

TWO



Tomorrow Never Knows

Sunday, September 1

“YOU’RE GOING TO BE *RICH*, man! Just remember all of us poor persons from La Jolla High when your mug is splashed across the cover of *People* magazine: Blake Hawkes, Inventor of the Year...”

Not bothering to reply, Blake inhaled deeply from the joint he was holding, then handed it back to Carter. Ever since the U.S. Congress finally voted to legalize marijuana nationwide in 2016, the California varieties had consistently ranked at the top of every survey. Still, the stuff Carter got from his licensed supplier up in Humboldt was always a cut above the rest. Blake indulged infrequently these days, but whenever he sampled Carter’s stash the experience was always intense—like lying back in some celestial hammock, watching half-formed ideas rise up from his subconscious and connect in a vast Hegelian constellation.

It was another joint from Carter, rediscovered in a desk drawer, that had inspired his solution to the quantum communication problem. Other than Mel, Carter was the only person who knew about Blake’s discovery. The whole story had tumbled out during their run that morning, despite his promise to Mel that he would keep it under wraps. It was okay, he knew—Blake could trust Carter with anything. They’d been best friends since the third grade, and had shared countless confidences over the years.

“Let’s review,” Carter was saying. “You’re telling me that this invention of yours lets anyone communicate instantly with someone else, wherever they might happen to be—across the universe even, to quote the late, great John Lennon?”

“That’s right. *And* the communication can’t be intercepted or jammed, or even detected—because there’s no actual transmission occurring between the two points.”

Blake lay back on the smooth wooden planks, staring up at the blue sky as his bare chest and legs soaked up the warmth of the sun. It was Sunday morning of the long Labor Day weekend, and not a car could be heard on the surrounding streets. On a day like this, up here on the roof deck of his parents’ house, it was easy to forget that he lived in the nation’s most populous state. Their four-story home was built on one of the highest points of their residential La Jolla neighborhood, and the roof had a commanding view of the tree-lined landscape around them. Spending time there always left him with the feeling that the world was somehow under control.

This is what life is about, he thought: catching rays and sharing some prime weed with an old friend after a hard morning run. They’d covered the rolling seven-mile course at a good clip, too. How long was it since he and Carter and the other guys had brought home the Division II high school cross-country championship? Nine years...an eternity. His training was more hit-or-miss these days, but it was nice to know he could still turn it on when he wanted to.

He’d needed this break. Closing his eyes, Blake visualized himself detaching from his worries and drifting down a quiet river, leaving all of them far behind: the breakup with Ann, his misgivings about his post-academic career, and now this latest twist—the sudden request from the government for a meeting. He didn’t mind talking with the Feds about his work, he thought, but why the mystery?

He’d gotten the phone call two days before.

“Blake? Mel here. I finally caught the video of your Zurich presentation. You were sensational! This work you’re doing on random convergence is going to turn the whole multiple universe concept on

its head.”

“Thanks, but I had some help. You were there the day that theory hatched—remember?”

“Sure I do. I realize it’s not going to cause the kind of splash your quantum communicator will, but it’s a very big deal. In the long run, it could point the way to a unified theory. I can’t tell you how proud I am of all you’ve accomplished.”

There was an awkward pause, as if the speaker was searching for the right words to express what was coming next. “Actually, it’s the communicator I’m calling about, Blake,” he said at last. “I’m afraid you’ll need to come back to campus a few days early. The Federal government got wind of the project somehow. They want to ask you some questions.”

Blake was taken aback by his advisor’s wary tone. Mel Morrison usually played the laid-back California surfer-physicist to the hilt (“The name’s *Mel*, dude—as far as I know, Professor Morrison’s still safely interred in Paris...”). It wasn’t like him to sound so uptight.

“Is everything okay?” he asked.

Mel waited a beat before answering. “This was bound to happen,” he said, a hint of weariness in his voice. “These days, every discovery has its price. Just stick to the science and you’ll be fine.” And with that, he hung up.

Blake was brought back to the present by Carter’s voice.

“If what you’re saying is true, you’re going to have every military and spy agency in the world knocking on your door. You lost me with that last part, though. How can the two thingamajigs communicate if there’s no transmission between them?”

“It’s based on something called quantum entanglement,” Blake replied. “The communicators use entangled electrons—pairs of electrons that are generated at the same time in a way that leaves them linked forever, no matter how far they are from each other—like psychic twins separated at birth.”

Opening his eyes again, Blake paused to let this sink in.

“When you bring one of these linked electrons out of its entangled

state—what they call collapsing it,” he continued, “it takes on a definite spin, along either the ‘x’ or ‘y’ axis. At that very same instant its twin collapses too, and takes on the opposite spin, even it’s a million light years away. Theoretically, you could collapse an electron in another galaxy and its counterpart would respond instantly back here on Earth.”

“Got it. So you communicate by sending out a bunch of ‘x’ and ‘y’ messages, like Morse code dots and dashes—right?”

“It’s not that easy. For one thing, there’s no way to predict which spin an electron will take on. So you can’t say, ‘Now I’m going to do three x’s and a y.’ The only thing you *can* control is whether you collapse an electron out of its entangled state or not.”

“Then why not collapse them in some kind of pattern—and send a code that way?”

“Because that poses another problem. Just by checking a particle, you’ll automatically collapse that particle if it hasn’t collapsed already. So when you look at a collapsed particle you can never tell whether you collapsed it yourself, or if your counterpart at the other end of the universe messed with it first.”

“I’m having serious trouble following you, brother.”

“Think of it this way,” said Blake. “Imagine that I sent you a magic envelope with a white piece of paper inside. Meanwhile, I have a special matching envelope that I keep for myself. The instant you open your envelope, the paper inside will randomly turn either red or blue. At that same instant, the paper in my matching magic envelope will turn the opposite color—even though I haven’t opened it yet. This means that any time you open your envelope and see that the paper is red, you’ll know that mine has to be blue—or vice versa.”

“Okay,” said Carter slowly.

“Now, my matching envelope works exactly the same way in reverse. When I open my envelope and see that my paper is blue, I know that yours has turned red. That’s pretty cool knowledge to have, right? Especially if you’re in another galaxy.”

“Right—an instantaneous exchange of information! And since you’re a galaxy away, it’s being sent faster than the speed of light, right?”

“Like I said, it’s not that simple,” said Blake. “For one thing, you can’t control which color either paper will turn. Plus, you can never tell if a paper has already changed color inside the envelope, because you’d have to open it to check—which automatically makes the paper turn red or blue, if it hasn’t already. So we can’t really exchange any information. Say you want to send me a prearranged signal by opening three envelopes at your end—because we’ve agreed that three colored pieces of paper means send help, whether they’re red or blue. There’s still no way I can tell that you really sent the signal, and that I didn’t transform the papers myself. To know that, I would need X-ray vision to look inside each of my closed envelopes without opening them—which is impossible.”

“I get it. A Catch-22....” Carter squinted skyward. “But you found a way around it.”

“Yeah, I did. The random convergence theory I developed predicts that when you bring together enough entangled electrons, it curves time slightly. It turns out you can see this time shift if you run a microwave beam through the electron field, because the shift accelerates the beam just a little bit. Then each time you bring one of these collected electrons out of entanglement it slows the beam down just a fraction, in a way that’s unique to the electron’s location. Using that knowledge, you actually *can* send the kind of signal we’re talking about, by collapsing electrons in a deliberate pattern with a laser while someone at the other end monitors the changes in the microwave transmission.”

“You figured this out yourself?”

Blake nodded. “About six months ago.” As he spoke, his mind flashed back over the long weeks of calculations leading up to the breakthrough, and his feeling of euphoria when he realized that the theory was holding up.

“The thing is,” he continued, “no one has been able to gather enough entangled particles together in one location to test the theory out. That was my big challenge: I had to find a crystal structure that could hold a billion or more entangled electrons for a sustained period of time.”

“And you did that, too.”

“Yup.”

“He said modestly,” laughed Carter. “I’ll take your word on the science, dude. It all sounds a little spooky, though.”

“It’s funny you say that, because Einstein thought the exact same thing. He called quantum entanglement ‘spooky action at a distance.’ He didn’t believe this kind of relationship between two particles really existed. He was convinced the theory was mistaken, or at least incomplete.”

“So Einstein was wrong?”

“One of the few times he was,” said Blake. “Anyway, after those issues were solved, it was just a matter of developing the hardware—starting with a computerized pulsed laser that could target specific electrons inside an artificial crystal lattice.”

“Spare me the techno-speak,” said Carter. “Can’t you just show me how it works?”

“I thought you’d never ask. Back in a flash.”

A minute later, Blake climbed back up the stairway to the roof with two identical black leather suitcases in his hands.

“These devices are configured to transmit and receive data from each other,” he said. “I just put the crystals in. Normally I keep them in the freezer to prevent the electrons from decaying. Each one holds one crystal for transmitting and another for receiving. They’re good for about a half hour’s communication time apiece before the quantum effect gets too faint to measure.”

Placing the cases carefully on the large picnic table at the center of the roof deck, Blake walked over to a corner section of the deck’s wrap-around bench. Raising its hinged seat, he removed some blankets from the storage space inside, then pried up the floorboards underneath to reveal a hollowed-out space he’d created years ago by sawing away the deck’s supporting struts. Blake reached down again and retrieved a rectangular object wrapped in heavy plastic. Setting the bundle down on the bench, he peeled away the covering to reveal an old manual Technics turntable.

“Haven’t seen *that* in a while.” Carter gave a low whistle. “Don’t tell me you’ve held onto your vinyl?”

“Relax,” Blake said. “You know the government scanners can’t detect analog.”

He plugged the turntable into a weather-protected outlet, then went back to the secret compartment and pulled out a pair of flat, plastic-covered square objects. Visible through their protective plastic sleeves were two vintage records—*Who’s Next*, with its iconic urine-stained block of concrete, and the Beatles’ debut album *Please Please Me*, graced by the grinning faces of an impossibly young John, Paul, George and Ringo.

Carter stared open-mouthed. “Hawkman, you never told me you still had these. You are one unreconstructed classic rock fiend—I’ll give you that.” He took one of the albums from Blake and turned it over in his hands. “As your oldest friend, though, I’ve got to advise you to ditch them. Seriously...we’re talking big trouble if you get caught with this stuff.”

“You’re being paranoid,” said Blake. “You think the Feds are going to come poking around a retired Admiral’s house looking for ancient record albums? Anyway, that law’s bound to be repealed soon.”

“You’ve been saying that for six years, and each year they clamp down harder,” said Carter. “You’re a whiz at physics, Blake, but you don’t know power politics like I do. The Rock Ban is just a new version of the old War on Drugs—an excuse for the cops to keep the population under their thumb. It’s a license to stop and frisk anyone they like. It’s even better than the drug laws, in fact, because it also lets the government monitor everyone’s computers and smart phones.”

“That’s easy for you to say. You’ve been able to listen to anything you like, over there on the other side of the ocean.”

Carter ignored him. “Lately, with these wireless probes,” he continued, “they can scan a whole city block in five minutes. I didn’t get a chance to tell you this, but my cousin and a bunch of her friends actually got arrested last spring when some Cultural Hygiene goons did a campus-wide scan at the University of Oregon.”

“What did they get caught with?”

“Illegal digital files, of course. Random stuff—Radiohead, Aimee Mann, Green Day, Beyoncé. Even some early Carole King. The point is, it was illegal, the Feds found it on their computers, and they were

screwed.”

“What happened to them?”

“They were eventually let off with reprimands and probation—but the government could have prosecuted. My cousin would’ve been kicked out of college, maybe even gone to jail. My aunt and uncle were pretty freaked out by the whole thing.”

“It’s so messed up,” said Blake. “Remember when we were kids, racing over to each other’s house to hear the newest CD or download? Or how we’d hear some great tune coming from the iPod of a kid we didn’t know, and we’d just walk over and ask what they were listening to?”

“That still happens,” said Carter.

“Yeah, except the only music kids get to hear now is that bland, government-approved crap. They’ll never know the thrill of getting turned on to Santana, or Little Richard, or Phish.”

“That’s our reality. Sooner or later you’ve got to accept it,” said Carter. “If the Republicans score another big win in November like everyone’s predicting, it’ll only get worse.”

“Maybe Fish will surprise everyone,” said Blake.

“With the number they’re doing on him? Not likely.”

While they were speaking, Blake had hooked an output wire from the turntable to one of the black cases. Next, he pulled a headset with earphones and attached microphone out of a compartment in the second case and connected it to an input on the case’s exterior. Satisfied with the setup, he slid The Who album out of its sleeve and placed it on the turntable.

“Your cousin’s big mistake was sticking with digital,” he said. “There’s not a scanner in the world that can pick up old-fashioned hi-fi. I’ve connected this turntable directly to one of the communicators, and it’s going to send the music straight to the second device, where you’ll be listening. There’s no Wi-Fi signal, not even any magnetized tape to scan. The police would have to have a directional microphone pointed at this exact spot to hear it. Now, get ready for a treat!”

Switching the turntable on, he lowered the stylus to the spinning record. A grin spread across Carter’s face as the first chords of “Baba O’Riley” hit his eardrums. Lifting the phones from his ears, he looked

at Blake and shook his head.

“I stand by what I said about the risk and all,” he said. “But man, do I like it.” Replacing the phones, he reached for the still-smoldering joint, closed his eyes, and floated away on an ocean of sound.

At the end of Side One, Carter took off the phones and gave an approving thumbs up. “Good dynamic range. I’m impressed!”

“And you didn’t have to go to Africa to hear it.”

While his friend had been listening to Townshend and company, Blake had been in a reverie of his own. This would be his last visit to his hometown for a while, he knew. In two days he was heading back to Berkeley to finish his dissertation. From there, the road led straight to Silicon Valley. He’d been fielding a steady flow of inquiries from technology firms based on his earlier research work, and had even met with a few. Once news of the quantum communicator became public, that stream would turn into a flood. It all felt vaguely disturbing, like driving down a jam-packed freeway with no exit ramp in sight.

Thinking about the communicator reminded him of his upcoming meeting with Federal agents. How did they hear about the project, he asked himself for what felt like the hundredth time, when Mel had been planning to sit on the news until next week?

Slow down, he thought, recalling the words of a former meditation instructor. *Live in the moment*. He glanced over at Carter, who had moved the tone arm back to replay “The Song is Over,” the final cut on the first side. The last time they’d seen each other was over a year ago, just before Carter left for his final Peace Corps posting in the Congo. The fact that they were hanging out today could be chalked up to pure fortune: Carter had been due to return Stateside in mid-September, but his paperwork had gone through faster than expected. The preceding week he’d been handed a ticket for the next plane home, more than a fortnight early.

“The bureaucracy works in strange and mysterious ways,” he’d told Blake. “I’ve learned not to question it.”

A lucky break for me, Blake thought. He had a sudden rush of nostalgia for their high school years, when the world revolved around

running, music, academics and girls, all blending into what seemed now like an endless procession of shimmering, carefree days.

“I’d love to take this thing out on the street,” Carter was saying. “What if we try talking over it while I make a run to my house? I can throw some beers in a cooler and be back here in twenty minutes.”

Blake shook his head. “I don’t think so. I’m already breaking lab rules. I wasn’t even supposed to take these off-campus.”

“Now who’s being paranoid? I’m talking a quick stroll down the block!”

“We can’t. It’s too risky,” Blake said.

Carter heaved a sigh. “Hawkman, this is like having a new Maserati and being afraid to drive it. Your invention is *begging* to be road tested! Aren’t you the tiniest bit curious to see how it works in the real world?”

Blake hesitated. Fucking Carter! He knew just how to push his buttons.

“Okay,” he said finally. “Twenty minutes. But don’t use the headphones—they’ll attract too much attention. There’s a built-in microphone and speaker at one end. Just wear it like a backpack and speak normally. I’ll hear every word you say.” He unplugged the box from the turntable and slipped the case straps over Carter’s shoulders.

“Cool. And don’t worry, Hawkman. If anyone makes a move, I’ll run like a snakebit coyote.”

Blake picked up the headphones connected to the second black case and placed them over his ears. “Don’t bump against anything, or you may throw off the computerized laser,” he instructed. “I’ll be listening, so keep talking as you go. I want to know right where you are, every step of the way.”

“Roger that.”

As Carter headed down the inner stairway, Blake suddenly heard his friend’s voice in his headphones.

“This is Red Paper calling Blue Paper. Do you read me, Blue Paper?”

“Loud and clear,” said Blake.

“Beautiful! Here we go...down the stairs, past the empty master bedroom—parents and little sister away for the long Labor Day

weekend,” Carter intoned. “The house is ours, which once upon a time would have meant just one thing: part-y! We’re getting old, my friend...”

Blake listened to the sound of the front door opening and clicking shut again. “Out on the sidewalk now,” Carter continued, “covering the familiar furlong to my own *Leave it to Beaver* domicile—the prodigal son, back from the Peace Corps, future unplanned, direction unknown. His progressive parents, disturbed by the situation, struggle valiantly not to show it as they gradually become reconciled to the fact that their son will *not* be following in his attorney father’s footsteps.”

“There’s always business school,” said Blake, speaking into the microphone on his own headset.

“Wow, it’s like you’re standing next to me! Thanks, pal, but I think I’d rather bop up to U.C. Santa Barbara and study anthropology—which is not such a bad idea, by the way. Anyhow, the old homestead is coming into sight...”

Carter’s voice broke off momentarily. “What’s this? We’ve got a *very* official-looking black sedan parked at the curb. Let me guess: the Feds are busting a meth lab. Or maybe rounding up some illegal aliens.” Another pause. “Hold everything. Two guys in suits are getting out. Something’s up.”

Blake leaned forward, listening intently. Carter’s voice had shifted gears, his easy patter replaced by the reflexive caution of someone who’d spent the past four years living on the fringe of various war zones.

“What can I do for you, sir?” he heard Carter say.

“Homeland Security,” a man’s voice said. “Keep your hands where we can see them. We’re going to need your backpack and any mobile devices you’re carrying. Then I want you to please get into the back seat of the car.”

“I’m afraid I can’t give you this—it belongs to a friend of mine and I have to return it,” said Carter coolly. “I’ll be glad to help you any other way I can, though.”

“You saw his badge, and here’s mine.” This second voice was ice-cold. “You can *help* by not giving us any shit. The man said ‘Please,’ didn’t he? I’ll take this, thank you very much. Now *get in the fucking*

car.”

“Yes sir,” Carter said. His voice, more distant now, had the respectful tone of someone who had seen more than his share of violence and knew all too well what the authorities were capable of.

A car door slammed, but Blake could still hear the men talking. They were holding the transceiver, he realized, unaware that he was listening in. He quickly reached for the mute switch on his own transmitter and flicked it on, then crouched on the deck, concentrating with every fiber of his being.

“You sure this is a good move?” one of them said. “It could tip Hawkes off.”

“How’s he gonna know? Unit Two will be at his back door in fifteen minutes. As soon as they’re in position, we ring the front doorbell and invite him for a ride. Remember, keep it polite. We just want him to come downtown so we can have a little chat about his school project.”

“Meanwhile, Spencer and Torres will be tearing his place apart,” chuckled the first voice.

“Things will go a lot easier without his buddy hanging around, believe me. Anyway, what choice did we have? HQ gave explicit instructions to snatch the black box at the first possible opportunity.”

“You’re right—we had to do it.... So, Poindexter’s in for a surprise, huh?” chuckled the first voice.

“That little platter collection’s gonna be his one-way ticket to Officer Training School. Hope he likes doing push-ups!”

“What about Mr. Peace Corps here?”

“We’ll keep him locked in the car until right before we make our move on Hawkes. Then we let him scamper home.”

“Sounds good. Any idea what this thing does, by the way?”

“Headquarters didn’t say. Some newfangled radar detector, I think....”