

Research Project

by Tom Purdom

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The Senior Fabricator talked for almost forty minutes but Postri-Dem felt his entire speech could have been reduced to three sentences: "*The humans are predators. Their mouths are covered with blood. Every day we hesitate provides them with another day they can use to pursue their true objective -- the search for some way they can kill us.*"

That's a translation, of course. But you can consider it an exact quote. Postri-Dem watched a recording a few hours after the meeting took place and his memory was one of his most important assets. If you make a reasonable allowance for bitterness and despair, I think you can assume his summary of the meeting is essentially accurate.

Postri-Dem wasn't there himself for the same reason I wouldn't have been invited if a comparable group of homo-sapiens had been conducting a similar meeting. The individuals who had been summoned to the conference were all members of the Chosen Presider's power structure. Two of them were participating by screenlink, from the groundbase the ifli had established on Mars. The others were reclining in the Chosen Presider's chambers, as usual, with their fingers comfortably wrapped around drinking containers and different types of finger-food.

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Jinny reads at a fifteen-year-old level but her reader knows she is only nine. On the right-hand screen of her reader, she is being presented with the text she has chosen -- Dr. Orlando Mazzeri's personal account of the last months of his relationship with Postri-Dem. On the left hand screen, the reader fills in the gaps in Dr. Mazzeri's description by offering her an artist's rendering of the meetings the ifli conducted in the Chosen Presider's chambers on their starship. The aliens lie in hammocks that hang from slender, transparent frames. Their faces are heavily wrinkled. Their skin is tinted blue. Their clothes look baggy. Their arms and fingers are unusually long, by human standards.

Jinny has picked Dr. Mazzeri's memoir because she thinks he looks like a nice man. He has a bald, oval head, just like the father in a group of stories her mother read her when she was a baby. His beard adds a touch of cozy furriness. She knows his memoir will be considered an "original source" -- a designation that impresses the mentor she is working with this year.

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The Chosen Presider had apparently learned a truth that had been passed on to me a few years after I had started chairing academic committees. If you let certain individuals say everything they want to say, they'll usually let you do everything you want to do. I had never applied the technique with any consistency, but Harap-If was a pro.

As far as the Senior Fabricator was concerned, the human species had been given an offer that was a better bargain than it could possibly have hoped for. The ifli had agreed, after all, to help us expand into the asteroid belt and any other part of the solar system that appealed to us -- with the exception of one useless desert planet. If we hadn't accepted such a generous proposal after eighty-six of our own days,

shouldn't it be obvious we were probably using the delay as a camouflage for some less innocent activity?

"Is it our fault they're still sitting on their home planet killing each other?" the Senior Fabricator orated. "They'd still be murdering each other on their own planet if we had come here a hundred years from now."

Etc.

At one point, the Senior Fabricator even ordered the latest human news-collage from the information system and tried to add a little visual showmanship to his speech. Harap-If pressed the button that turned her hammock in the appropriate direction and stared with great intentness at scenes she had watched a hundred times. Save Mars demonstrators marched through the streets of Berlin and Tokyo. A New York media guru presented an update on the position of the Titanic.

For the Senior Fabricator it was our attitude toward the Titanic that provided the final proof we couldn't be trusted. All our newscasts made it clear we believed he and his colleagues would actually slam an artificial comet into Earth and kill the entire human population. If we thought *they* would do something like *that*, what kind of actions would *we* be willing to take against *them*?

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The left hand screen offers Jinny a description of the ifli project the human news media had dubbed the "Titanic." An orbital diagram depicts the long spiral the giant mountain of ice was supposed to describe as it traveled around the sun on a path that connected the rings of Jupiter with the surface of Mars. Two arrows indicate the points where it would have intersected the orbit of the Earth. Jinny brushes the interruption away with an irritable wave of her left hand.

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I think it's fair to say that Harap-If's attitude toward us wasn't much more benign than the Senior Fabricator's. From her viewpoint, there was something basically incomprehensible about beings who killed each other by the millions and became upset because someone was turning a cold, lifeless world into a place where living things could flourish. She probably wouldn't have hesitated for a minute if the Senior Fabricator and his colleagues had come up with something less devastating.

Postri-Dem always insisted she had been appalled when they had told her they wanted to build a gigantic broadband electronic jammer and place it in Earth orbit. All her political instincts told her the Device would have consequences no one could imagine.

The Senior Fabricator wanted to launch the jammer toward Earth orbit as soon as the meeting ended. The Chosen Presider would have let us dither for another year if we'd wanted to, but she had to deal with the political realities. I don't know how she decided the committee would agree we could have another eight days, but everybody at the meeting accepted the figure as soon as she suggested it.

Did she think we should receive a warning? As far as I can tell, she didn't even consider the idea. The Senior Fabricator insisted he couldn't vouch for the safety of the Device if we learned about it before they placed it in position. And what would happen if they tried and failed? We might be weaker than they were technologically, but there were seven billion of us and we controlled the resources of an entire planet. Once we made up our minds to fight, we could probably overwhelm their electronic defense systems merely by throwing hundreds of missiles at them.

Stridi-If was one of the people who was attending the meeting by screenlink. Her final orders from the Chosen Presider were as contradictory as most diplomatic instructions. Every word Stridi-If uttered in our presence was supposed to underline the fact that her superiors were becoming dangerously impatient -- but we must receive no indication our civilization would be reduced to a pre-electronic level if we didn't make up our minds in eight days. Postri-Dem was supposed to drop a few hints into his discussions with me, in addition -- if they could convince someone like Postri-Dem he should forget his obsessions for a few moments.

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The reader's programming is state-of-the-art but it retreats to a bit of cowardly evasiveness -- Request Information If Necessary -- when Jinny reaches the next few paragraphs. Fortunately, Jinny is one of those children who feels she understands sex as well as she needs to. She understands the mechanics, in other words, but she still hasn't learned *why* people do it.

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The evening after the meeting, Postri-Dem spent most of his waking hours listening to three voices squealing and murmuring in the next room. The partitions in the living quarters in the Martian groundbase weren't much thicker than a pastry wafer.

Postri-Dem could have joined the trio in Kipi's room if he had wanted to. Kipi had made it clear she was in that kind of mood. Every time he heard one of those squeals, images of squirming bodies and happy faces pushed everything else out of his consciousness.

I won't claim they're the best quartet you could team up with, Stridi-If had said when she had suggested he should fill out this particular Five. *They're not the kind of people you can entertain with a long lecture on the more fascinating aspects of the human economic system. But it's better than lying in a room all by yourself daydreaming about your last stroking.*

Postri-Dem was too old to be the "odd man" in a Five or Seven in which all the females already had children. His younger brother had been permanently committed to a Seven for almost six Homeyears. His brother had even fathered a child. Postri-Dem had belonged to six different Sevens since he had reached sexual maturity. His relationships with three of them had all ended with the same scene: a visit from one of the older women, and a gentle, carefully phrased announcement that he was a wonderful, *interesting* person, and they all liked him very much, but...

That wasn't the exact wording they had used, obviously. But it's a reasonable translation. Postri-Dem's relationships with his own species had been about as satisfying as a rejected thesis.

I once worked out a time line in which I compared events on the ifli starship with events on Earth. It was easy to say the Chosen Presider's culture-segment had crossed forty-eight light years in two hundred and six Earth years. But what did that mean when you tried to think about it as something that had happened to thousands of highly intelligent civilized beings as they lived out their lives in a ship that was essentially a miniature city? When they had left their home system over two centuries ago, it had been 1812 on Earth. Napoleon's soldiers had been suffering the agonies of the retreat from Moscow. Our most advanced communication system had been the semaphore telegraph.

They had been traveling for eighty-eight years -- and they were still almost thirty light years from Earth -- when the people of Europe and the Americas had greeted the first day of the twentieth century. They had been almost twenty light years away -- and much of the human race had been involved in the second military holocaust of the twentieth century -- when they had picked up the radio waves human civilization had emitted into space in the 1920s. Verdi... Pasteur... Einstein... Fermi... Hawking... they had all lived and died while the ship had been creeping toward the moment when we would suddenly realize that something odd seemed to be moving through the solar system.

Postri-Dem had been fascinated by my time line. When he had shown it to Stridi-If, her only reaction had been horror at the number of wars listed among the historical events.

Postri-Dem had been eleven when he had been snared by the questions that would turn him into a scholar who spent most of his waking hours immersed in databanks and analytical programs. He had been studying the basic facts about the evolution of his own species, with three other children his own age. Most of the video transmissions the ship had been receiving from Earth had still been black and white. The adults had all been terrified when their screens had confronted them with films and documentaries that depicted the horrors that had taken place between September 1939 and August 1945.

Postri-Dem's best friend at that time had been a child he eventually addressed as Rapor-If. For her, their first views of the flickering images had been an occasion for displays of shrieks and wild hand waving. For him, it had been the beginning of the great adventure of his life. He realized immediately that the universe had presented him with a giant experiment in the relationship between biology and culture. On two worlds, forty-eight light years apart, the blind forces of chance had created two conscious, intelligent species -- and one of them, contrary to all expectations, was apparently predatory and semi-carnivorous.

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Jinny's reader includes a complete, illustrated children's encyclopedia. On her desk, there is an interactive forty-thousand volume children's library. She is fascinated by the results she gets when she touches "semaphore telegraph" and "second military holocaust of the century" with her finger. The language of the second reference creates some problems for the encyclopedia but she manages to work it out and the reader eventually refers her to the library. She plugs the reader into the library box and spends another twenty minutes putting together an outline of the conflict the people of the twentieth century called the Second World War.

Dr. Mazzeri's reference to Giuseppe Verdi sends her back to the library once again. She has been "exposed" to opera but this is the first time she has wondered why human society has produced a form of theater in which the actors sing their lines. Her father knocks on the door just as she is succumbing to temptation and starting to query a reference to Chinese opera.

Jinny's father is a tall man with a frame that is so thin he looks almost frail. He is home today because he is attending a conference. He has spent the last three hours in his office nook, scanning presentations and exchanging comments and questions with the other participants. Jinny's mother usually works at home but today she's taking a look at two missile defense sites near Binghamton. Every month Jinny's mother is supposed to spend a day talking to "on-site personnel" and doing "hands-on work" with "honest hardware."

Jinny's father looks blank when she tells him she's writing a report on Postri-Dem.

"Postri-Dem?"

"The alien. The ifli."

Her father raises his eyebrows. "What made you pick him?"

Jinny frowns. It's the kind of question she never knows how to answer. Then she smiles. "I thought Dr. Mazzeri looked like you, Daddy. The scientist who went to Mars. I thought he looked nice."

Her father rubs her head. Jinny looks up at him, wide-eyed, and he presses her against his leg.

* * *

Our first discussion session after the meeting took place the next morning. Maria and I were eating our four hundred and forty-fourth snack bar breakfast and resolutely ignoring any visions of black coffee and fresh rolls that happened to wander into our minds. The brown spheres Postri-Dem was eating provided him with a combination of texture and flavor he had loved since he was a child -- a mildly crunchy exterior, with a sweet, smooth cream in the middle. He had started stuffing them into his mouth three at a time long before we had finished the first hour of our session.

Postri-Dem spent most of our sessions lying in a hammock placed a few steps in front of our links. A communication unit built into the frame of the hammock connected him to the base information system. Three steps behind him, Stridi-If would stand against a wall, politely nibbling on a finger-food. Her favorite was a thin red stick that was almost as long as her arm.

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The reader offers Jinny a standard artist's visualization of the two "links." They are essentially a pair of

cylinders mounted on treads. Two jointed arms are attached to the sides of each cylinder. A "head" module, mounted on top, contains two cameras and a pair of microphones. The faces of the two human emissaries stare out of screens placed just below the head module.

An insert in the upper right hand corner of the screen contains a cutaway view of the cramped space vehicle in which Dr. Mazzeri and Ambassador Lott ate their snack bar breakfasts and didn't drink coffee. A caption explains that the vehicle orbited Mars at seven-hundred kilometers. Two small communications satellites created a network that kept the vehicle connected with the links as it circled the planet.

The figures in the drawing are wearing big helmets and gesturing with gloved hands. The treads on the links were controlled with pedals, but the arms and the head module were slaved to the motions of their bodies. The system looks clumsy to Jinny's eyes, but she knows it is a primitive version of the technology she uses when she takes electronic field trips.

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For the last two days, we had been discussing three subjects: two All-Time Fascinaters and one Perennial Puzzle. The two Fascinaters were mating customs (sex) and the patterns of intraspecies competition (violence in human terms, something else in Postri-Dem's terms). The Puzzle was sleep. On two worlds that were totally isolated from each other, the evolutionary process had produced intelligent species that slipped into unconsciousness for approximately 25 percent of each day. The ifli's knowledge of their biochemistry seemed to be more detailed than ours but Stridi-If had told us we would have to avoid discussions of chemical pathways for the time being. We could discuss patterns and customs, however, and the specialists on our consulting committee had told us they could use any information I could give them.

Sleeping habits got the first hour. For the second hour, we concentrated on the mating myths we had exchanged two days earlier. The anthropologist who had lobbied for the topic was one of my favorite people on the consulting committee and I did my best to fill every minute of the hour with something useful. I became so engrossed in the subject, in fact, that I actually felt irritated when the loudspeaker on the wall of the groundbase produced its standard polite murmur.

I shook my head. "The voice of Order and Proper Procedure seems to have spoken."

Postri-Dem countered with a wave of his hands and a slight roll of his shoulders -- his best approximation of a human shrug. "I was running out of thoughts anyway. I'm certain your consultant will have a few dozen questions we can explore the next time we take up this topic."

Behind him, Stridi-If spoke to him in their own language -- which I didn't understand at the time, of course. "This is your last opportunity for the day, Habut," Stridi-If said. "If you can't say something useful while you're discussing intraspecies competition, we may as well assume you're never going to give me anything I can work with."

Postri-Dem's full name was Postri Habut Luxerdi. His close acquaintances -- when he had any -- usually called him Hab or Habut. Stridi-If's full name was Stridi Ro Stridki but I'm confident Postri-Dem never called her Strid or Ki.

Stridi-If had interrupted Postri-Dem three times during the last hour and he had ignored her every time. As far as she was concerned, he had already missed several chances to let us know his species wasn't quite as harmless as its evolutionary history indicated: I had given him a perfect opportunity to make the point when I had leaped on the resemblance between our story of David and Bathsheba and their story of Gutara and Estrihar.

The legend of Gutara and Estrihar was one of the oldest stories Postri-Dem's species had created. Gutara was a legendary ruler -- the "queen" (more or less) of a famous city state. Estrihar was an architect who already belonged to a Five that was dominated by a woman who managed important construction projects. Gutara wanted Estrihar for herself, so she gave her rival a dangerous project -- a bridge that crossed a ravine in the mountains. The other woman had died in a storm, Gutara's role in the death had been discovered, and Gutara had been clawed and expelled.

It was a minor coincidence in some ways but it was the kind of thing that fascinated both of us.

Postri-Dem had realized he was looking at an alternative evolutionary history when he was still a child. I had realized it three weeks after we had started our conversations and I had reacted with the same naïve, babbling excitement that had overtaken him all those years before.

I have to confess, too, that the discovery had given both of us a more adolescent pleasure. It messed up one of the more plausible chains of logic our colleagues had produced.

On Postri-Dem's world, theorists had assumed that any intelligent aliens they encountered would have to be herbivores. Carnivores, they had reasoned, were specialized creatures who depended on their size and their speed. On Earth -- with equally impeccable logic -- many human exobiologists had argued that any intelligent aliens *we* met would have to be predators. Carnivores, they had argued, lived by their wits. They had to outmaneuver their prey. It was an agreeable idea and I suspect it had influenced most of our responses when we had discovered an alien ship had orbited Mars. As far as we were concerned, a group of people just like us had entered the solar system, made no attempt to communicate with us, and hit a robot probe with a blast of static that had put it out of business an hour after it had reached Mars.

Postri-Dem had been convinced his leaders were doing the wrong thing when they knocked out the probe. We were intelligent beings, after all. He had presented the Chosen Presider with a long document -- the equivalent of twenty thousand words in International English -- in which he listed all the evidence that indicated we could keep our violent proclivities to a minimum when we really tried. Harap-If even read it. I gather. Apparently she had more patience than most of the human politicians I've encountered.

* * *

Jinny's library contains eleven books on evolution and paleoanthropology. In one of the books on human evolution -- a treatise for twelve-year-olds entitled *How Did We All Get Here?* -- there is a two-screen layout.

The first screen is dominated by a picture of naked proto-humans standing on the edge of a plain. Their hands hold pieces of chipped flint. They look across the grasslands at fat herbivores. A half-eaten carcass is surrounded by jackals who will have to be dispersed before the humans can grab their share.

On Earth, the text explains, the evolution of intelligence had begun with a creature which had slipped into a way of life that revolved around hunting and scavenging. A weak, unimpressive animal had begun to rely on its brain -- on its ability to construct simple weapons and make predictions about the behavior of its prey. The hunters and gatherers with the best brains had tended to survive -- and the human species had become more and more dependent, generation after generation, on its ability to think.

The second screen is illustrated with an artist's conception of the early ancestors of the ifli. The proto-ifli are naked, too. In the background there is a marsh. Some of them are widening a shallow ditch by scraping it with stones. Others are cutting thin saplings and bringing them to a pond, where a tangle of mud and wood is rising in the center.

On Postri-Dem's world, the text argues, the blind forces of chance apparently descended on herbivores -- weak, unimpressive marsh creatures who had been crowded into the drier lands at the edge of their natural habitat. In the marshes, they had protected themselves from predators by building nests of mud and grass in the middle of ponds. In the borderlands, some of them responded to their plight by digging primitive canals and creating their own ponds. Like the ancestors of the first true humans, they created a way of life that favored individuals who used their brains. In their case, however, the survivors were individuals who could *build*.

Jinny read that book over fourteen months ago. *How Did We All Get Here?* was, in fact, the text in which she first learned of the existence of the ifli. She feels she's been interested in the ifli for a long time, of course -- and she has, when you think of fourteen months as a percentage of nine years. She has read all the other books in her library that mention the ifli and she is now using her "Interlibrary Connection" and downloading material from public databases. She already knows, for example, that the sexual division of labor in Postri-Dem's culture-segment conformed to the standard division of labor in most ifli cultures. Ifli females tended to be politicians and administrators. Ifli males tended to be engineers and designers. Like most of the people who encounter that fact, she has wondered if the UN selection

committee made a lucky guess when it sent a female diplomat and a male exobiologist to Mars. It didn't, but there seems to be a general agreement that the sexual composition of the human delegation may have influenced the Chosen President's decision to open discussions.

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This was only the third time we had discussed intraspecies competition. It was obviously a delicate subject. I was still selecting my words with great care.

"Actually," I said, "I don't see why we can't go on discussing the story of Gutara and Estrihar. I think it raises important questions about the way our different species compete. As I understand the story -- Gutara's city was erecting that bridge because of a rivalry with another city. They were creating a trade route to compete with a city that had already built a bridge over the same river."

"Trade isn't quite the correct word," Postri-Dem said. "The stream of information and certain kinds of... social intercourse... was just as important. But you've presented an accurate summary of the situation, other than that."

"But that brings up a question we can't seem to get away from. Didn't they at any time consider the possibility they might take *possession* of the other city's bridge? By engaging in violence?"

Postri-Dem waved his hands and engaged in another attempt to simulate a human shrug.

"I can only tell you what I've said before, Doctor Mazzeri. We do not seem to think of such things. If we do -- there is no tradition that tells us how to go about it. You have specialists in violence. Techniques. We usually resolve conflicts by moving. If that isn't practical... there are places on our Home world where you'll see six bridges built within steps of each other."

He popped another pair of brown spheres into his mouth. From the way he described it to me, the spheres coated the cells of his tongue and cheeks with a flake-speckled cream that created a sensation comparable to the feeling we humans get when we eat something sweet.

"I think it's clear we are less violent by nature," Postri-Dem said. "As I've said before, we do engage in brawls and riots. But they tend to be disorganized short-term events by your standards. Even when we dealt with predators -- even then, we relied on defensive structures. On walls. On water barriers. And ultimately, of course, on the modification of the predator's habitat that accompanies technological development. As your species is doing."

He paused and crunched his way through two more spheres while he arranged the phrases he had constructed the evening before. "I should tell you, however, that there have been occasions when members of our species used environmental modification as a competitive technique. The fact that we didn't institutionalize that kind of competition seems to support the idea that you can't institutionalize some things unless you are more naturally violent to begin with. Your species apparently developed organized violent competition shortly after you developed agriculture and started living in large scale social units. We didn't. But the fact that we've accumulated a few famous examples of aggressive environmental modification indicates the potential may be there."

"Very good, Habut," Stridi-If said in their language. "You took your time but you couldn't have done a better job if I'd written the script for you. You've planted the idea but you haven't over-emphasized it."

Maria's voice broke in on our private communications circuit. "I think we'd better talk, Orly. This might be a good place to put in another word about the Titanic."

I started to object and then shrugged. Postri-Dem told me to take all the time I needed and we blanked the screens on our links and broke the audio connection.

"They're probably thinking about some way they can bring up the Water Project," Stridi-If said. "That was perfect, Habut. Just be careful what you say if they want to talk about the Water Project. We have to make it clear we aren't referring to anything that would increase their panic over that."

Postri-Dem stuffed two more spheres into his mouth and choked back the impulse to tell Stridi-If he wasn't sure the humans would understand the difference between an artificial comet that wiped out their entire species and a Device that eliminated most of the gains they had made in the last two centuries. Postri-Dem's life had been unusually asocial, by the standards of his species, but he had learned one

important fact about his relationship with the rest of society -- he had a tendency to blurt out his thoughts without taking into account the responses they might provoke.

To Stridi-If -- and most of the other members of his culture-segment -- he was an odd, comic figure. Stridi-If was only five Homeyears older than Postri-Dem was, but she thought of him, he knew, as someone who was basically a child. She liked him -- in the same way you would like a child -- but she felt he had to be watched for his own good.

The most frustrating -- and agonizing -- period in Postri-Dem's life had been the three months that followed the moment when our links had come rolling across the Martian sands and paused outside the ifli base. There had been days, he claimed, when he had thought he would go mad if the Chosen Presider and her advisers didn't decide to open talks with us. Officially, Stridi-If had been his liaison with the power structure. Officially, she had been working with him because she had been the diplomat who would represent them if they decided to initiate a dialogue. In reality, she had been a caretaker who was supposed to save a valuable resource from self-destruction. There had been times when Postri-Dem had seriously believed he should bypass the standard political process and make impassioned speeches in the corridors. There had been other times when he composed long, angry messages to influential individuals who were opposing contact. Stridi-If had provided the patient, gentle voice that calmed him down before he made a fool of himself in public.

Stridi-If had been the sympathetic partner who convinced him his arguments would be more effective if he let a trained go-between do the talking.

I finished working out my wording with Maria and blinked on our screens.

"Ambassador Lott has raised a question I think I have to bring up," I said. "It's really a political and diplomatic issue, but I think it's something you and I can discuss. As you know, many people on our planet are concerned about your Water Project -- to put it mildly. When they look at this discussion on Earth, many people are going to wonder if the effects of an artificial comet might be considered a form of environmental modification...."

Postri-Dem reached for the bowl of spheres. He picked up three of them, then lowered his hand just before it reached his mouth.

"I think that can best be answered with a quote, Doctor Mazzeri. As your philosopher Machiavelli put it --"

He switched to Italian -- a language Stridi-If didn't understand.

"Transmit this to Earth at once. In eight days, we are going to launch a high speed rocket equipped with a jammer that can interfere with most of the electronic activity on your planet indefinitely. The propulsion unit and the jammer will receive their energy from a very powerful fusion energy reactor. The missiles you have placed in orbit as a defense against the Water Project are your only hope. You must destroy the rocket while it is using the reactor to decelerate. The propulsion unit and the jammer cannot operate simultaneously. If your missiles approach it while it is in free fall, the jammer will probably stop them."

Journalists have often asked me how it feels to hear someone tell you the world is going to end. Fortunately, I didn't have to respond in any rational way. Maria hit the right buttons and Postri-Dem's message started winging directly to Earth.

I do know my link lurched forward a few inches and stopped with a jerk. I had apparently reacted to the message with a sudden, involuntary movement.

Postri-Dem's jaws crunched down on three spheres simultaneously. He found it hard to believe he had actually completed the entire message. He had spent hours arranging the wording. He had repeated it tens of times after he had memorized it but he had still been convinced he would forget something important if he actually decided to say it out loud.

The Lurch of the Link had reminded me this was no time to let Stridi-If see I was excited. I swallowed hard and tried to remember how I would react if he had actually quoted a passage from a Renaissance philosopher.

"That's very interesting, Postri-Dem. I never thought of that particular aspect of Machiavelli in just that way."

Behind Postri-Dem's back, Stridi-If was already murmuring into her communicator. Postri-Dem knew the information system could apply a translation program to his message and produce a reasonably accurate paraphrase in about twice the time it had taken him to deliver it.

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The communications screen tells Jinny she has a call from her mother. She wants to keep on reading, but she knows she can't.

Jinny's mother looks very crisp and trim in her uniform. She wants to make sure Jinny is playing with her friends. She asks how a boy named Herbert is doing and Jinny assures her she's going to call Herbert before the day is up.

"That's very important, baby. You can't keep your nose stuck in a reader all the time."

"I'm writing a paper on Postri-Dem," Jinny says. "Did you know the ifli lived in families that had two mothers and three daddies? Some of them had three mothers and four daddies."

Her mother smiles. "Would you like that? Would you like having more than one mommy and daddy?"

"I just thought it was interesting. Did they have extra mommies and daddies because they didn't eat meat?"

"I'm afraid I don't know, dear. Are you making sure you're researching at least three sources?"

"I'm reading Dr. Mazzeri's own story. Then I'm going to see what else the library has."

"Dr. Mazzeri's own story? Isn't that a little long?"

"It's just something he wrote about Postri-Dem. For a collection of articles on Postri-Dem. It's really interesting, Mommy. He really liked Postri-Dem. You can tell it from the way he writes about him."

Her mother smiles again. "I'll have to look at that when I get home. Make sure you pay attention to your paragraphing, baby. That mentor you've got this semester puts a lot of emphasis on paragraphing."

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Stridi-If's hiss was so sharp and intense it made Postri-Dem's entire body turn warm -- a sensation that characterized the ifli's response to high-level threat. He knew what he was going to see before he turned his head but he still cringed when he saw it. Stridi-If had dropped into a graceless, awkward crouch. She was still holding her communicator in her left hand but the fingers of her right hand had bent into stiff, curving claws.

This wasn't the first time Postri-Dem had been faced with someone who had fallen into that crouching, clawing position. There had been times, in his childhood, when he had found himself surrounded by ten or twelve children of both sexes.

Sometimes it was something he said. Once he had merely mentioned that the pictures he had seen of the Netherlands looked pleasanter to him than some of the more industrialized areas of Home. The landscape of Holland had apparently been shaped almost completely by human activity, but the humans had treated it with more respect, it seemed to him, than his species had treated Home. There were even places on Earth where the humans had set aside large areas of untouched wilderness. Did intelligent predators need some contact with the wilderness in which they had once stalked their food animals?

To him it had been an interesting idea -- the kind of thing that kept running through his mind. He had known he was in trouble as soon as the other children started to react but he had still been surprised.

"Do you know what you've done?" Stridi-If screamed. "To yourself? To everyone?"

Postri-Dem rolled out of his crouch. He turned away from her, with his head cocked to one side, so she was shrieking at his left shoulder. He would have turned his back on her if he had let his instincts take control of his muscles.

Maria's link rolled forward with its arms waving. Her amplified voice boomed Stridi-If's name. She might have been half bored by the scholarly information I was exchanging with Postri-Dem, but she was used to situations in which she had to move from sleepy semi-attention to full, intense participation. She had cut her diplomatic teeth on the UN team that had defused the Thai-Taiwan naval confrontation.

Some of the assignments that had followed had been even tougher.

Stridi-If didn't have Maria's experience but she was a professional, too. She rose out of her crouch and shrieked an order at Postri-Dem. He backed to one side and Stridi-If advanced on the barrier.

"I wish to point out that this situation is still fluid," Maria said. "The recording we have just transmitted is marked with a code that will take it directly to our ultimate superior -- the Secretary General. No one else on Earth will know about this unless he chooses to tell them. He will have to inform two of our subcultures -- the Japanese and the Americans -- if you launch your missile. They control the missiles that orbit Earth. But right now you and I can still discuss this in private."

It was an astonishing performance. She had determined the exact nature of her negotiating stance and laid it out in sentences that sounded like they had been rehearsed for days. She had even made sure she omitted an important bit of information. We couldn't keep track of the ifli missile without help from the Japanese and the Americans. The equipment in the European Community couldn't do the job.

Later on she told me she had thought about situations in which we might be threatened with attack and worked out some of the possibilities. She had never thought about a planetary jammer but that was the kind of unexpected development she had learned to allow for.

"Orlando and I were sent here because billions of human beings want to establish peaceful relations with you," Maria said. "But we can't control all the subcultures on our world. We've done our best to make that clear to you. If the Japanese and the Americans learn anything about this, we can't promise you we can control their response."

The I's were dotted. The important points were spelled out. I thought she had put too much emphasis on the danger posed by the Japanese and the Americans until I realized Stridi-If probably wasn't used to negotiations that included the threat of violence.

Stridi-If was standing in front of the barrier with her hands pressed against her legs. It occurred to me she was probably faced with a personal problem, in addition to the professional crisis Postri-Dem had forced on her. She should have demanded a translation as soon as Postri-Dem started using a language she didn't understand.

Maria had already thought of that. "Is there any way we can work this out between us, Stridi-If? Just the two of us?"

"You're asking us to reverse our decision -- to tell our engineers they can't deploy the Device. Harap-If will have to bargain with you herself, Ambassador Lott."

* * *

Jinny feels a little niggles of curiosity when she scans the reference to the "Thai-Taiwan naval confrontation" but this time she lets it pass. She is surprised to learn that the Japanese and the Americans seemed to be working together in space during the period when all this happened.

Jinny's mother once tried to explain why she has to go away every month. One of the items she put on the screen was a map that showed how the world was divided into five "competitive zones."

* * *

Postri-Dem had never felt more isolated. Stridi-If glanced at him once or twice while she talked to the Chosen Presider on her communicator, but she acted, in general, as if he had disappeared.

When he had been invisibled in the past, Postri-Dem had always retained access to his databases. This time he wouldn't even have that. He would wander through the halls of the Marsbase with every door shut against him, until he sank into a depression, stopped searching for food, and let himself drift into a coma. He could even be expelled. His species had been expelling troublemakers into inhospitable environments for as long as it had been keeping records.

Yet, even now, huddling in a corner of the conference room, he was fascinated by the way Maria was handling the situation. He had noted the way she had used the threat of violence as a negotiating tool even as she insisted she represented a party that wanted to avoid violence. His people used threats, too, but

they were essentially commercial bargainers. Maria was discussing a nightmare of death and maiming as if she were telling Stridi-If some of the members of her culture-segment might take their business somewhere else if they didn't get their way.

Stridi-If placed a communication screen in front of the links and the Chosen Presider began talking to Maria. No one paid any attention to Postri-Dem when he crept up to his hammock and picked up his food bowl. He started to put two spheres into his mouth at once, then stopped himself and dropped one into the bowl. They might be the last food he would ever eat.

Harap-If's amplified voice boomed through the conference room. "Postri-Dem! Come over here and get to work. I'm not going to let all the time you've spent studying these people go to waste now that we really need it."

* * *

Postri-Dem had already realized he was watching an exercise in futility. Intellectually, the Chosen Presider knew we were intelligent beings like her own people. Emotionally, she probably thought of the Device about the same way we would regard an electrified barrier that herded sharks away from a private beach.

Stridi-If and Maria were both people who thought in terms of power. For them, the whole discussion was a matter of threat and counter-threat -- with Stridi-If hampered by the fact that she didn't know how to use the threat of violence. Sometimes she tried to indicate her people were willing to do things that were so savage they were clearly beyond their powers. Other times she shied away from threats that many human diplomats would have carried out without a flicker of remorse.

Postri-Dem listened for a full hour before he became so absorbed in his own thinking that he forgot he was a walking corpse. "I would like to make a suggestion, Harap-If."

"It's about time you did," Harap-If said.

"Doctor Mazzeri and I probably understand the differences between our species better than anyone in either group. Perhaps it would help if he and I talked about this in private. And tried to devise a plan Stridi-If and Ambassador Lott could then discuss."

Stridi-If was horrified, of course. He had already betrayed her once. What would he tell me if she left us alone now?

The Chosen Presider nibbled on her finger-food while she listened to Stridi-If's objections. They were speaking in their own language but Maria realized something important was happening and let me know the situation called for judicious silence.

"Everything will have to be recorded," the Chosen Presider said. "We'll need to know what you said if anything more goes wrong. But you can talk without supervision."

* * *

The last time he had talked to me, Postri-Dem had been a full member of his culture, representing it in an honorable position -- if I can translate his feelings into something that approximates human terms. Now he was an outcast -- someone who might be dead within a few days. There would be no trial, no attempt at the kind of legal maneuvering we Westerners have inflicted on most of the human population. A high-level committee would consider his case. Its deliberations would be recorded and disseminated. And the members of his community would follow their natural inclinations and avoid contact with someone who had made it clear he didn't value their welfare and their good opinion.

Their history included many cases in which someone had been expelled or invisibled and later generations had decided the outcast had been right. They had their Galileos and Semmelweises, too. But none of their heroic dissenters had been out-and-out traitors.

I wasn't surprised when he immediately told me he already had a proposal that could lead the two diplomats out of their impasse. I was even less surprised when I discovered what it was.

The crux of our problem with the ifli's offer was the suggestion that they should move their starship into

a low Earth orbit. They wanted to position themselves above our planet, take on two or three thousand human passengers, and transport our first interplanetary colonists to the asteroid belt. They apparently couldn't believe we would think they might bombard Earth -- or engage in some other kind of violent action -- if we let them place a massive ship, of unknown powers, in Earth orbit.

Now, of course, we had learned what they could do. Who knew what other tricks they had hidden in their baggy little sleeves?

Maria had already suggested one solution. We could place armed humans on their ship before it orbited Earth. Stridi-If had conveyed their rejection of the idea with waving arms and a general air of agitation. Hard as it is to believe, there wasn't one item on their ship that could be considered an anti-personnel weapon. Asking them to accept armed humans on board their ship was a little like telling beavers or prairie dogs they should let weasels into their lodges and tunnels.

The one thing we hadn't understood was the reasoning that had led to the offer. One of the biggest criticisms of my behavior has been the complaint that I didn't start discussing intraspecies competition until I had been exchanging information with Postri-Dem for over two months. If I had known they were working on something like the Device, I probably would have introduced the subject by the beginning of the second month. As it was, I thought we should avoid the matter until both sides had acquired a good basic picture of the people they were dealing with. None of us realized that the ifli's offer was an example of a tactic that was their equivalent of arms control. Sometimes they would share a resource, like a road or a tunnel, and let two groups gradually merge into one. They deliberately created a situation in which both sides were dependent on the same resource. Then they let time do its work.

Harap-If had backed a proposal that required real courage. She had gambled that spacefaring humans and spacefaring ifli would eventually blend into a common society -- in spite of their fundamental differences

-- as they built cities in the asteroid belt and engaged in trade.

My own opinion is that we probably would have. In spite of all the evidence to the contrary, I don't think human beings are fundamentally warlike. We are *willing* to fight when we want something. We'll fight back when someone tries to take something away from us. But most of us don't *like* fighting. We like thinking about it -- and watching other people do it -- but very few of us actually enjoy the experience.

Postri-Dem's proposal was less far reaching. He wanted to set up a research station in Mars orbit -- a station in which ifli and humans would engage in the same kind of exchanges he and I were engaged in. We could send humans one way to Mars orbit and the ifli could build the research station. They might even turn Deimos or Phobos into the kind of habitat we would have built in the asteroids.

By the time he finished describing the idea, I had the feeling he had almost forgotten his personal situation. "It fits into our way of minimizing competition," he argued. "And you could think of it as the kind of arms control measure you've developed. You'll have permanent observers in Mars orbit. You can keep an eye on what we're doing and make sure we aren't launching anything at Earth."

* * *

Jinny already knows who Galileo is, so she ignores the one paragraph bio when it appears on the left screen. Semmelweis is another matter. So is "arms control." She finds the idea so intriguing she ends up skimming three different articles on the subject.

* * *

It was a self-serving proposal, of course. He and I were agreeing, in essence, that the world would be a far better place if the engineering and military types would get out of the way and let those of us who valued knowledge and learning go about our business.

Fortunately, Maria thought it was a good idea, too. She was a diplomat, not a scholar, but she had always understood the value of knowledge. "They'll learn more about us, too," Maria said, "but they're so

far ahead of us in that area we're bound to gain more than we lose."

She even threw in an extra on her own. If they approved the plan, the national governments on Earth wouldn't be told about the Device. Postri-Dem thought that sounded like a good idea, Maria's recommendation went back to Earth, and he let Stridi-If know he'd come up with a cheaper, less complicated proposal that seemed to meet with our approval.

Stridi-If sounded less enthusiastic. "I'll communicate the proposal to Harap-If, Ambassador Lott. Are you confident your officials will accept your recommendation?"

"Yes. I am."

There was nothing equivocal about Maria's response. She didn't hesitate. She didn't qualify her words in any way. By now I knew her well enough to know she wouldn't say something like that if she didn't mean it.

* * *

Postri-Dem never told me what happened during the next day and a half. I have no idea when they let him know they were leaving. It's quite possible they never *did* let him know.

He must have understood when their ground-to-orbit vehicle took off with half the population of the base on board. Did he wander around the base like a ghost? Did he find an empty apartment and huddle in a hammock? Did people mock him? There were some things even he couldn't chatter about.

I found him sitting on the floor in a corridor, with his back propped against the wall. He managed to pull himself erect when he saw the link but after that he just settled against the wall and stared at it as it rattled toward him.

There was no danger he would die in the near future. The microwave beam was still supplying the base with power. I knew it would probably shut down sooner or later, when a critical component finally failed, but for now he had all the air, heat, and light he needed. Our biggest immediate problem was the pressure we were getting from Earth. The Security Council governments all knew the starship had left Mars orbit. They all wanted to know -- at once! -- where it was going.

* * *

Jinny already knows that the Marsbase drew its energy from a solar powered microwave station the aliens had constructed from material they had taken from the Martian moon Phobos. The ifli had placed the station in an appropriate orbit before they had started working on the groundbase, so the ground crews would have all the power they needed from the moment they touched down.

She isn't quite sure how microwave beams work. She's already looked at a brief explanation and decided she may have to defer the topic for a while. Most of the material on microwaves in her encyclopedia discusses cooking and communications devices. There is no indication any human had ever thought about building orbiting stations that transformed solar power into microwave energy and beamed it down to Earth.

* * *

A psychologist, the old saying goes, is a man who observes the reactions of the other people in the airplane when the pilot announces the right wing has just fallen off. An astronomer is a woman who starts estimating spectral categories when the man she's in love with draws her attention to the glories of a summer night. There's a whole roster of jokes about scientists and their preoccupation with their specialties. In a sense I was living one of those jokes. What kind of a person would shut himself in a closet, a hundred million kilometers from a doctor or a dentist, just so he could talk with a wrinkled, short-legged eccentric who happened to come from another star system? The news media had been impressed when two hundred exobiologists had applied for the job. Divide two hundred by the population of the Earth in 2026 and you'll understand why people like me feel we belong to a statistically

insignificant minority. You'll also understand, I think, why the four thousand ifli in the Chosen President's culture-segment didn't produce more Postri-Dems.

It took me a week to get him to the point where we could resume our discussions. I did it, for the most part, by putting myself in his place and doing things that would have had the right effect on me. I dropped interesting facts about human society or human biology into discussions about practical matters such as the quality of the food he had available. I called him at odd hours and asked him to clarify things he had said during our discussions. I introduced topics that were related to the conversations Maria was having with New York.

It helped that he could still beam a record of our conversations at the ifli ship. The ship never gave him any indication it was receiving or recording but he could always hope. The information he was gathering could still become part of his species' knowledge-base -- whether they appreciated it or not.

I think Maria's efforts had some effect on him, too. I listened in on some of her initial conversations with Earth and I know she made a real try.

It was Maria, in fact, who decided we should lobby for a full research base on the surface of Mars, with enough people on the ground to help Postri-Dem keep himself alive. She concentrated on the long term military advantages of a research effort when she talked to New York, but I don't think I misinterpreted the way her face lit up when she and I first discussed the idea. She tended to see everything we learned in terms of power conflicts, security arrangements, and military potential, but she cared about Postri-Dem, too. She couldn't hide the genuine *relief* that broke through her emotional defenses when she decided there was a real possibility we could help him survive.

For me it was the most exciting eight months I have ever lived through. We had been talking for weeks but we had barely touched the surface of dozens of subjects. Brain chemistry, economic systems, meteorology -- there were times when my consultants had to send me thirty screens of material just so I could acquire enough background to discuss one innocuous question.

Some topics were way beyond both of us. We couldn't handle anything that involved serious mathematics. Neither one of us knew his own system of mathematics that well. The questions that really excited us dealt with the kind of issues that fascinate specialists in sociobiology. There was a day -- to give you just one example -- when one of our consultants asked us to look at the social arrangements of the animals the ifli were related to. On Earth, we had studied primates like gorillas and baboons and speculated about the things their behavior could tell us about ourselves. On their world, some of their biologists had looked at the social behavior of the different kinds of marsh creatures they were related to and mapped the chemical pathways that influenced traits like sociability.

By the time we finished with that one, Postri-Dem was chattering away as if Stridi-If was still standing behind him and he still had a Five to return to when we stopped talking. If he had been a member of our own species, I think he could have become a figure comparable to Freud or Darwin. I have always been proud of my ability to understand a broad range of disciplines and see connections the specialists tend to overlook. Postri-Dem made me understand the difference between talent and genius.

Would his stature have been recognized if he had stayed in his own star system? The culture-segment he had been born into was essentially a backwoods, provincial society. In his own system, he would have been connected to an intellectual network that included thousands of individuals who could appreciate his potential.

* * *

The left screen offers Jinny pictures and capsule biographies of Sigmund Freud and Charles Darwin. There are also references to famous researchers who studied primates in their habitats. The program even presents her with two small indications it was designed by someone who had a sense of humor. The list of "possible additional readings" includes references to "John Dolittle, M.D." and a field worker who seems to have been a titled English aristocrat. Jinny smiles when she spots both of them. She read *The Story of Doctor Dolittle* when she was six, when she came across it while she was browsing through her library. She has never read anything by Edgar Rice Burroughs but the library brought his existence to her

attention when she offered it key words that staked out the general idea of stories that deal with communication between people and animals.

* * *

I hardly ever talked to the international bureaucrats in New York. Most of the time, I didn't even pay attention to the things they were saying to Maria. Sometimes she would ask for my thoughts on a topic that some assistant to a third under-secretary had dropped into the discussion. The rest of the time I tried to ignore everything they were saying to her.

An alien -- an educated, intelligent, highly cooperative visitor from another star system! -- was sitting on Mars. How could anyone feel we couldn't scrape up the resources to keep half a dozen people on the surface of the planet?

It's my personal opinion that Maria might have succeeded if the ifli ship had stayed in the solar system. The situation began to turn against us about the time we realized they weren't retreating to the asteroids after all.

Maria spent a big part of our last six weeks trying to convince our lords and masters we couldn't continue our conversations with Postri-Dem merely by establishing a communications center on Earth. I composed a special memo, with fifteen screens of attachments, which underlined the rather obvious fact that he came from a highly social species, and needed some form of on-the-spot companionship. Every consultant who had any connection with the social sciences signed the statement of concurrence that Maria circulated. The fact that we *might* -- *possibly* -- send him technical advice and spare parts couldn't help him deal with the unimaginable social isolation he was facing.

I was still exchanging information with Postri-Dem during the last hours we spent in Mars orbit. I had to help Maria with some of the final items on the pre-ignition checklist but I could still spend half my time connected to my link. The committee had given me a list of "pressing," "indispensable" topics that would have kept us busy for the next month, but I spent most of the time discussing the topics he chose.

He had become fascinated by children's games. As far as he knew, the children of his own species had never engaged in "hunting games" like hide and go seek. On the other hand, I had never really looked at the distribution of games like that on Earth. Did they play them in China and Japan? Or India? Were they less common in agricultural cultures?

"It seems to me, Orlando, that your species should have been affected by all the generations in which you were primarily farmers. Your agricultural phase seems to have been almost ten times as long as ours. That's not long by evolutionary standards, but there should have been some selection in favor of personalities who were less violent."

"We always had robbers," I said. "Most of our societies have included a warrior class. The farmers could get robbed at random or they could have a regular, predictable arrangement with warriors they thought of as their rulers. In practice they never really had much choice. If one set of warriors didn't take control of them, another would."

"But did the farmers' children play tag? And hide and go seek?"

That may not seem like the kind of conversation you should engage in just before you're going to leave someone alone on an empty planet. Was he just keeping up a front? Was he concentrating on his intellectual concerns so he wouldn't have to think about the hopelessness of his situation?

I think he really cared about the questions we were discussing. He might have turned his attention to escape if there had been any hope he could do it. Since there wasn't, why shouldn't he surrender to the passion that had brought him to this moment?

The real parting came when we reached the point where we had to route our transmissions through Earth. By that time the communications lag was almost four minutes one way. We were still talking, but it was a form of voice mail, not a real conversation. When I started relaying through the big receivers and transmitters that had kept us in touch with Earth, the situation would become ludicrous. His messages would reach me in a few minutes. Mine would have to travel three quarters of an hour before they reached Mars.

He had set up a camera in his new quarters and we had continued to maintain visual contact. There was no indication he was exceptionally agitated. He was chewing on the brown spheres he had been eating the day he told us about the Device, but I had no reason to think he had selected them for psychological reasons. As far as I could tell, he had been eating exactly three types of food items since he had acquired absolute control over the food preparation equipment.

My last message before the rerouting was notable mostly for the things it didn't say. I had never thanked him for the terrible sacrifice he had made and I still didn't think he would want me to. Instead, I tried to let him know I wasn't the only member of the human species who thought our exchanges of information had been an incredible intellectual adventure. I spent most of our last few minutes blipping him the seventy million names -- complete with their occupations, ages, and nationalities -- that were appended to the message of support we had circulated.

Would the bureaucrats have financed a Mars station if they had known he was going to destroy the ifli base? I like to think they would have.

They might not have believed him, of course. But I think they would have given in if they had been convinced he meant it.

Did he wander around the base thinking about our talks as he tinkered with valves and electrical equipment? Did he consume information in the same way a gourmet might spend his last days drinking and devouring? Goethe is supposed to have died saying, "More light! More light!" -- but Goethe didn't die by his own hand. Goethe hadn't betrayed his own species.

At our Institute we're still studying the recordings made from Earth-based interceptions of the messages he transmitted to the starship. They're one of the primary collections of data we use in our attempts to crack the language of his culture-segment. Our translations are still splotchy -- and not very reliable -- but many of them seem to contain little lectures that summarize his conversations with me and highlight ideas he considered important. I get the impression he was trying to justify his efforts by proving he was collecting knowledge that might be useful. In many of his summaries, he points out that certain aspects of the human personality might be common traits in all intelligent species descended from predators.

Out of all the communications in our files, however, the one I value the most is the last one he sent me. If you really want to understand Postri-Dem, it seems to me that last message tells you everything you need to know. I argued with Maria before she convinced me I had to add it to the public file, but I should have realized I didn't have to worry. In general, the news media have been interested in the aspects of the story that usually preoccupy them. In many cases, in fact, they have created portraits of Postri-Dem that are very similar to the picture the members of his own culture-segment probably developed. In one of the standard dramatizations of the story, he is seen as bumbling, good-hearted, and generally unworldly. Other popular treatments present him as a sacrificial, almost saintly being.

The producers of the first version interviewed me for several hours and I did my best to convince them they were on the wrong track. That was the last time I ever tried to argue with a media lord. Call that last message up. Watch the way his hands move as he talks. Remember that he had grown up in a small town with a population of four thousand, light years from the center of his civilization.

I know his emotions were driven by an alien body chemistry. I know we'll never fully understand the culture that shaped his thinking. It doesn't matter. He wasn't just being polite when he told me the thing he valued most about our relationship was the chance to talk to someone just like himself.

No culture -- no species -- can produce large numbers of people who spend their lives worrying about the nature of the stars or the mysteries of alien psychologies. Most of the individuals in any society have to concentrate on the tasks that keep their world functioning. Scientists and scholars may be the ultimate source of wealth and power, but they're probably considered misfits and oddities in every civilization in our galaxy.

* * *

in Helsinki. Her encyclopedia tells her the Institute is a small, cost-conscious organization which is financed by modest grants from governments and private foundations. It also receives gifts from thousands of small donors all over the world. It is housed on two floors of an office highrise. Its eight Research Fellows spend most of their time studying the information collected during the fourteen months the human race actually engaged in direct conversations with another species.

As soon as she finishes reading Dr. Mazzeri's memoir, Jinny activates her interlibrary connection and enters the public sectors of the Institute's database. A thirty minute introductory video describes the translation techniques the Research Fellows apply to the conversations recorded during the contact period. Sixty percent of the material is still untranslated, the voiceover notes.

After she finishes watching the videos, Jinny asks for information on ifli children's games and spends another two hours exploring that subject. When her mother comes home the next day, Jinny has to admit she has just started writing her paper. The grade she receives from her mentor is so low it comes with a memo that goes directly to her parents. Jinny must learn she has to finish her work on time, the memo says. And she must improve her paragraphing.

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