

Reality Check

by Michael A. Burstein

Life wasn't exciting, perhaps, but for the moment it was very secure, and David Strock preferred it that way. He stood up at his desk and stretched, enjoying the comfort of the late morning sunlight coming through the window of his spacious office. He looked around, taking in once more the size of the room, the beautiful chairs, the overflowing bookcases, and the view of Boston outside. Not bad for someone not even in his thirties yet.

He sat down again and hummed to himself as he shuffled the papers on his desk. This one, another paper for peer review. That one, a proposal he was writing with his experimental colleagues. *Really*, he thought, *at some point I need to get back to doing real physics*. It had been at least a week since he had grappled with a problem.

Just as the clock read noon, there was an expected knock on at the door. "Come in!"

The door opened, and in walked Judith Pell. David smiled as she carefully closed the door behind her, but left it slightly ajar. "Hello, David. What do we have today?"

David got up and began walking over to the small refrigerator he kept in his office, with a microwave oven on the shelf above. Since Judith and he were the only ones nearby who kept kosher, David tended to bring lunch for both of them every day. But their schedules meant that they usually only ate together on Mondays and Wednesdays. "Sanbusaks. From Zaatar's Oven."

"Mmm." Judith cut in front of David, opened the refrigerator door, and pulled out the white paper bag which contained their lunch. "What kind did you get me?"

"Your favorite. The mushrooms and shallots with cashkavel cheese. And an Israeli salad."

"Good, I'm starving." Judith put the sanbusaks into the microwave and turned it on. "Let's eat."

They went out to the separate bathrooms for the ritual washing of the hands. The men's room was slightly closer, so David waited for Judith to return before reciting the blessing over bread. They nibbled a little of the sanbusaks afterwards, to complete the ritual, but then munched away on their salads, using the plastic forks provided by the restaurant.

"Did you have a good *shabbat*?" Judith asked in between swallows of food.

"Yeah. Sarah's still tired from caring for Yitzhak, so I made dinner."

"He's what, four months old now?"

"Five months." David took another forkful of salad. "How was your *shabbat*?"

"Oh, pretty good. Seth and I stayed at home, hid under the bed." She smiled.

David nodded. "I've had weeks like that."

"So what are you working on?" Judith asked.

"Nothing much," David said, immediately followed by, "Well, this is interesting." He picked a reprint from a stack on his desk and passed it over to Judith. "Just got these today from *Physical Review Letters*. I did the work about nine months ago, but the paper just got published. Help yourself to one."

Judith put her fork down on the paper plate and read the title and author of the paper aloud. "'High-Energy Consequences of the Many-Worlds Interpretation of Quantum Mechanics. By David R. Strock, Massachusetts Institute of Technology.'" She rolled her eyes at David. "Oh, yes, real interesting."

David smiled back. "OK, I admit, it's probably not going to shake the world outside of my field. And I know it has no applications to your work on car-carbo—"

"Carbosilane dendrimers." Judith smiled. It got a lot easier to pronounce the name of a material when you worked with it all the time.

David smiled back. "Right. Come to think of it, it has no applications at all from what I can tell. But it was fun to do."

"Fun. Well, that's why we got into science in the first place, isn't it," Judith said, more as a flat statement than a question. She put the paper back on his desk and continued eating.

"Well, yeah, fun," David murmured. He took a good, long look at his friend. "Judith, is something on your mind?"

She put her fork down and stared at her food. "I don't know. It's just that—I don't seem to be getting anywhere. Four years of grad school and my project seems no nearer to completion than it did at the beginning. Dennis is talking about lining up a job for me after I get my Ph.D., but then he has me working on stuff for his projects, not for my own. The equipment he has me working on is outmoded, and breaks down half the time, and when I point this out to him, all he tells me to do is fix it. I just feel like I'm treading water, going nowhere." She looked up at him and smiled weakly. "I'm sorry to dump on you like this."

"No, it's OK, that's why I asked." David thought for a moment. "I wish I could help. Do you want me to talk to Dennis?"

"No! I mean, better I should handle it myself. I don't want him to think I've been talking to other professors about this."

But you are, David thought, then retracted it. Judith wasn't complaining to another professor, she was confiding in a friend. "It's not like we're in the same department. I don't think he'd mind."

"I know, but still . . ." She trailed off.

David nodded. "I understand. Still, if there's anything I can do for you—"

"You'll be the first to know."

They finished eating their lunch in silence.

* * *

David got most of his paperwork finished by the middle of the afternoon, and decided to leave early. Still ruminating over what he might do to help out Judith, he sighed audibly. Physics problems were so much easier to solve than real ones. What was that quotation from his high school physics teacher, Mr. Borten? Ah, yes. "Physics is easy. *Life* is hard."

Just as he was gathering up his papers and getting ready to go, the phone rang. David stuffed the papers into his backpack and picked up the phone.

"Hello?"

"Hello," said a woman's voice. "Is this David Strock?"

"Speaking."

"Dr. Strock, my name is Kristin Anderson. I'm a physicist working at the SSC."

The Superconducting Supercollider. David knew a few people who worked on projects there, of course, but he didn't know anyone who worked there full time. "Yes?"

The physicist on the other end of the line paused for a moment, then said, "We'd like to invite you to come down to Waxahachie. We have a position we think you might be interested in."

"Me?" David asked, puzzled. "I'm a theorist, not an experimentalist."

"We do have theoretical physicists on staff."

"But—but I'm not working on anything relevant to the SSC, as far as I know." Most of his work dealt with interactions that took place at far lower energies than that of the SSC.

"Actually, you are. Some of us here have become quite impressed with the work you're doing, and we want to meet you."

"Well, if that's all, why not come up here to Boston?"

Another pause. "Isn't there any way you can come down for—for a week or so?"

"I'm really not interested in leaving MIT. What's this all about, anyway?"

"I can't tell you over the phone."

"You can't tell me over the phone? Is this some sort of joke?"

"No, it's not a joke," she said quickly. "I'm serious. We're working on something confidential here, and we could really use your help."

David thought for a moment. "I don't have anything to do with weapons."

"Neither do we. We're not Los Alamos, we're the SSC."

"You're not Fermilab, either."

"What?"

"I said you're not Fermilab."

"I understood that, I just didn't know what you meant."

"What I meant is that I already have an affiliation with one government lab, Fermilab. And I'm content with those connections. Not to put too fine a point on it, but when I do have to go visit a lab I'd rather have to go to a large city like Chicago than a small town like Waxahachie." *Easier to find kosher food*, he thought. "I know a lot of physicists would jump at the chance to work on the SSC," he continued aloud, "but frankly, I'm not one of them."

"I think you might jump at this."

"That's your opinion, not mine. But I'm really not interested in doing any work with the SSC. I'm sorry."

David thought that might end the phone call, but Dr. Anderson was still persistent.

"Doctor Strock—trust me. This is big. And we're not asking for any sort of commitment yet. We just want you to see something that we think will interest you. That we *know* will interest you."

The sincerity in her voice finally grabbed him. All things considered, David wouldn't mind seeing the SSC anyway, at least for a quick visit. After all, it was the pinnacle of experimental apparatus in his field.

"No commitment?"

"None. Just come down and see what we have to show you."

David could live with that. "All right, look." David checked the calendar on his wall; it was Monday, and he had a class to teach tomorrow and on Thursday. But he could probably get someone to cover the second lecture. "I can fly down Wednesday, but I have to get back to Boston well before sundown on Friday."

"That shouldn't be a problem. We'll make arrangements for your tickets and call you tomorrow."

* * *

That night, David had a minor argument with his wife, Sarah. He had held off mentioning the phone call until after they had eaten dinner and Yitzhak was asleep in his crib. They sat down on the sofa and turned the television onto cable news, as usual. Then he told her that he'd be going to Texas for a few days, the day after tomorrow.

"Texas? They want you to go to Texas?"

"It's only for a few days," he said.

"What's in Texas?"

"The Superconducting Supercollider. You know, the SSC."

Sarah sighed. "David, it's bad enough that you go out to Chicago every few weeks. What's this Texas trip all about?"

"I'm not sure. They may want to offer me a job." He shrugged. "I wouldn't take it, of course."

"I hope not. We're not doing another Los Alamos."

"Hey, Los Alamos was a nice town."

"But—"

"It's OK, Sarah. I remember."

When David and Sarah had first been married, they had spent half a year in Los Alamos, New Mexico, because that had been the only place David had managed to get an appointment. He had worked for one of the theory groups at the Los Alamos National Laboratory. But the Jewish life had been practically nonexistent, with one tiny Jewish Center hidden between a copse of trees and a canyon, and expensive kosher meat only available by way of Albuquerque. David and Sarah's presence had been such a novelty in the town that the weekly newspaper, the *Los Alamos Monitor*, had done a front page article on them when they celebrated Passover.

Thank God for the appointment to MIT.

"I remember," David repeated. "I wouldn't want us to go through that again. Especially—"

"Especially now that we have Yitzhak," Sarah finished. "I'm surprised you would even agree to go for a few days."

"I did arrange to come back in time for *shabbat*."

"That's supposed to make it better? I really don't want you going."

"You know, Sarah, I don't remember the *ketubah* I signed at our wedding prohibiting me from going to Texas."

"It's just that—David, it's already hard on me, having to stay home and take care of Yitzhak. I feel so isolated during the day. I don't want you abandoning me."

"Abandoning you? What in the world brought that on?"

"I'm afraid of losing you."

"Losing me? Losing me to what?"

Sarah sighed. "To your work. I see the look you get in your eyes sometimes, when we're at home, and you run off to write something down on another scrap of paper. Sometimes it's as if you're not

completely here. What if the reason they want you at the SSC is so big that you—you never come back?"

David took his wife's hand. "Sarah, you know that you're the most important thing in the world to me."

"Am I? Sometimes I don't feel it."

"Yes, you are," David said, looking into her eyes. "What can I do to reassure you?"

"Hold me, David. And promise me that you won't take whatever they offer you."

"OK, OK, I promise."

He took her in his arms and carried her off to their bedroom. They finished the evening making quiet love.

* * *

On Wednesday afternoon, David flew into the Dallas/Forth Worth airport. He managed to get a direct flight, but the airline had screwed up his kosher meal, so when they landed he felt slightly hungry and annoyed.

Adding to his annoyance, the plane was full and David's seat was close to the back; he waited for the people in front of him to exit before he could go himself.

Fortunately, David had thought ahead and only brought an overnight bag with him, so he didn't have to wait at the carousel for his luggage. He passed quickly through the jetway corridor which connected the plane to the terminal and walked past the metal detectors. The voices of other passengers filled his ears, but the long, drawn-out sounds of their vowels definitely made this place feel different from Logan. David even stopped in surprise when he saw two men in suits actually wearing ten-gallon hats. The men greeted one of the other passengers with raucous laughter and went on their way. Amused, David smiled to himself and kept walking until he spotted his ride.

A short blond man wearing a T-shirt that displayed Maxwell's four equations of electromagnetism stood at the end of the corridor that led into the main terminal. He held up a sign with David's name on it. David walked up to him and introduced himself as other travelers jostled around them. "Hello, I'm David Strock."

The man put down the sign, gave David a warm smile, and shook his hand. "I'm Jim Bicking. I'm a technician with the SSC. Are you ready to go? Do you want to use the bathroom first?"

"I'm ready," David said. "Lead the way."

Jim led David out of the terminal to the parking lot. As soon as he left the air-conditioning of the buildings, a hot wind chafed his face. The air tasted different from that in Boston, somewhat drier. It brought back memories of the time he spent in New Mexico.

As they walked, more and more people walked around them, and the busy feeling of the airport parking lot unsettled David. His hand flew to his head at one point and he adjusted his *yarmulke*. Normally, he never gave it a second thought, but being in Texas made him feel very self-conscious about his appearance. He suspected he'd be the only Orthodox Jew in Waxahachie. The dry heat also continued to make him feel very uncomfortable; just because he remembered it from Los Alamos didn't mean that

he was used to it.

Finally, they arrived at a small white car. Bicking helped David put his bag in the trunk, and then he drove the two of them to the SSC. During the ride, the technician made small talk about life in Texas. He had his own perspective on it, as Bicking was a Caltech graduate who grew up in the Pacific Northwest. Texas felt hot and dry to him too, but he was used to the openness and the car culture. David nodded politely at his comments, but didn't really contribute much to the conversation. He kept looking out the window, taking in the suburban area he saw surrounding the roads outside the city.

In under an hour, they arrived at an administration building, in the town of Waxahachie rather than anywhere near the ring. The collider ring, of course, ran underground in an area which surrounded the town, as it was far too big to fit in the town itself. David racked his brain for the full dimensions of the collider, but couldn't remember them.

The tech parked in an adjoining lot and escorted David to the office of his contact. When the office door opened and a woman emerged, Bicking nodded a quick goodbye and trotted away.

"Dr. Strock? I'm Kristin Anderson." She extended her hand, and he shook it after barely hesitating. The laws of *negia* did say that one shouldn't touch a member of the opposite sex, but there were dispensations for politeness and other such things. But it was still ingrained enough in David to cause the hesitation.

"Please, call me David."

"And I'm Kristin. Well, I'm really Julia, but I prefer my middle name."

She smiled at him, and he smiled back. She was a small woman, with dark hair and large glasses that seemed to hide her face. She seemed to be the sort of person who would get along with anybody. Or at least try to.

He noticed that she was staring at him with more than a usual intensity. "Is something wrong?"

"No, it's just that you look familiar, but I can't place you."

David smiled. "I have that kind of face."

"I suppose so," she said, but with a trace of uncertainty in her voice. "It doesn't really matter."

The two of them sat down, and David started in. "Well, Kristin," he said, "you've brought me all the way here from Boston to see the SSC. Can you tell me now what this is all about, or do I still have to guess?"

She clasped her hands together. "I notice that most of your work is in the field of lower energy interactions."

So she wasn't planning to get directly to the point. "That's right."

"May I ask why?"

"You know, I'm really not here for a job interview."

She unclasped her hands. "It's not an interview, I'm just curious."

David shrugged. "I find lower energies more interesting."

"Why?"

"Because the theories are actually verifiable by experiment, if you want to know the truth. A lot of my colleagues have their heads lost in the clouds, working on things like supersymmetry and string theory. It's already past the point of technological impossibility. We would need an accelerator running around the equator of the Moon to test some of their ideas." David paused. "There's also the anonymity problem."

"Anonymity?"

"Look around you," David said, sweeping his arm around. "High energy physics has gotten bigger and bigger over the years. It used to be that a group consisted of just a few scientists, all getting equal credit for the work done. Now there's no way many of our theories can be verified without huge experiments, requiring hundreds of scientists. How many co-authors did you have on your last paper? Fifty? One hundred?"

Kristin looked over his shoulder. "I'm not really sure."

"My point exactly. I don't want my name among a string of *et. al.* s."

Kristin seemed to consider that for a moment. "Pardon me for saying this, but you don't seem like the kind of person who needs to get so much recognition for his work."

"Oh, I'm not an egotist. It's just that when I work on theories in lower energies, I know that they're wholly mine. And when I'm working with my experimental colleagues, I know that they can actually verify or disprove my work. If I were working in higher energies, either I'd have to arrange for time on the SSC, or else wait for an even larger collider to be built." David knew that his comments might sound confrontational, but he didn't care. "I don't see the point, frankly."

Kristin's only reaction was to smile. "Ironic, given what we brought you down here for."

Finally, an opening. "Now that you mention it, would you finally tell me what all this is about?"

Kristin nodded, and looked David directly in the eyes. "Your recent paper was brought to my attention."

"Which paper?"

Kristin opened a desk drawer, and pulled out a copy of "High-Energy Consequences of the Many-Worlds Interpretation of Quantum Mechanics." She placed it gently on the desk, facing up for David.

David looked at the paper and resisted the temptation to laugh. " *This* is what all this is about? My *parallel universe* paper?"

"It *was* all your own work, wasn't it?"

He leaned back. "Sure, sure it was. But it's a lark, nothing else. Completely theoretical. Just like string theory and time travel using wormholes."

Kristin gazed into the distance, then looked right into David's eyes. "Teleportation seemed like a lark when Bennett and company published their findings back in 1993."

"Yes, and as far as I'm concerned, it's still a lark, despite the experimental inroads. Its only application is quantum computing, anyway."

"We're drifting from the point."

"And that point is?"

"The point is why we brought you here. If I understood your paper correctly, you imply that when high enough energies exist, it could prove the existence of other universes."

"Other—? Didn't you hear what I just said? The paper was a throwaway piece of theory, one of those things that can't be proven. Its only significance is in theoretical cosmology."

"Are you sure?"

"Of course I'm sure! The energy levels I describe in my paper are those of the Big Bang. My theory might imply a way to test the different interpretations of quantum mechanics, perhaps see if Many-Worlds has greater validity than the rest. But that's all. And it still doesn't explain why you dragged me to Texas."

"It doesn't?"

David sighed. "No, it doesn't. My paper has nothing to do with the SSC. The only reason I could see that you would want me here is if the high energies of the SSC created a wormhole to another universe. But that's patently absurd."

Kristin removed her glasses and stared at him. The seconds passed, noted by the ticking of the wall clock.

"No," David said, finally breaking the silence. He laughed. "No, no, no! You can't possibly be serious!"

"I am," Kristin said, putting her glasses back on. "We've had a connection to another universe for about three years now."

"That's ridiculous. Why haven't I heard anything about this?"

"We *are* a government laboratory, Doctor—David. We're pretty good at keeping secrets."

"This would be one of the biggest, if it were true." A thought occurred to him. "I don't remember getting any sort of security clearance."

Kristin nodded. "It's been taken care of."

"'It's been taken care of.' Do you have any idea how much a security clearance costs?"

"Yes." She let the word hang in the air, so its implications could sink in.

"Hm. I still don't believe you."

"I didn't think you would." Kristin stood up. "You want proof, right?"

"If you don't mind."

"Then let's head out to the ring."

Kristin led David to her car in the parking lot, a small gold Saturn. They got in and she began driving them to the edge of the town.

"Where are we going, exactly?"

"Building G. It's situated on the ring, about half an hour from here."

"Does the G stand for anything? Or is it just a convenient label, like the letters they give buildings at all government laboratories?"

"Or the numbered buildings at MIT?" Kristin replied.

David smiled. "Touché."

"'G' stands for Gate, as in the Gate between universes. We call this division the Gate project. Over in number Two, they use the same names."

"Two?"

"Sorry. Universe Two, that's what we call it. After all, we're Universe One."

"I suppose they call themselves One and us Two," David said, a hint of sarcasm in his voice.

"No," Kristin said, apparently missing his tone. "Alpha and Beta. We're Beta."

"Um."

During the rest of the drive, David managed to make small talk with Kristin. Mostly, they talked about physics and funding, keeping the conversation on a professional level.

One thing they specifically did not talk about was parallel universes. David still couldn't believe she was serious. He kept thinking that this had to be a joke of some sort. And yet, they had paid to fly him down to Waxahachie, and Kristin seemed very serious about the whole thing. If this was a joke, it certainly was a very expensive one.

And if it wasn't . . .

David surmised he'd find out soon enough. Might as well enjoy the ride.

* * *

Just as Kristin had said, they arrived at Building G within half an hour.

"Doesn't look like a G," David said after they got out of the car. In fact, it was a squat cubical building.

"Did you expect it to?" Kristin asked.

They entered the small cubical building through a pair of glass doors. David was hit by a blast of refreshing cool air, a nice contrast from the dry heat of the late afternoon. It was even more comfortable here than it had been in Kristin's office.

He followed Kristin down a few winding white-walled corridors, until they came to a nondescript door with a metal handle. "This is it," she said. She removed a passkey card from her purse.

"Tight security, huh?"

"Ever since—well, we try." She reached out her hand to open the door, then stopped. "Are you sure you're ready?"

"Yeah, yeah, I'm sure." David rolled his eyes, still unbelieving.

"OK, then," Kristin said. She slid her passkey through the reader and the door opened with a click.

David was hit by a blast of sound, a mix of thunder and crashing waves, which emanated from the center of the room. Its source was a giant globe of what appeared to be pure electricity, hovering at least a meter above the ground. It sparkled continuously with white and blue flashes, as if they had somehow managed to trap the fires of creation.

David had never really bothered with the Jewish blessings of witnessing and experiencing, but from somewhere in the the back of his mind came the words "*Baruch atah adonoy, elohaynu melech ha'olom, she'osoh li nays bamakom hazeh*"—the blessing one said when personally experiencing a miracle. Given the fact that David had always considered himself a rationalist scientist, in a world where he always easily managed to keep his religious beliefs separate from his scientific work, it was the last blessing David had ever thought he would say.

He recited it, with wonder and eagerness filling his soul.

Kristin shut the door, returning the hallway to blissful silence. "Well, what do you think?" she asked.

David cleared his throat. "Um. I have one question."

"Shoot."

"Where am I going to get kosher food in Waxahachie?"

Kristin smiled. "I've already done your homework. There's a Jewish community in Dallas, less than an hour away."

* * *

"Here are the problems," Kristin said once they were finally back at her office. She ticked them off on her fingers. "One, we'd like to make the Gate more stable."

"More stable. Got it." David took notes in his little black binder.

"Two, we have no idea why we're connected to this one particular universe."

David nodded. "That is odd, yes. If what we're seeing is an application of the Many-Worlds interpretation, there should be an infinite number of universes out there. With more being created every second. Say!"

"What?"

"Maybe that would explain the lack of stability. Perhaps the Gate *is* trying to connect to other universes. The stability may be the fluke."

"That would be a shame," Kristin replied. "Three. We'd like to be able to pass objects through the Gate without threat."

"Threat? What sort of threat?"

"Stability, mostly, and not just to the Gate. We have passed objects through before, in both directions. And we've monitored them closely."

She paused, as if waiting for David to prompt her, so he did. "So what happens to them?"

"They disappear."

"Disappear."

"That's right."

"You mean, like-vanish?"

"Yes."

"How does that happen? I mean, what do you see?"

"I can show you a notebook log later on. But basically, the object seems fine at first, then vanishes for a short period of time. The longer it stays in our universe, the more frequently it vanishes, and the longer it vanishes, until finally, it disappears entirely, never to return."

"How long does that take?"

"A few days, usually. Smaller objects last for a week. The time is inversely proportional to the mass."

"The larger the mass, the quicker it's gone?"

"That's right."

David wrote that down in his notebook as an equation:

$$t = k/m$$

"Do you have any explanation for the disappearing?"

Kristin nodded. "We think that objects from one universe have a certain resonance with that universe. So that when they're taken out of their own universe, they try to return."

David looked into the distance, turning equations and concepts over in his mind. "That makes sense, of course. The question isn't, why do the objects disappear, but why do they hang around for so long in the first place?" He looked back at Kristin. "Do these objects ever reappear in the other universe?"

She shook her head. "Not as far as we've been able to determine."

"Then conservation of mass is being violated."

"We doubt it. We think that the mass is transforming into energy, and that the energy is being absorbed by the Gate. We still need to make more accurate measurements to verify this, though."

"And also," David added, "the law might have to be expanded to take into account our connection to another universe. After all, our universe isn't a closed, isolated system anymore. Hmm."

"What?"

"You'd better be careful. If too much energy gets transferred between universes, and we lose the Gate, that could affect the balance of energy in our own universe. It might even have implications for the final fate of the universe."

"Cosmological implications?" Kristin asked, puzzled.

"Sure. We still don't know what the current balance in the universe is. If we let in too much energy, we might actually cause the Big Crunch. And if we lose too much energy, we might avert that by accident."

Kristin's reply was slow in coming. "I doubt our actions could have such significance."

"Are you a cosmologist?" David asked.

She shook her head. "Experimental particle physics was my only field, until the Gate happened."

David nodded. "I'm not one either, but I've studied it. Do you know how balanced our universe is between collapsing back on itself and expanding forever? It's a razor edge of difference."

"Right. Could we get back to the immediate problem?"

"Sorry. I sometimes get carried away." David checked his notes. "Stability, right?"

Kristin smiled blandly and nodded. "Right. Now, do you understand why we called you in? Your paper is the first real theoretical breakthrough we've seen in over a year. And it's not like we don't have our own people already working on it."

"I understand. That paper must have been a red flag."

"Most definitely," she replied. "So . . ."

"So?"

"You still haven't answered my question explicitly. Will you take the job?"

David stood up, and walked over to the window. He thought of Sarah. "Why can't I just assist you from MIT?" he asked. "I'm a theorist. I don't need to be near the machine, I just need pen, paper, and access to a computer."

Kristin shook her head. "For one thing, we want you here so you can work in concert with all the other people studying this problem. And some of them are on the other side of the Gate."

David raised an eyebrow. "Oh."

"For another thing, all our work is classified. We can't have you playing around with our data at an unsecured facility. Any theoretical work you do on the Gate has to be done here."

David thought. He thought about Sarah, he thought about his work, he thought about the Gate. He thought about the history of science, and he thought about his place in it.

"Well?" Kristin finally asked.

David nodded. "Yes. I'll take the job."

* * *

David returned to MIT to tie up things for the semester. He was able to get a leave of absence to cover him for a few months work at the SSC, with the understanding that he'd return by the Fall. At first, the Institute had not been too pleased with David's leaving, but after a few phone calls back and forth with the SSC, they had worked it all out. A graduate student, coincidentally a friend of Judith Pell's, was put in charge of the remainder of David's classes. David was so busy getting ready to leave that he didn't really have time to check in with Judith, to find out how she was doing, so he asked the graduate student to pass on his greetings.

David's other problem was leaving behind his wife and his community for the time being.

"You promised," was the first thing Sarah said to him when he explained that he'd be gone for a few months. She held Yitzhak in her arms and nursed him as they argued in their usual, quiet manner. "You said you wouldn't take any job they offered you."

David shifted his weight back and forth between his feet. "It's only for a few months."

"Los Alamos was only supposed to be for a few months as well. What am I going to do in Waxahachie? All my friends are here. I don't want to go to Texas."

"Well, um, I agree. It wouldn't be good to drag Yitzhak away, either. I was figuring—" David couldn't bring himself to say it.

Sarah completed his thought for him. "You were thinking I'd stay behind in Boston, weren't you?"

David shrugged. He averted his eyes from Sarah's and stared down at their baby, who suckled contentedly with his eyes closed. "Well, yes," he said. "After all, this isn't a permanent move. I'm not leaving MIT for good, just for a while."

"David, did it ever occur to you that I hardly get a chance to see you now as it is? Did you even *listen* to what I said before you left for Texas on Wednesday?"

"I listened," David said weakly.

"It certainly doesn't seem like it."

David didn't reply; he couldn't think of anything to say.

Sarah broke the silence. "So what's so important about this job, anyway? Why can't you stay here in Boston and do whatever it is they want you to do?"

David hesitated. This was the worst part. Because of security, he couldn't tell Sarah anything about the Gate project. Finally he blurted out, "Help. They need my help."

"For what?"

In his heart, David begged Sarah for forgiveness, and then gave her the standard cover story that Kristin had told him to use. "There's this new procedure that may allow them to reach even higher energies than the SSC was designed for, and they think I can help them with it."

Yitzhak finished nursing and began gurgling happily. Sarah put him over her shoulder and burped him before replying. "David, I may not be a physicist, but I'm also not stupid. This isn't the sort of work you usually do. You're a low-energy theorist, not a high-energy experimentalist."

David shrugged. "That's what it is," he said, hating himself with every word.

Sarah looked him straight in the eyes. "It's classified, isn't it? You can't tell me what you're really working on, can you?"

David nodded, feeling somewhat relieved. "No, I can't. I'm sorry."

Sarah sighed. "It's Los Alamos all over again. I just hope it's worth it to you, whatever it is."

"I hope so, too."

* * *

The lab set David up with a small apartment in Waxahachie, in a building used specifically as transitory housing for visiting scientists and technicians. He had one large room to himself with two full-sized beds, and a small kitchen which he managed to render mostly kosher. The oven needed to be cleaned up and brought to an extremely high temperature, and the microwave had to be cleaned out as well. By pure luck, the kitchen sink was stainless steel, not porcelain, so cleaning that up as well made it useable.

The apartment also came with dishes, cookware, and silverware, but David knew none of it could be trusted. He simply went out and bought cheap stuff which he figured he could abandon later. Or maybe convince the lab to put into storage for the next Orthodox Jew to work here.

David got into the rhythm of working for the Gate project. His office was in Building G, a room off the same corridor as the Gate, so he could be close to it as he worked. Every morning, before he left his apartment, he would put on his phylacteries and recite the traditional morning prayers. But now he had to

get used to an additional morning ritual. After he removed his phylacteries, he would put on the purple badge they forced him to wear, showing that he had the security clearance to be in Building G. It felt odd to him. The last time he had been required to wear a badge was when he worked at Los Alamos, and back then his badge had been red, since he'd had no security clearance at all.

The weirdest part of working on the Gate project, however, had nothing to do with the badges or the government security. The weirdest part was collaborating with scientists in another universe.

The technicians showed David how they used radio signals to communicate with their counterparts over in Universe Two. Most of the time, they simply used Morse code sent over a telegraph machine. David could leave a message for someone in Universe Two in the "radio room," next door to the room with the Gate. The message would be sent over by some technician while David was occupied elsewhere. Later on, David would stop by the room, and pick up a reply.

The technicians also showed David another way they could communicate with the other universe. They had a device similar to a videophone, which allowed for a realtime conversation between the two universes. But due to the cost, it was a method rarely used, and David never got to see it in action. He felt curious about it, but even more curious about the fact that the date and time were the same on both sides of the Gate.

For the most part, David found himself collaborating with a physicist named Harold Volin, whom he only knew through the fellow's equations. It was the most bizarre collaboration he had ever participated in, precisely because of the lack of any personal contact. Although he obviously could never meet Harold, he had a good idea of what sort of man Harold was through his jokes. Besides swapping equations back and forth, Harold would also relay mock arguments over how they could co-publish a paper and share the credit across universes.

The last part of his routine that David had to arrange was what to do every Friday night and Saturday, for *shabbat*. There were no synagogues in Waxahachie, not even a Reform temple. David would spend his *shabbats* in North Dallas, which had a Chabad center on Forrest Lane, organized by the Lubavitch chassidim. David had always felt uncomfortable seeing them on street corners in their black hats and long coats, encouraging every nonobservant Jew who passed by to recite a few prayers. Now, he welcomed their presence, for they were the only people around who understood his need for religious and spiritual refreshment at the end of the week. Every Friday afternoon, a different family would take him in for the holy day, and every Saturday night he would take his leave and drive back to Waxahachie, ready for a new week of research.

But for David, the most important part of *shabbat* was that he would call Sarah every Friday, a few hours before sundown arrived in Massachusetts. *Shabbat* was a time for renewal, and his weekly phone calls to Sarah were an important part of that. Although she still sounded upset at his absence, after a few minutes of conversation she always seemed to cheer up. Which, in turn, cheered David up as well.

And so things progressed, for about a month, until a chance encounter at a group party.

* * *

David hated group parties. Even though he enjoyed interacting with the members of his scientific teams—otherwise, he wouldn't have gone into science in the first place—there was something about these parties that always struck him as artificial. They spent so much time together at work; why force them to socialize?

There was also the problem of food. People rarely took into account David's need to keep kosher, and so there was usually little or nothing he could eat. Someone had provided a bowl of carrots, so David did have something to munch on; but there were no guarantees as far as the onion dip was concerned.

David wandered around the conference room, making small talk with various other members of the Gate project. After half an hour had passed, he was already considering making his excuses when the door opened and admitted a woman he had not met before.

She was a pretty woman, with long blond hair, and she wore a red floral-pattern dress. She looked to David like a typical midwesterner. At least, David acknowledged, she looked like his image of a typical midwesterner, which was perhaps not the same thing. As he walked past her, intent on the door, he gave her a small nod, which he expected her merely to return in kind.

That made her reaction even more surprising. She stopped dead in her tracks and stared at him, which caused David to come to a stop as well. She pulled what looked like a photograph out of her purse, studied it, and walked right up to him.

"Daniel?" she asked.

"No, the name's David. Commonly mixed up, though."

"Oh. But I thought—I mean—"

"What's this?" David asked, taking the photograph from her hand. It was a picture of him, taken a few years ago, before he had grown his beard. "That's funny," he said. "I didn't realize that theoretical physicists had fans." He took a closer look at the picture, and realized that he wasn't wearing a *yarmulke* in the photograph. Nor did he recognize the background.

He looked up at the woman. "Where did you get this?"

"Um—it's a long story."

David shrugged. His curiosity was piqued, and he had to admit, he would have more fun chatting with this woman than sitting at home. "This *is* a party. Apparently, I have the time to hear it."

* * *

Her name was Paula Eisen, and she had the strangest connection to the Gate project of anyone David had met. She was a math teacher at the local high school, and last year she had gotten involved in the Gate project in a rather bizarre fashion.

"His name was Jack. Jack Levinson." She cocked her head at David. "That name doesn't mean anything to you, does it?"

David shook his head. "Should it?"

"Jack would say so. You see, he came over from the other universe and I got to meet him."

David was stunned at the casual way she said that. "He crossed over?"

"Yes."

"But—but no one's supposed to do that. No one has, as far as I know, since the first encounter.

"It was somewhat irregular," she said, munching on a carrot stick. "From what I've been told, they keep it out of the briefings."

"How can they keep it out of the briefings?"

"I think Dr. Anderson doesn't want anyone else getting any weird ideas."

"That doesn't make sense. It's—oh!"

"What?"

"There is a record of a seventy-kilogram object that was sent from Universe Two into here for a few days, and then returned, apparently unharmed. That's the largest on record."

Paula nodded. "That must have been Jack."

"Um." David idly wondered for a moment what blessing one would say when passing through the Gate into another universe. None came to mind. "So what's the deal with this guy?"

"Well—there's no real easy way to say this."

"Just say it."

Paula looked around the room for a moment, at all the other people talking and eating. Finally, she looked back at David and said, "OK. Jack came over here to find you."

"Me?"

"Yes. You see, you're his best friend, and you're dead."

David shook his head quickly, then leaned forward. "Excuse me?"

"I'm sorry, this isn't easy to explain. Your counterpart—Daniel—was Jack's best friend. Until he died."

"Counterpart?"

"Yes. The person in the other universe who is you. But he's dead."

"Dead? You're trying to tell me that there's another version of me, through the Gate, and that he's *dead*?"

Paula nodded.

David put up his hands and shook his head. "You have *got* to be kidding."

Paula glared at him, and David realized that she was most assuredly not kidding.

"Let me get this straight. This is a little too much to take at once. I have a counterpart in the other

universe?"

"Had. And yes, you did. You saw the photograph."

David whistled. "This changes quite a lot. I never realized that we had—I guess 'copies' is the word—in the other universe."

"Not all of us do, apparently. But some of us—" She cut off as she noticed David staring into space. "Hello?" She waved her hand in front of his face.

"Oh, sorry. I was just trying to see how this—this symmetry, I guess, between our universes works. It might be significant."

Paula nodded. "Look, there's a lot more to this story, and I don't think this is the place to discuss it. There's an Italian restaurant I like in Dallas; would you like to go out to dinner?"

David shook his head. "I wouldn't be able to eat anything there. I keep kosher."

"Oh, right, sorry," Paula said, glancing at the top of his head. Then, softly: "Perhaps you could come over to my place, instead."

That gave David pause. He quickly glanced at his wedding ring, not for too long, but just long enough so Paula would notice it. Then he looked back up at her.

"Does this restaurant serve salad?" he asked.

* * *

The restaurant made David feel uncomfortable. It wasn't the ambience, although it did seem to be a strange mix of Texas casual and Northeast formal, what with the red plastic tablecloths and the finished wood furniture. It was just that the restaurant was not a kosher one, and David stayed out of such establishments. Even just reading the menu made him queasy, with its listings of veal parmigiana and a lasagna that clearly combined both meat and cheese. David kept looking at the door and out the large windows, worried that one of the Jews he had stayed with in Dallas would see him and think he was eating *treif*. Oddly enough, Paula also kept looking at the door, as if she expected someone else to walk in at any moment.

In the end, David only ordered a glass of water, figuring he would eat later, when he got home. Paula gave him a sad glance, but ordered a chicken parmigiana for herself.

"I hope you don't mind," she said as the waiter took their menus away, "but I'm rather hungry."

"It's fine," he said.

She nodded. "I thought you were going to have a salad."

"Changed my mind," David said abruptly. "Can we get down to business?"

"Certainly. Let me tell you about Jack."

David shook his head. "Can we start somewhere else? I'm more interested in hearing about this other

version of me. It's a little disconcerting to think that there was another David Strock around."

"Daniel," she corrected. "And actually, all I know of Daniel I heard from Jack."

David nodded. "OK, so tell me the story from the beginning."

"Well, let's see. It actually begins a few years ago, before I ever got involved. You see, the first events that told the other universe of our existence were a series of explosions in their ring. Apparently, the antimatter beams from our working SSC leaked over into the other universe, and boom!"

"I know all that."

"Oh? Do you know that one of the explosions killed Daniel?"

David looked at his water. "No," he said quietly. "I didn't know that."

"That's how Jack got involved. Daniel and he were biking along the path of the ring when an explosion killed Daniel. Jack was there, and he saw the whole thing." She sighed. "It really tore him up with survivor guilt. After the scientists in the other universe established contact with us, Jack got the idea into his head that he needed to find Daniel here. He wanted to talk to him, and perhaps resolve his guilt. But the scientists at the lab wouldn't help."

"So he took matters into his own hands."

"Exactly. One night last year he snuck through the Gate—"

David interrupted. "How? Don't they have any security? We do."

"They do have security, but Jack is known to them, because of—of what happened to Daniel. They even invited him to be present the first time contact was made between our universes." She paused. "Also, the Gate isn't a big secret in the other universe."

David nodded. "Pretty hard to cover up the explosions, I would imagine."

"It wasn't just that," Paula said, shaking her head. "From what Jack told me, it made a lot of news when they started using their SSC. After all, it had been abandoned for quite a few years."

"Interesting," David said. "I've been thinking about the science of parallel universes, and yet there's history to be considered as well." He sipped his water. "How different is this other universe from ours, in that respect?"

Paula shrugged. "I don't know. When Jack was here, we talked about it. Most of it seemed similar, except for minor things. Other than their decision to abandon the SSC, of course. Why the sudden interest?"

David took another sip of water and looked away for a moment. "My family lost relatives in the Holocaust. It would be nice to think that the other universe missed out on it."

"Um," Paula said. She looked uncomfortable, David noticed as she awkwardly changed the subject back to the events of last year. "Well, Jack came to Waxahachie High School to look for Daniel or someone who might know him, and that's how I met him. I found him near my desk in the Math

department office. He seemed to know something about the school, but his knowledge was off, and—well, I was intrigued. I took him out to dinner and listened to his story. I didn't believe him, of course, until he started to disappear."

"Disappear? You mean, he would vanish for a short period of time?"

"Yes. I brought him back to my apartment because it was rather disconcerting. I didn't want anyone else to notice, and besides, there was a manhunt going on."

"For Jack?"

"For Jack. The scientists were worried that he might vanish forever, and they weren't sure of the effect his crossing over would have on the Gate."

"They couldn't have told the town they were searching for a refugee from another universe," David noted.

"Right you are," Paula said, smiling. "They simply called him a dangerous trespasser."

"I take it you didn't turn him in right away."

Paula shrugged. "I like to live dangerously. Speaking of which, after Jack vanished and reappeared a few more times, I pointed out to him how incredibly dangerous it would be for him to stay here. So I offered to help him out with his search for Daniel, since no one else would, and I helped him turn himself in to the scientists at the lab. Dr. Anderson saw him safely back through the Gate to Universe Two, and I took on the task of finding Daniel's counterpart."

"And now, you have," David said.

Paula nodded. "And solely by a pure stroke of luck. Until today, it's been incredibly frustrating. I mean, I knew that it was possible Daniel's name was different here, but it never occurred to me it would be so close."

"What do you mean?"

"Well, apparently, I look like an old friend of Jack's in the other universe named Rachel Larsen. Our names are totally different, but we're analogues of each other. But sometimes the names are similar: the director of the SSC in the other universe is named Roy Schwitters, from what I've heard."

David nodded. "That does sound similar to our Ray Schwartz."

"Anyway," Paula continued, "I've been looking for someone named Daniel Strock or something close to that in our universe. I've also been looking for people who did the same things Daniel did, such as go to the same college or take a job teaching high school math."

"I guess that makes a certain amount of sense."

"Yeah, well until today, it didn't work. And even in this case, it seems to have simply been a bizarre coincidence."

"Unless there's a deeper connection we're both missing," David said. "Tell me, did you ever think of

tackling this problem from the other point of view?"

"What do you mean?" Paula asked.

"Instead of looking for our world's Daniel Strock, did you ever search for this world's Jack Levinson?"

Paula looked stunned. She opened her mouth, as if she was about to say something, but closed it a moment later.

"I mean," David continued, smiling, "if I am this universe's Daniel Strock—my, that feels weird to say—then shouldn't one of my friends be an analogue to Jack Levinson?"

Paula shook her head. "I never thought of that."

"Neither did Jack, apparently, from what you told me. It might have made his search easier."

The waiter arrived with Paula's dinner, and in deference to his stomach rumblings, David ordered a can of Coke. The waiter brought it with a straw, and David opened it and sipped it as Paula ate.

"You wouldn't have a picture of Jack, would you?" he asked between sips. "It might help me identify his analogue, if I know him."

Paula shook her head. "Silly, isn't it? I never thought I would need a picture of him, so I don't have one. Still—I think they must have one at the lab. They ran a picture of him on the news when they were searching for him."

"Hm. Well, maybe I'll look for it when I get back." David paused. "Now that I know all about Jack, what can you tell me about Daniel?"

"Um. Well, there's not much I can really tell. I never met him, and I really only got to know him through Jack."

"So what did Jack say about him?"

"Well, Jack tended to describe Daniel in reference to himself. Jack's a solid, steady kind of guy—"

David interrupted. "That doesn't sound like the kind of person who jumps between universes."

"Normally he wouldn't. But I think he was trying to be more like Daniel. Jack described him as more impulsive, more fun-loving. He was poking fun at Jack during their last bike ride just before the explosion."

"Hm. I take it neither of them were particularly, um, religious?" David tried to make the question sound casual, but he didn't think he succeeded.

"Not as far as I know," Paula answered. "Anyway, now that you know the story, tomorrow you should talk to Dr. Anderson, and then re-establish contact with Jack. He'll be happy to hear from you."

David frowned; Paula's use of the word "re-establish" troubled him. "Hold on a second. What makes you think I want to talk to Jack Levinson?"

"Because—well—you're the one."

David leaned back for a moment, and slowly shook his head. "I don't think you understand, really. You're accepting the same fallacy that Jack did. I'm not Daniel. I'm *David*."

Paula remained silent, and David continued. "I have a life here, my own life, that's nothing like the one Daniel led. I don't think I know anyone who closely resembles this Jack Levinson, and I certainly have nothing in common with his Daniel Strock."

"But still—for Jack—"

David sighed. "Well, look. I suppose I could relay a message through Harold."

"Who?"

"Harold Volin, my collaborator in Universe Two. He can probably look Jack up in their phone book and give him a call. Let him know I've been 'found,' so to speak."

Paula shook her head. "It's going to take a little more than that."

"Why?"

She chewed on her lower lip. "I haven't actually been in contact with Jack for almost a year now. You see, shortly after he went home, he decided to go to New York City."

It took David a moment to realize that she meant the New York City in Universe Two, not the one here.

"What's he doing there?"

"Finding himself, I think."

David nodded. He hated that expression; people who needed to "find themselves" always seemed to act as if getting "lost" in the first place wasn't their own fault, but some accident caused by the world around them.

Choosing his words carefully, he said, "It sounds as if he's forgotten about Daniel."

"Oh, I'm sure that isn't it," Paula replied easily. "I mean, he may have finally gotten his life back together, but I'm sure he'd still want to meet you."

David shook his head. "It's one thing for me to ask Harold to pass a message along to someone else in Waxahachie Two. But it's quite another thing to ask him to track down someone who's a few thousand miles away."

Paula leaned back. "Look, David. You're not the only one who's allowed to contact the other universe. I can always ask Dr. Anderson to contact her counterpart."

"So why don't you?"

"Because if you're not planning to talk to Jack after I let him know about you, what would be the point?"

David didn't say anything, so Paula continued. "Will you at least consider it?"

David thought for a moment, and finally, he nodded. "I'll think about it. But let me point out one thing. If Jack has really gotten his life back together, do you really want to start taking it apart again?"

"I don't understand."

"How will he react when he discovers that you've found me, and that I'm nothing like his deceased friend?"

Paula looked thoughtful for a moment. "It's better to know than to be left hanging, isn't it?"

"You may be right," David said. "But sometimes, it's better not to know."

* * *

Paula had drifted away from regular contact with the Gate project once Jack had gone to New York, but now that she knew of David's existence, she insisted on being kept more in the loop. She wanted to know every scrap of progress they were making to stabilize the Gate between universes.

Unfortunately, it wasn't much. David's research simply was leading nowhere, and the Gate itself was starting to suffer signs of instability. From time to time the Gate would fade or the radio connection between universes would weaken. When that happened, they would run very carefully controlled beams through the SSC ring to restabilize the Gate, but everyone on both sides knew that there had to be a better way, and that it was only a matter of time before the Gate disappeared.

David's work was so intense during this time that Paula stopped bothering him about Jack. But in the back of his mind, David knew that that was the only reason Paula was so interested in their progress.

Summer finally came, and David left the dry heat of Waxahachie for the humidity of Boston. The first day he was back he planned to spend at home recuperating from his trip, and catching up with Sarah and Yitzhak. He made it home by the late afternoon, and opened the door calling out Sarah's name.

She emerged from the kitchen, wiping her hands on an apron. The smells emanating from that room indicated that Sarah had been making a stew. "So," she said. "You're finally back."

David dropped his bag and walked over to hug her. She accepted it perfunctorily, and without enthusiasm.

David released her, and was about to ask Sarah what the matter was when he realized that that might not be the best thing for him to do. She knew he was coming home that day; obviously, despite all the good phone conversations they had shared every week, she was still upset with him for having gone to Texas.

So instead of saying anything confrontational, he merely replied, "Yes, I'm back," as plainly as he could. When Sarah didn't respond, he followed that with, "I'm going to go upstairs to unpack my bag."

Sarah nodded. "So then what do you want to do? Are you planning to head over to MIT?"

"No," he said slowly, dragging the word out as he picked up his bag. "No, I was planning to do that tomorrow. Tonight I just wanted to stay at home and relax."

They heard crying from the other room, and Sarah immediately quickstepped towards Yitzhak's crib. David dropped his bag and followed close behind, and when they got to the crib he peered over Sarah's shoulder at the baby. What he saw astonished him. "My—wow! Look how big he's gotten."

Sarah took the baby in her arms and glared at David. "Did you expect me to send you pictures while you were in Texas?"

"No, but—"

"Did you think that Yitzhak would stop growing just for you? That the world around here would stop while you did your research?"

"No, no, I didn't. I just wasn't thinking, that's all."

Sarah bounced Yitzhak up and down and murmured comforting words in his ear, trying to calm him down. David remained quiet.

In a minute, Yitzhak was gurgling happily. Sarah placed him gently back into the crib, and turned to David. "So how has Yitzhak been?" he asked her.

She shrugged. "Fine, I suppose. I told you on the phone that the doctor said he was fine."

"Yes, you did," he said quietly. "Listen, Sarah. I didn't think the world here had stopped just because I was gone. I was just pleased to be back, to see how big Yitzhak has grown." He paused, then asked the question on his mind. "Sarah, aren't you glad that I'm here? I know I'm glad to see you, to be back."

Sarah stared at him, then turned around and led him away from the baby's room. David once again followed her, this time to the kitchen, where Sarah checked the pot with the stew and began stirring it with a red plastic spoon.

David remained quiet again, until finally Sarah spoke. "Yes, I'm glad," she said curtly, looking away from David and into the pot. "I'm glad you're back. But I didn't want you to be gone in the first place, remember?"

David nodded. "I'm sorry about that."

"Me too," she replied.

Sarah and he didn't talk much after that. David stayed at home, as he had planned. They ate dinner, watched the news on television, and went to sleep.

* * *

The next morning, David headed out to his office at MIT, as he knew that he would have a lot of paperwork to take care of. After last night's tension, he was relieved and pleased to note that his office in Building 6 looked exactly the same as he had left it.

Around noon, Judith Pell came to his office to join him for lunch. David hadn't really had a chance to sit down and talk with her since the whole Gate business began, which was already about three or four months now. Once again, they ate sanbusaks, and once again, Judith was distraught over her research.

"It's still not getting anywhere," Judith complained. "Half a year's gone by and I'm at a standstill."

"How is that possible?"

"I had this idea for an experiment I wanted to try, and Dennis didn't think it would lead anywhere. So instead, I'm still working on the experiment he insisted I do, and guess what? That's not leading anywhere, either."

"Hm. What was your idea?"

Judith paused, her fork halfway to her mouth. "You really want to hear about it?"

"Sure." *It might distract me from my own troubles.*

"OK." Judith proceeded to explain her work on carbosilane dendrimers, and although David tried to keep up, his thoughts drifted back to his own problems. In the back of his mind, he assimilated the information Judith was sharing, but it barely made an impact on the forefront of his consciousness.

Judith must have noticed, because she tied up her discussion quickly and then asked, "What about your work?"

"There isn't really anything I can tell you." David smiled. "You know that."

"I know, but just in general, how's it going?"

David frowned. "About as well as your work. I have ideas, but I'm not getting anywhere."

Judith nodded. "That bad. Well, maybe both our projects will work out."

* * *

That night, during dinner, David's thoughts were elsewhere. Sarah had put Yitzhak to bed early so she and David could catch up in person, but during the meal David picked at his food and spoke in one-word sentences.

Finally, Sarah said, "David, something's bothering you, and it's not me. What is it?"

David looked down at his plate. "I really can't say."

"Are you sure, David?"

He nodded. "You know I can't talk about the work."

She sighed, and leaned towards him. "David, David. Who am I going to tell?"

David looked up at her face, and saw his wife, his companion, the mother of his child, and the woman he loved. But most of all, he saw his best friend, the one person with whom he could share everything. And the one person with whom he ought to share everything.

It all came pouring out of him.

David told her everything about the Gate project, from the beginning. He glossed over the scientific details, since they weren't relevant, but told her of the frustration and the bizarreness inherent in being a part of the Gate project. Then, with only the slightest hesitation, he told her about Paula Eisen, Jack Levinson, and his analogue named Daniel in Universe Two.

And Sarah, bless her heart, believed every word of his incredible story.

When he finished, he said, "I'm sorry."

She smiled and shook her head. "There's no need to be sorry. In fact, I'm sorry, David."

"What?"

She sighed, then repeated, " *I'm* sorry. I know I've been acting very cold about the fact that you went off to Texas to do this project. But now I understand why it was so important to you."

"Oh."

"And there's something even more important than that, something important to me." She leaned closer. "This conversation is what I've been hoping for, David. I've been hoping you'd share your problems with me."

David smiled weakly. "So what can I do?"

"Well, I can't exactly help you with the science, you know that." Sarah had studied English literature in college. "But I can help you with one thing."

"Tell me."

"This Jack Levinson you mentioned?"

"Yes?"

"You really ought to contact him."

David was surprised; this was the last thing he expected Sarah to say.

"I really don't think that's the issue."

"It isn't?"

"No, it isn't. It's everything. It's the research, the stupid secrecy, the pressure—"

She interrupted him. "David. I know you better than that. I noticed how much more emotional you became when you mentioned Jack Levinson. I can tell that that's what bothering you the most."

He wrung his hands. "Perhaps."

"So tell me. What is it? What bothers you about this Jack Levinson?"

David thought for a moment. "I don't want to find myself shoehorned into some artificial friendship, simply for the sake of a guy I've never met."

Sarah smiled. "Why would you have to be friends with him? Once he talks to you, he'll come to realize you're not his friend Daniel."

David tensed up.

"That's it, isn't it," Sarah said. It was a question stated as a fact.

David nodded. "I'm disturbed by this other version of me."

"Why?"

David took a moment to consider the best way to put this. "All my life I've assumed that my decisions mattered, that they counted, because I was the only me there was. But now—if it's true that there are parallel versions of us—I don't want to think that my decisions never mattered. What happens to free will, to morality, if any and every universe possible actually comes to pass? What happens to—" He cut himself off, and it was left for Sarah to finish his thought.

"What happens to God?"

David nodded, sadly. "Yes." He gestured to their bookshelves where they kept the Judaica. He stared at the volumes of the Torah and the Talmud, the laws of his religion which he had studied as intently as he had studied the laws of science. The laws which he grew up believing and following, not just out of faith, but also out of rational deduction.

"If every possible universe can happen—does happen—then there's no reason to assume that anything we do can be for the glory of God. It's all meaningless," David concluded.

"Why is it meaningless? I never get to experience these other universes. No one does."

"But now that we have proof—"

"Some proof. Sounds to me like you only know of one other world which is different from ours, and you're having a hard enough time holding onto it as it is."

"But I know it exists. And if it exists, so do others."

"Are you sure?"

Was he? The theory the group worked with assumed that the Many-Worlds interpretation of quantum mechanics led to the alternate universe. This implied other universes, infinitely many, since every time a decision had to be made the universe would have to split into two. And if there were an infinite number of universes, then every universe had to be possible.

But what guarantee did he have that this was the correct theory? Sure, it seemed to work, but if it was correct, wouldn't they have contacted other universes by now?

"No," David said. "I guess I'm not sure."

"Then don't be so ready to jump to conclusions." Sarah came closer and squeezed David's hand.
"David, you know I can't answer those questions. I don't think anyone can answer them for you. You have to answer them for yourself. But I can tell you one thing. I know you, David. And I know that you have always acted as if these things matter. And I know that you would want to continue acting as if these things matter, even in your moments of doubt."

"You're saying I should get in contact with Jack."

Sarah nodded. "Wherever Jack is from, he's a human being in need of comfort, comfort which only you can provide. And perhaps talking with him about this Daniel person can convince you of your own individuality."

"You're too good for me, you know that?"

Sarah shrugged. "If you're going to be there anyway, you might as well do some good in the world."

David laughed. " *Tikkun olam*. Repairing the world. Or maybe that should be *olamim* ? Repairing the worlds."

"Perhaps this is why you got called to Texas in the first place."

David stood up. "Sarah, I think I have a phone call to make."

She nodded.

David went to the other room, picked up the phone and dialed Paula's number in Texas. After two rings, she answered.

"Hello?"

"Hello, Paula. This is David Strock." Pause. "I'm going to give a message to Harold for Jack."

* * *

David returned to Waxahachie the very next week. This time, Sarah was slightly more encouraging, although she insisted that he return home as quickly as possible. Just because she thought he had an important thing to do there didn't mean she wanted him gone for much longer.

Through Harold Volin, David got a message through to Jack, who indeed was living in New York. He had taken a position teaching mathematics at the Berkeley-Carroll School, a private school in Brooklyn, but since summer vacation had started, he was free to return to Waxahachie.

Just a few days later, David found himself in the Building G radio room, awaiting a transmission on the video phone from Universe Two. Two technicians worked to boost the signal, so as to increase throughput, and Paula Eisen sat next to him, darting her head around anxiously.

"When he shows up," David told Paula, "let me do the talking."

"I'd like to say hello. I haven't spoken to him in over a year."

"Look, it's hard enough for me to just do this. Let me handle it my way, OK?"

Paula started to say something else, but then merely nodded.

After a few minutes of fiddling with the controls, one of the technicians approached David. "Dr. Strock?" she asked.

"Yes."

"He's ready for you now." She pointed at the controls. "Just flip that switch there."

David did, and was immediately face to face with someone he had never seen before, but whom he assumed had to be Jack Levinson. David studied the man's features closely. He didn't know anyone in his life who even remotely resembled him. The guy was thin and of average height, with brown hair, brown eyes, and a round face. David searched his memories of friends from high school, college, and other places, but nothing clicked.

That wasn't the case the other way around, however. After a few seconds, Jack's face lit up with obvious joy. "My God. You look just like him." Which prompted David to think: *But I'm not. Remember that.*

"Hello, Jack," Paula said. "Told you I'd find him."

David glared at her as Jack said, "That you did. Thank you."

David turned back to Jack. "So?"

"So." He leaned back and sighed. "It's really good to see you—I mean, it's a pleasure to meet you."

It sounded to David as though Jack had been about to say that it was good to see him *again*.

"It's, um, nice to meet you too." Pause. "Paula's told me a lot about you."

"I wish I could say the same. First I've heard of your existence was a few days ago, when Dr. Volin got a message to me. I met him when Daniel—when all this began."

David nodded. "I understand."

Jack looked uncomfortable. "So, um, I hope you didn't find this too weird."

"No, not really," David said, wishing to spare Jack his real feelings. "But there are a few things I thought you needed to know." David tilted his head, making his *yarmulke* clearly visible.

"Yeah," Jack said, and chuckled. "You can relax. I know you're not really him. I can't imagine Daniel ever being a physicist. Still, I wanted to come back here, to talk to you."

"Why?" David said. He tried to make it sound like simple curiosity.

"That's a good question. I'm not really sure myself. Part of it—"

The video phone suddenly went blank. Jack's voice and face were replaced by static and snow.

"Jack?" David called out. "Jack!"

Just as suddenly, the picture was restored.

"What happened?" Jack asked. "We lost the signal for a moment there." Behind him, people were running back and forth.

"I'm not sure," David said. He turned to one of the technicians. "Why did we lose the signal?"

"I'm checking," he said. "But the video phone seems fine."

"Well, if it wasn't the phone—"

Suddenly, Kristin walked in. "David, we have a problem."

David nodded. "What's happening to the Gate?"

Kristin looked around for a moment, then said, "It's degrading. We'll probably lose the connection within a week, unless we can figure something out."

"I see." He looked back at Jack. "Jack, would you excuse me? Perhaps you can chat with Paula for a while." He turned to Paula. "Maybe," David continued, "you could tell him about me." She nodded.

"OK," Jack said. "I understand. You need to get to work. We'll talk later."

Unless the Gate's gone, David thought. "Yeah, later."

* * *

David and Kristin worked the rest of the day and into the night, separately and together, to come up with some idea, any idea, that might work. They sent messages to Harold Volin, who was working with Dr. Anita Zahn, the head of the Gate project in Universe Two.

In the end, it was Volin who figured out an approach. He relayed the idea to David, who brought it to Kristin.

"Harold thinks we should pump lasers into the Gates at the exact same time, while slowly increasing the strength of the magnetic containment field."

"We've already tried a stronger magnetic field, and it didn't seem to have any effect."

David shook his head. "It's not the strength of the field that Harold thinks would help—it's the change in flux."

It took Kristin a moment, then she got it. "Faraday's Law."

"Exactly." Faraday's Law, developed by Michael Faraday in the nineteenth century, showed that a changing magnetic flux could induce a voltage in a wire. "Harold says that if we can induce a higher voltage directly, it may strengthen the Gate."

"And the lasers?"

"To freeze the stability in place. We're talking about cooling lasers, the kind that trap and hold atoms. Harold thinks they could trap the Gates in the same way."

"So they remain rock-steady."

"Something like that."

"Where did he come up with this idea?"

"You're not going to believe this," David said, grinning. "It looks like the Gates are simply obeying Pauli's Exclusion Principle."

"Pauli's Exclusion Principle?" This was something taught in high school chemistry, a principle that stated that two associated particles called fermions could not share the same quantum state at the same time.

"Yes. Imagine the Gate here and the one there as being two large elementary particles."

Kristin immediately objected. "But they're not elementary particles. They're—they're wormholes. They're openings in spacetime. What does that have to do with Pauli's Exclusion Principle?"

David shrugged. "I didn't say they actually were elementary particles, they just seem to be acting like it. Harold's still trying to figure out why. But he was able to establish that the Gates shouldn't ever have the exact same properties, since otherwise they'd be in the same quantum state, and then they would repel each other."

"This is purely theoretical, I take it?"

David grinned again. "Nope. It's for real. We checked the properties both when the Gates are stable and when they are unstable, and it looks like we need to freeze the Gates so their spins are opposite. That's what's been causing the instability, a spin problem."

A spin problem. The phrase echoed in David's mind. Something about spins, and being able to hold a steady spin in a particle . . . he had heard something like that recently . . .

His thoughts faded as Kristin said, "Well, unless we have a better idea?"

The thought was gone. "Nothing else comes to mind."

"We can't afford to wait any longer. Let's contact Universe Two and arrange the test for tomorrow."

* * *

The busy activity of the Gate room thrilled David, in the way that experiments always thrilled him. Theory was his specialty, and he wouldn't have traded it for anything, but nothing beat the buzz of an experiment. After all, no matter how beautiful or elegant a theory was, it was never until an experiment had been performed that you absolutely knew the truth about the laws of the universe.

Even Richard Feynman, one of the greatest theorists of science, had pointed out the absolute necessity of experiment. David remembered a story a professor told him in graduate school, about a time when a bunch of theorists were arguing over the waves being produced by a fountain in a hotel lobby. Feynman

overheard their conversation, and decided to answer their question by stepping into the fountain and creating the waves they were discussing.

A technician bumped into David, interrupting his reverie. "Excuse me."

"It's all right." David watched as the technicians passed back and forth, checking digital displays and making adjustments. The Gate was still active, of course; but they had managed to bring the noise down to a low hum so people could talk while readying the experiment. The air still smelled of metal and ozone, however.

On either side of the Gate stood the two Nuclear Magnetic Resonance, or NMR, machines, which would create the multiTesla fields necessary for stabilizing the Gate. David remembered how quickly NMR got changed to MRI, or Magnetic Resonance Imaging, by the medical profession when it became an important diagnostic tool; doctors had been afraid that patients would be frightened by the word "nuclear." Of course, there was no such nonsense here—and they weren't even going to be imaging anything, so calling it MRI made no sense.

Facing the Gate sat a powerful dye laser, which looked like a bulky metal box with a lens on one end. The other laser for the experiment sat in the other universe, of course, and they were aligned so the beams would meet exactly in the "middle," wherever that might be.

Kristin walked in from the radio room, where she had been coordinating the final steps with the scientists in Universe Two. David turned to face her. "Are they set?" he asked.

Kristin nodded. "Yes." She pointed at the digital clock on the wall, which displayed hours, minutes, and seconds. 11:58:03 AM, Central Daylight Time. "We're synchronized perfectly."

"You know, that's still one of the mysteries of this whole thing we have yet to solve—the fact that time seems to flow the same in both universes."

"Worry about it later. Right now we've got something more important to worry about." She backed into a corner of the room. "Excuse me? Could I have everyone's attention please?"

The murmuring quieted down, and she continued. "We're almost ready to start the experiment, so could everyone who no longer needs to be here please leave the room? And everyone else, check your pockets one last time for anything metal—that field will be strong enough to rip your keys right out of your pants."

Most of the technicians shuffled out of the room; a few of them said a quick "Good luck!" to David and Kristin as they exited. Only three technicians stayed behind to monitor the equipment.

"Well," David said.

"Well," echoed Kristin.

There was nothing left to do in the last minute but wait.

The instant the clock hit 12:00:00, the NMR machines and the laser turned on simultaneously. The technicians verified this by checking the digital displays, but, of course, there was nothing else to see. Magnetic fields are invisible, and the laser light was so coherent that the only way to tell a beam existed would be to scatter dust into it.

Their combined effect, however, was clearly evident. The Gate began churning, and what looked like spherical layers started spinning in different directions. After a few seconds, the spinning seemed to get faster.

Kristin turned to David. "This doesn't look like increased stability."

"No, it doesn't." He walked to the technician at the laser. "Can we pump more energy into the Gate?"

The technician nodded and slowly turned a dial.

Suddenly, a huge popping sound filled the room, and the Gate began to make a crackling sound. "Turn it down!" David shouted, and the technician complied.

But the Gate continued to crackle and spin, and the noise got louder and louder. Kristin jumped over to the board which controlled the magnetic field and began turning the dials frantically. "We have to turn up the magnetic field! It may stabilize the spins!" The other two technicians began to help.

It didn't work. Suddenly, the spinning spherical shells of white light fractured into white and blue sparks which sizzled and popped, and began flying around each other at faster and faster speeds. The noise in the room got even louder, prompting everyone to cover their ears.

Then, as David watched in horror, the Gate began to implode. The sphere of the Gate began to shrink, and as it got smaller and smaller, the rate of shrinking got faster and faster. The diameter was now eight meters, now four, now two, now one—

With a loud shlurping sound, the Gate finally swallowed itself and was gone.

An overbearing silence filled the room, finally broken by Kristin. "David. My office. Now."

* * *

A few minutes later, David sat on the other side of Kristin's desk, waiting for her to get off the phone with the scientists in the Gate room.

"Uh-huh. I see. Thank you very much." She hung up, a dejected look on her face.

"What's the story?" David asked.

Kristin shook her head. "We can't get back the other universe. Everything we try fails." She sighed. "It's gone."

"Can't we just run more beams in the collider? That's how this whole thing got started in the first place."

Kristin glared at him. "Have you forgotten the inherent dangers? Especially now that there are people working on the other side?"

David felt sheepish. "Sorry."

She nodded her acceptance of his apology. "Anyway, building the Gate required coordinating with our counterparts in the first place. We seem to have lost all communication, not just the Gate. Without their

help, all we could do would be to create more explosions along their ring."

David suddenly snapped his fingers. "Something occurs to me. They're not going to have much more to work on unless we can get back in contact. Perhaps if we just wait long enough, we can safely assume that the ring is safe again, and then we can start running the high energy beams."

"The DoE isn't willing to take that chance," Kristin said. "They've been walking on eggshells throughout the entire project." She hit her desk hard with her fist. "Damn! We've come so close."

Startled by her quick emotional outburst, David changed tactics. "Look, Harold and I have been working on theories involving magnetism and spin. But aren't there any other theories that we could use? I mean, we're not the only ones working on the problem. Isn't there any other way to reinstitute stability?"

Kristin closed her eyes and shook her head, all the while rubbing her hand. "The only other theory we had been developing dealt with wormholes and exotic matter, but—well, such a thing would be years in the future, if ever."

David nodded. He knew about exotic matter, of course—a theoretical form of matter posited by Kip Thorne and other relativists, needed to keep the throat of a wormhole open. Such a wormhole could lead to elsewhere in our universe, or even to another universe, but the throat would close up very quickly if not held open by some superdense material. The Gate could not have been a traditional wormhole, or they never could have opened it in the first place.

There had to be another way. If only they had managed to keep the spins opposite each other for just a little bit longer.

Spins. Something, something was tugging at the back of his mind—

Carbosilane dendrimers.

So much had happened in the past few months that David hadn't really found the time to think about his friend Judith Pell, and her graduate school problems. Suddenly, he saw a solution to both of their problems.

"Excuse me, Kristin," he said, jumping up, "but I have to go make a phone call."

David practically ran to his office and dialed Judith's lab at MIT.

* * *

"Can you explain that again? Remember, I'm a math teacher, not a physicist."

"This is more chemistry than physics, actually."

Paula glared at him. She and David were sitting in his office, as he was trying to explain the breakthrough they had made. At that very moment, Judith and a team of technicians were working to implement the idea that she and David had developed together.

"OK, let me try again. My friend Judith works with carbosilane dendrimers."

"Which means nothing to me."

"All you need to know is that a dendrimer is a polymer with many branches. And each branch can have a different quantum spin."

"Which is?"

"It's a property of subatomic particles. You can think of it this way. A particle can either spin clockwise or counterclockwise. If clockwise, we call that spin down, or if counterclockwise, we call that spin up."

"Why?"

"Look at your right hand. If you make a fist with the thumb extended, the fingers curl counterclockwise, and the thumb points up. But if you turn your hand upside-down—"

"The fingers curl clockwise and my thumb points down!"

David nodded. "Exactly. Now here's the problem. We can sort of think of the Gates as having two different spins, which is why they can coexist. Our Gate is 'spinning' one way, say up, and their Gate is 'spinning' the other way, say down. But if the Gates try to spin in the same direction, they begin to lose their connectivity.

"Now, if we surround the Gates on both sides with a carbosilane dendrimer ring, and align the spins to be antiparallel by using magnetic fields in both universes, we should induce stability."

"Hm. Doesn't that require the folks in Universe Two to be doing the same thing?"

"It might," admitted Daniel. "Then again, we were leaking beams into their universe long before we built the Gate. If we can just manage to reproduce those energy levels, we may be able to use a SQUID to contact them by radio. Then we can let them know what we've discovered."

"A squid?"

"Sorry—a Superconducting Quantum Interference Device. Harold Volin used one to contact our universe, before the Gate existed. We could do the same thing."

"Oh. Well, I'm still not sure what you're talking about, but if it gets us back in contact with Jack, that's fine."

"Paula, there's one other thing." David paused. "I've hesitated to tell Kristin or the others, because it sounds so outlandish that I'm not sure I believe it myself. But I need to tell someone, so . . ."

She nodded. "What is it?"

"I've been doing some calculations, and I think I have another partial explanation for the instabilities. Once we're ready to start the Gate again, it occurs to me that although the space axis might be invariant, that would not necessarily be true of the time axis."

"Are you using invariant to mean—"

"I mean, when we finally get the Gate to work again, we may be able to select the Gate to open up at

any point in time for the other universe."

Paula was silent for a moment.

"Any point in time?" Paula finally asked.

"Yes," David said with a nod. "Any point in time. We could open up the Gate in the middle of their yesterday or their tomorrow. We could study the history of their universe, from the beginning. We could finally verify the truth of the Big Bang. We might even be able to get clues to how our universe might end, given what happens to theirs in the far future." He grinned at her. "What do you think?"

"We could save Daniel," Paula said softly.

David stopped grinning. He leaned back and didn't reply right away. When he finally spoke, the words came slowly. "I hadn't thought of that. I don't think that would be such a good idea."

"Why not?"

"Because it's already happened."

"But if the Gate allows you to travel in time—"

"It doesn't."

"But you said—"

"I said we could focus the Gate on any point of time in the other universe. I was thinking of observation, not intervention."

Paula looked puzzled. "But it's a Gate, not a window. Doesn't that mean we could open up the Gate to a time just before the explosions started, and pass through? Then we could warn Jack and Daniel not to go bicycling on that day, and save Daniel's life! Isn't that possible?"

"Theoretically, yes, but—"

"Then why not do it, God damn it!"

"Paula, you're talking about altering the timeline, irrevocably changing what has already happened, and not just for one universe, but for two. The consequences could be disastrous."

"So?"

"Do you have any idea what the risks are?"

"Do you have any idea what it is to lose a friend?"

"Damn it, I'm losing one right now!" The anger in his voice shocked David more than it surprised Paula.

"What are you talking about?" she asked softly.

David rubbed his eyes. "It's Sarah."

"Sarah?"

"My wife. Every night, we talk on the phone. She pleads with me to come home. She hates the fact that I'm working here. She says I've been seduced—by my work." David looked away.

"I'm sorry," Paula said. "I had no idea."

"Of course you didn't," he said, a touch of sarcasm in his voice. "You don't see *me* when you look at me—you see this friend of Jack's he told you about. The bicycle-riding, impulsive, happy-go-lucky math teacher. Well, get it through your head—I'm not him!"

"I *said* I was sorry."

David wiped his eyes. "It's OK. I'm sorry too. I didn't mean to shout."

"David?"

"Hm?"

"Why can't we help Jack? I don't understand the problem."

David took a deep breath and let it out. Paula was loyal, he granted that, but sometimes her stubbornness was just too much.

He decided to explain the problem calmly and rationally.

"Look, Paula. You can figure it out for yourself. What is it you're thinking of doing?"

Paula looked puzzled for a moment. "If, as you say, the Gate can be opened up at any time in their past, we can open it up during one of their bike rides, go through, and warn them."

"Uh-huh. Will they listen?"

"What?"

"Will they listen?" David repeated. "From what I know, Jack is a relatively straightforward person, and Daniel was spontaneous to the point of recklessness. If a stranger magically appears in front of them to warn them off the path, will either of them really pay any attention?"

"Um." Paula bit her lower lip.

"It gets worse. If we show up before that first meeting between universes, then what happens to the Gate project? What happens to the lives of the people on both sides of the Gate? Think of the history you've lived over the past few years. You would never even get to know Jack. Are you willing to take the chance that the world we create for him—and for us—would be better?"

Paula looked away for a moment. "I'm willing to take that risk, yes."

He considered her anew. "You must really like him."

"Yes. Yes, I do."

David nodded. "But, Paula, realize that it's not just you taking the risk. It's every single human being, on both sides, who's been affected by the Gate project over the past few years. Can you honestly ask them to take that risk as well, on the chance it may bring one friend back to life?"

And what about other changes? David thought to himself. *What about wiping out the plagues, the wars, the Holocaust? Do any of us have the right to do that?*

The seconds went by painfully slowly. "So what happens next?" Paula finally asked.

David walked over to the window, looked out at the dry grassland that surrounded them, and then turned back to Paula. "We get back to work. And we hope they're doing the same."