere aside producing a really destructive shock wave. In any event, it wouldn't spiral in. Fred's right.

Yours truly,

James C. Wilcox

* * * *

You're partly right: I did slip and misspeak when I said the atmosphere had nothing to do with it. And Fred may not have been assuming what it sounded like to me, but he was at least mistaken in assuming that the atmosphere would have no effect on the incoming body. If it got close enough to enter the atmosphere at all, friction would have the effect I think we're all agreed on. If it were coming almost straight in, that effect might be negligible, producing an effect much as Fred describes. But at a sufficiently glancing angle, the result would be a gradually decaying orbit in the form of a flat spiral, as I said.

* * * *

Dear Dr. Schmidt,

Thank you for both publishing my letter [Brass Tacks, May 2009] and taking the time to respond to it. After reading your response, I concluded that some clarification of my position might be in order.

I do not believe we very much disagree with your contention that to be important a book should have "pressing relevance" to the reader. I just wished to point out that it is unlikely to have that relevance unless it reaches that reader. If its readability suffers to such an extent that a reader is unable or unwilling to work through it, how can that person find it relevant? While a duty to make the effort does indeed reside with the reader (which I believe to be your point) a greater duty resides (I believe) with the author. I do not know you personally, so I may be blackguarding you unfairly, but is it not something of the same arrogance as you are accusing the compilers of the list, to assume the failure to find it important is caused by reader laziness in not even trying to understand the content? Above all else, an author is a communicator. Is it not the duty of the communicator to make his communication clear? I do agree with you that it often is not easy. Many of your writers of the Science Fact section do, however, succeed admirably in accomplishing that. I simply maintain that if it can be done it should be done.

Thank you again for your courtesy in reading and responding to me earlier.

Again, respectfully yours,

Steve Altman

P.S. Your implied assertion that the *National Enquirer* is trash and shouldn't be important is quite true, but then so was *Mein Kampf* and would anyone argue it wasn't important or influential?

* * * *

We agree that writers can and should make their writing, even on technical subjects, clear, engaging, and accessible. However, I have personally known many instances of humanities people with an overt disdain for scientific and technological subjects who would not even pick up that kind of book to see for themselves whether or not the author has done that. No matter how well the author has expressed himself, he cannot "reach the reader" unless the reader picks up the book, opens the covers, and looks inside. A compiler of "most important" lists who systematically fails to do that is, I still maintain, guilty of a serious sort of negligence.

* * * *

Dear Dr. Schmidt,

In a science fiction novel I read many years ago, one of the characters observed a politician delivering an address. At the end of the address the narrator realized the politician had spoken but hadn't said a thing because the politician had use linguistic artifices that the crowd could not discern. Yet all present hailed the address as a masterpiece. It was the deliberate introduction of "noise" into the system.

Your editorial seems to recognize that this is what is in play, but what to do? For your consideration, here are some possible filters that a voter might use.

1. Look at what is said before power forums (National Press Club, Council on Foreign Relations, etc.). Forget "stump" speeches and the talking head show. The current president, in those fora, never swayed from a message of collectivism vice individuality. In foreign policy fora he never swayed from a minimalist role for American foreign policy except when that would have entailed an obvious retreat from Afghanistan and Iraq.

2. Look to the people who support the candidate and can vouch for the characteristic(s) he claims to advance. The current president relied solely on himself as the promoter of his virtues. His opponent had character witnesses lined up around the block.

3. Look to his mentors and the early influences. The current president's mentors, those that could be identified, are all communists or vehemently anti-American. I say that because they are either documented as such in the Party records or by a media records. Would you deny evidence just because it doesn't fit your preconceptions, sensibilities, or world-view?

4. Look to internal consistency. I don't deduct points for "flip flops" per se. If facts change, opinions had better change. However, how often has the candidate made unequivocal statements of fact that later have to be papered over or retracted?

5. Look for unguarded moments of candor. In the Joe the Plumber moment, the current president set forth his entire agenda in one sentence. He wants to "spread the wealth around." He has just rammed through a piece of legislation and proposed a budget that will do exactly that.

6. Look for a record. What has the candidate actually done? Though she was the victim of unrelenting media condemnation, there is no gainsaying the fact, provable and verifiable, that Sarah Palin had more actual executive experience than any of the other three candidates. Whether an observer credits that experience says nothing about Sarah Palin. Just about the observer. The current president was an officer in a large donated program that failed according to any objective measure of the results versus the stated objectives.

7. Look at language. Words mean things. Does he deal with specifics? "Hope," "Change," "Yes we can," are all very nice words, but "Just words." The fact is such formulations are meant to appeal specifically to emotions. Emotions are nice and everyone needs some. But, they are not calls to action in any meaningful sense nor do they point to a course of action. If a candidate does not offer specifics, at least as a trial balloon, and brushes off questions of specifics, major red flags need to go up.

There are other filters, but you get the drift. I could not agree with you more that people **MUST** make informed choices on election day. Especially now. The "Marching Moron" block has endangered our national survival. But, these days, how many people are going to take the effort to educate themselves?

Would you join me in proposing a poll test? If a voter cannot name two of the three branches of the federal government, **THEY MUST NOT BE ALLOWED TO VOTE**. How about it?

John Jarrell

San Antonio, TX

* * * *

You make some good points in terms of general advice; but, ironically, your letter itself provides a good place to practice applying them. Your own political bias comes through so loudly it raises doubts about whether consistent noise filtration is really your primary interest. Many of your allegations are at best hard to support (e.g., “relied solely on himself” and “all ... vehemently anti-American”), and your consistent misspelling of “Palin” undermines confidence in your attention to detail.

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Reader's Department: **UPCOMING EVENTS** by Anthony Lewis

25-27 September 2007

FOOLSCAP 11 (Washington state SF conference) at Redmond Marriott Hotel, Redmond, WA. Guests of Honor: Peter David & Jeff Sturgeon. Membership: \$45 in advance, higher at the door. Info: www.foolscap.org.

18-20 September 2009

HORROR REALM [formerly Zombie Fest] (media-oriented horror convention) at Crowne Plaza Pittsburgh South, Pittsburgh, PA. Guests: Ken Foree, Jeff Lieberman, Tiffany Shepis. Membership: \$20. Info: www.192.pair.com/lifeless/HorrorRealm/home.htm; hrcon@itsalivefans.com

9-11 October 2009

GAYLAXICON 2009 (GLBT science fiction, fantasy, and horror conference) at Saint Louis Park Doubletree, Minneapolis, MN. Guests of Honor: Margaret Weis, Lawrence Schimmel, Andy Mangels, Terrance Griep. Memberships: \$70 until 11 August 2009. Info: www.gaylaxicon2009.org; info@gaylaxicon2009.org; Post Office Box 6045, Minnehaha Station, Minneapolis, MN 55406.

16-18 October 2009

CAPCLAVE (Washington DC area SF conference) at Hilton Washington DC/Rockville, 1750 Rockville Pike, Rockville, MD. Author Guest of Honor: Harry Turtledove; Editor Guest of Honor: Sheila Williams. Memberships: \$45 until 30 June 2009, \$55 until 31 September 2009, \$60 thereafter. Info: www.capclave.org; c/o Barry Newton, Post Office Box 53, Ashton, MD 20861.

23-25 October 2009

GEEK.KON (sci-fi, fantasy, anime, gaming, etc.) at Sheraton Hotel, Madison, WI. Guests to be announced. Membership: \$20. Info: www.geekkon.net/index; Post Office Box 5191, Madison, WI 53705.

29 October-1 November 2009

WORLD FANTASY CONVENTION at The Fairmont Hotel, San Jose, CA. Guests: Garth Nix; others to be announced. Membership: \$125. Info: www.worldfantasy2009.org/; World Fantasy 2009, Post Office Box 61363, Sunnyvale, CA 94088-1363.

2-6 September 2010

AUSSIECON FOUR (68th World Science Fiction Convention) at Melbourne Convention and Exhibition Centre, Melbourne, Victoria, Australia. Guest of Honor: Kim Stanley Robinson; Artist Guest of Honor: Shaun Tan; Fan Guest of Honor: Robin Johnson. Membership from 1 January 2009 until some later date (see website for latest details): AUD 210, USD 175, CAD 185, GBP 100, EUR 120, JPY 16000; supporting membership AUD 70, USD 50, CAD 50, GBP 25, EUR 35, JPY 4900. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition—the works. Nominate and vote for the Hugos. Info: www.aussiecon4.org.au/, info@aussiecon4.org.au, GPO Box 1212, Melbourne, Victoria, AUSTRALIA 3001

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