## **Risk**

Isaac Asimov

Hyper Base had lived for this day. Spaced about the gallery of the viewing room, in order and precedence strictly dictated by protocol, was a group of oﬃcials, scientists, technicians and others who could only be lumped under the general classiﬁcation of “personnel.” In accordance with their separate temperaments they waited hopefully, uneasily, breathlessly, eagerly, or fearfully for this culmination of their eﬀorts.

The hollowed interior of the asteroid known as Hyper Base had become for this day the center of a sphere of iron security that extended out for ten thousand miles. No ship might enter that sphere and live. No message might leave without scrutiny.

A hundred miles away, more or less, a small asteroid moved neatly in the orbit into which it had been urged a year before, an orbit that ringed Hyper Base in as perfect a circle as could be managed. The asteroidlet’s identity number was H937, but no one on Hyper Base called it anything but It. (“Have you been out on it today?”

“The general’s on it, blowing his top,” and eventually the impersonal pronoun achieved the dignity of capitalization.)

On It, unoccupied now as zero second approached, was the *Parsec,* the only ship of its kind ever built in the history of man. It lay, unmanned, ready for its takeoﬀ into the inconceivable.

Gerald Black, who, as one of the bright young men in etherics engineering, rated a front-row view, cracked his large knuckles, then wiped his sweating palms on his stained white smock and said sourly, “Why don’t you bother the general, or Her Ladyship there?”

Nigel Ronson, of Interplanetary Press, looked brieﬂy across the gallery toward the glitter of Major-general Richard Kallner and the unremarkable woman at his side, scarcely visible in the glare of his dress uniform. He said, “I would. except that I’m interested in news.”

Ronson was short and plump. He painstakingly wore his hair in a quarter-inch bristle, his shirt collar open and his trouser leg ankle- short, in faithful imitation of the newsmen who were stock characters on TV shows. He was a capable reporter nevertheless.

Black was stocky, and his dark hairline left little room for forehead, but his mind was as keen as his strong ﬁngers were blunt. He said, “They’ve got all the news.”

“Nuts,” said Ronson. “Kallner’s got no body under that gold braid. Strip him and you’ll ﬁnd only a conveyer belt dribbling orders downward and shooting responsibility upward.”

Black found himself at the point of a grin but squeezed it down. He said. “What about the Madam Doctor?”

“Dr. Susan Calvin of U. S. Robots and Mechanical Men Corporation.” intoned the reporter. “The lady with hyperspace where her heart ought to be and liquid helium in her eyes. She’d pass through the sun and come out the other end encased in frozen ﬂame.”

Black came even closer to a grin. “How about Director Schloss, then?”

Ronson said glibly, “He knows too much. Between spending his time fanning the feeble ﬂicker of intelligence in his listener and dimming his own brains for fear of blinding said listener permanently by sheer force of brilliance, he ends up saying nothing.”

Black showed his teeth this time. “Now suppose you tell me why you pick on me.”

“Easy, doctor. I looked at you and ﬁgured you’re too ugly to be stupid and too smart to miss a possible opportunity at some good personal publicity.”

“Remind me to knock you down someday.” said Black. “What do you want to know?”

The man from Interplanetary Press pointed into the pit and said, “Is that thing going to work?”

Black looked downward too, and felt a vague chill riﬄe over him like the thin night wind of Mars. The pit was one large television screen, divided in two. One half was an over-all view of It. On It’s pitted gray surface was the *Parse,* glowing mutedly in the feeble sunlight. The other half showed the control room of the *Parsec.* There was no life in that control room. In the pilot’s seat was an object the vague humanity of which did not for a moment obscure the fact that it was only a positronic robot.

Black said, “Physically, mister, this will work. That robot will leave and come back. Space! how we succeeded with that part of it. I watched it all. I came here two weeks after I took my degree in etheric physics and I’ve been here, barring leave and furloughs, ever since. I was here when we sent the ﬁrst piece of iron wire to Jupiter’s orbit and back through hyperspace—and got back iron ﬁlings. I was here when we sent white mice there and back and ended up with mincemeat.

“We spent six months establishing an even hyperﬁeld after that. We had to wipe out lags of as little as tenths of thousandths of seconds from point to point in matter being subjected to hypertravel. After that, the white mice started coming back intact. I remember when we celebrated for a week because one white mouse came back alive and lived ten minutes before dying. Now they live as long as we can take proper care of them.”

Ronson said, “Great!”

Black looked at him obliquely. “I said, *physically* it will work. Those white mice that come back—”

“Well?”

“No minds. Not even little white mice-type minds. They won’t eat. They have to be force-fed. They won’t mate. They won’t run. They sit. They sit. They sit. That’s all. We ﬁnally worked up to sending a chimpanzee. It was pitiful. It was too close to a man to make watching it bearable. It came back a hunk of meat that could make crawling motions. It could move its eyes and sometimes it would scrabble. It whined and sat in its own wastes without the sense to move.

Somebody shot it one day, and we were all grateful for that. I tell you this, fella, nothing that ever went into hyperspace has come back with a mind.”

“Is this for publication?”

“After this experiment, maybe. They expect great things of it.” A comer of Black’s mouth lifted.

“You don’t?”

“With a robot at the controls? No.” Almost automatically Black’s mind went back to that interlude, some years back, in which he had been unwittingly responsible for the near loss of a robot. He thought of the Nestor robots that ﬁlled Hyper Base with smooth, ingrained knowledge and perfectionist shortcomings. Mat was the use of talking about robots? He was not, by nature, a missionary.

But then Ronson, ﬁlling the continuing silence with a bit of small talk, said, as he replaced the wad of gum in his mouth with a fresh piece, “Don’t tell me *you’re* anti-robot. I’ve always heard that scientists are the one group that aren’t anti-robot.”

Black’s patience snapped. He said, “That’s true, and that’s the trouble. Technology’s gone robot-happy. Any job has to have a robot, or the engineer in charge feels cheated. You want a doorstop; buy a robot with a thick foot. That’s a serious thing.” He was speaking in a low, intense voice, shoving the words directly into Ronson’s ear.

Ronson managed to extricate his arm. He said, “Hey, I’m no robot. Don’t take it out on me. I’m a man. *Homo sapiens.* You just broke an arm bone of mine. Isn’t that proof?”

Having started, however, it took more than frivolity to stop Black. He said, “Do you know how much time was wasted on this setup? We’ve had a perfectly generalized robot built and we’ve given it one order. Period. I heard the order given. I’ve memorized it. Short and sweet. ‘Seize the bar with a ﬁrm grip. Pull it toward you ﬁrmly. *Firmly!* Maintain your hold until the control board informs you that you have passed through hyperspace twice.

“So at zero time, the robot will grab the control bar and pull it ﬁrmly toward himself. His hands are heated to blood temperature. Once the control bar is in position, heat expansion completes contact and hyperﬁeld is initiated. If anything happens to his brain during the ﬁrst trip through hyperspace, it doesn’t matter. All he needs to do is maintain position one microinstant and the ship will come back and the hyperﬁeld will ﬂip oﬀ. Nothing can go wrong. Then we study all its generalized reactions and see what, if anything, has gone wrong.”

Ronson looked blank. “This all makes sense to me.”

“Does it?” asked Black bitterly. “And what will you learn from a robot brain? It’s positronic, ours is cellular. It’s metal, ours is protein.

They’re not the same. There’s no comparison. Yet I’m convinced that on the basis of what they learn, or think they learn, from the robot, they’ll send men into hyperspace. Poor devils! Look, it’s not a question of dying. It’s coming back mindless. If you’d seen the chimpanzee, you’d know what I mean. Death is clean and ﬁnal. The other thing—”

The reporter said, “Have you talked about this to anyone?”

Black said, “Yes. They say what you said. They say I’m anti-robot and that settles everything. —Look at Susan Calvin there. You can bet *she* isn’t anti-robot. She came all the way from Earth to watch this experiment. If it had been a man at the controls, she wouldn’t have bothered. But what’s the use!”

“Hey,” said Ronson, “don’t stop now. There’s more.” “More what?”

“More problems. You’ve explained the robot. But why the security provisions all of a sudden?”

“Huh?”

“Come *on.* Suddenly I can’t send dispatches. Suddenly ships can’t come into the area. What’s going on? This is just another experiment. The public knows about hyperspace and what you boys are trying to do, so what’s the big secret?”

The backwash of anger was still seeping over Black, anger against the robots, anger against Susan Calvin, anger at the memory of that little lost robot in his past. There was some to spare, he found, for the irritating little newsman and his irritating little questions.

He said to himself, Let’s see how he takes it. He said, “You really want to know?”

“You bet.”

“All right. We’ve never initiated a hyperﬁeld for any object a millionth as large as that ship, or to send anything a millionth as far. That means that the hyperﬁeld that will soon be initiated is some million million times as energetic as any we’ve ever handled. We’re not sure what it can do.”

“What do you mean?”

“Theory tells us that the ship will be neatly deposited out near Sirius and neatly brought back here. But how large a volume of space about the *Parsec* will be carried with it? It’s hard to tell. We don’t know enough about hyperspace. The asteroid on which the ship sits may go with it and, you know, if our calculations are even a little oﬀ, it may never be brought back here. It may return, say, twenty billion miles away. And there’s a chance that more of space than just the asteroid may be shifted.”

“How much more?” demanded Ronson.

“We can’t say. There’s an element of statistical uncertainty. That’s why no ships must approach too closely. That’s why we’re keeping things quiet till the experiment is safely over.”

Ronson swallowed audibly. “Supposing it reaches to Hyper Base?”

“There’s a chance of it,” said Black with composure. “Not much of a chance or Director Schloss wouldn’t be here, I assure you. Still, there’s a mathematical chance.”

The newsman looked at his watch. “When does this all happen?” “In about ﬁve minutes. You’re not nervous, are you?”

“No,” said Ronson, but he sat down blankly and asked no more questions.

Black leaned outward over the railing. The ﬁnal minutes were ticking oﬀ.

*The robot moved!*

There was a mass sway of humanity forward at that sign of motion and the lights dimmed in order to sharpen and heighten the brightness of the scene below. But so far it was only the ﬁrst motion. The hands of the robot approached the starting bar.

Black waited for the ﬁnal second when the robot would pull the bar toward himself. Black could imagine a number of possibilities, and all sprang nearly simultaneously to mind.

There would ﬁrst be the short ﬂicker that would indicate the departure through hyperspace and return. Even though the time interval was exceedingly short, return would not be to the *precise* starting position and there would be a ﬂicker. There always was.

Then, when the ship returned, it might be found, perhaps, that the devices to even the ﬁeld over the huge volume of the ship had proved inadequate. The robot might be scrap steel. The ship might be scrap steel.

Or their calculations might be somewhat oﬀ and the ship might never return. Or worse still, Hyper Base might go with the ship and never return.

Or, of course, all might be well. The ship might ﬂicker and be there in perfect shape. The robot, with mind untouched, would get out of his seat and signal a successful completion of the ﬁrst voyage of a man- made object beyond the gravitational control of the sun.

The last minute was ticking oﬀ.

The last second came and the robot seized the starting bar and pulled it ﬁrmly toward himself—

Nothing!

No ﬂicker. Nothing!

The *Parsec* never left normal space.

Major-general Kallner took oﬀ his oﬃcer’s cap to mop his glistening forehead and in doing so exposed a bald head that would have aged him ten years in appearance if his drawn expression had not already done so. Nearly an hour had passed since the *Parsec’s* failure and nothing had been done.

“How did it happen? How did it happen? I don’t understand it.” Dr. Mayer Schloss, who at forty was the “grand old man” of the young science of hyperﬁeld matrices, said hopelessly, “There is nothing wrong with the basic theory. I’ll swear my life away on that. There’s a mechanical failure on the ship somewhere. Nothing more.” He had said that a dozen times.

“I thought everything was tested.” That had been said too. “It was, sir, it was. Just the same—” And that.

They sat staring at each other in Kallner’s oﬃce, which was now out of bounds for all personnel. Neither quite dared to look at the third person present.

Susan Calvin’s thin lips and pale cheeks bore no expression. She said coolly, “You may console yourself with what I have told you before. It is doubtful whether anything useful would have resulted.”

“This is not the time for the old argument,” groaned Schloss. “I am not arguing. U. S. Robots and Mechanical Men Corporation will supply robots made up to speciﬁcation to any legal purchaser for any legal use. We did our part, however. We informed you that we could not guarantee being able to draw conclusions with regard to the human brain from anything that happened to the positronic brain. Our responsibility ends there. There is no argument.”

“Great space,” said General Kallner, in a tone that made the expletive feeble indeed. “Let’s not discuss that.”

“What else was there to do?” muttered Schloss, driven to the subject nevertheless. “Until we know exactly what’s happening to the mind in hyperspace we can’t progress. The robot’s mind is at least capable of mathematical analysis. It’s a start, a beginning. And until we try—” He looked up wildly, “But your robot isn’t the point, Dr. Calvin. We’re not worried about him or his positronic brain. Damn it, woman—” His voice rose nearly to a scream.

The robopsychologist cut him to silence with a voice that scarcely raised itself from its level monotone. “No hysteria, man. In my lifetime I have witnessed many crises and I have never seen one solved by hysteria. I want answers to some questions.”

Schloss’s full lips trembled and his deep-set eyes seemed to retreat into their sockets and leave pits of shadow in their places. He said harshly, “Are you trained in etheric engineering?”

“That is an irrelevant question. I am Chief Robopsychologist of the United States Robots and Mechanical Men Corporation. That is a positronic robot sitting at the controls of the *Parsec.* Like all such robots, it is leased and not sold. I have a right to demand information concerning any experiment in which such a robot is involved.”

“Talk to her, Schloss,” barked General Kallner. “She’s—she’s all right.”

Dr. Calvin turned her pale eyes on the general, who had been present at the time of the aﬀair of the lost robot and who therefore could be expected not to make the mistake of underestimating her. (Schloss had been out on sick leave at the time, and hearsay is not as eﬀective as personal experience.) “Thank you, general,” she said.

Schloss looked helplessly from one to the other and muttered, “What do you want to know?”

“Obviously my ﬁrst question is, What *is* your problem if the robot is not?”

“But the problem is an obvious one. The ship hasn’t moved. Can’t you see that? Are you blind?”

“I see quite well. What I don’t see is your obvious panic over some mechanical failure. Don’t you people expect failure sometimes?”

The general muttered, “It’s the expense. The ship was hellishly expensive. The World Congress—appropriations—” He bogged down.

“The ship’s still there. A slight overhaul and correction would involve no great trouble.”

Schloss had taken hold of himself. The expression on his face was one of a man who had caught his soul in both hands, shaken it hard and set it on its feet. His voice had even achieved a kind of patience. “Dr. Calvin, when I say a mechanical failure, I mean something like a relay jammed by a speck of dust, a connection inhibited by a spot of grease, a transistor balked by a momentary heat expansion. A dozen other things. A hundred other things. Any of them can be quite temporary. They can stop taking eﬀect at any moment.”

“Which means that at any moment the *Parsec* may ﬂash through hyperspace and back after all.”

“Exactly. Now do you understand?”

“Not at all. Wouldn’t that be just what you want?” Schloss made a motion that looked like the start of an eﬀort to seize a double handful of hair and yank. He said, “You are not an etherics engineer.”

“Does that tongue-tie you, doctor?”

“We had the ship set,” said Schloss despairingly, “to make a jump from a deﬁnite point in space relative to the center of gravity of the galaxy to another point. The return was to be to the original point corrected for the motion of the solar system. In the hour that has passed since the *Parsec* should have moved, the solar system has shifted position. The original parameters to which the hyperﬁeld is adjusted no longer apply. The ordinary laws of motion do not apply to hyperspace and it would take us a week of computation to calculate a new set of parameters.”

“You mean that if the ship moves now it will return to some unpredictable point thousands of miles away?”

“Unpredictable?” Schloss smiled hollowly. “Yes, I should call it that. The *Parsec* might end up in the Andromeda nebula or in the center of the sun. In any case the odds are against our ever seeing it again.”

Susan Calvin nodded. “The situation then is that if the ship disappears, as it may do at any moment, a few billion dollars of the taxpayers’ money may be irretrievably gone, and—it will be said—through bungling.”

Major-general Kallner could not have winced more noticeably if he had been poked with a sharp pin in the fundament.

The robopsychologist went on, “Somehow, then, the ship’s hyperﬁeld mechanism must be put out of action, and that as soon as possible.

Something will have to be unplugged or jerked loose or ﬂicked oﬀ.” She was speaking half to herself.

“It’s not that simple,” said Schloss. “I can’t explain it completely, since you’re not an etherics expert. It’s like trying to break an ordinary electric circuit by slicing through high-tension wire with garden shears. It could be disastrous. It *would* be disastrous.”

“Do you mean that any attempt to shut oﬀ the mechanism would hurl the ship into hyperspace?”

“Any *random* attempt would *probably* do so. Hyper-forces are not limited by the speed of light. It is very probable that they have no limit of velocity at all. It makes things extremely diﬃcult. The only reasonable solution is to discover the nature of the failure and learn from that a safe way of disconnecting the ﬁeld.”

“And how do you propose to do that, Dr. Schloss?”

Schloss said, “It seems to me that the only thing to do is to send one of our Nestor robots—”

“No! Don’t be foolish,” broke in Susan Calvin.

Schloss said, freezingly, “The Nestors are acquainted with the problems of etherics engineering. They will be ideally—”

“Out of the question. You cannot use one of our positronic robots for such a purpose without my permission. You do not have it and you shall not get it.”

“What is the alternative?”

“You must send one of your engineers.”

Schloss shook his head violently, “Impossible. The risk involved is too great. If we lose a ship *and* man—”

“Nevertheless, you may not use a Nestor robot, or any robot.”

The general said, “I—I must get in touch with Earth. This whole problem has to go to a higher level.”

Susan Calvin said with asperity, “I wouldn’t just yet if I were you, general. You will be throwing yourself on the government’s mercy without a suggestion or plan of action of your own. You will not come out very well, I am certain.”

“But what is there to do?” The general was using his handkerchief again.

“Send a man. There is no alternative.”

Schloss had paled to a pasty gray. “It’s easy to say, send a man. But whom?”

“I’ve been considering that problem. Isn’t there a young man—his name is Black—whom I met on the occasion of my previous visit to Hyper Base?”

“Dr. Gerald Black?”

“I think so. Yes. He was a bachelor then. Is he still?” “Yes, I believe so.”

“I would suggest then that he be brought here, say, in ﬁfteen minutes, and that meanwhile I have access to his records.”

Smoothly she had assumed authority in this situation, and neither Kallner nor Schloss made any attempt to dispute that authority with her.

Black had seen Susan Calvin from a distance on this, her second visit to Hyper Base. He had made no move to cut down the distance. Now that he had been called into her presence, he found himself staring at her with revulsion and distaste. He scarcely noticed Dr. Schloss and General Kallner standing behind her.

He remembered the last time he had faced her thus, undergoing a cold dissection for the sake of a lost robot.

Dr. Calvin’s cool gray eyes were ﬁxed steadily on his hot brown ones.

“Dr. Black,” she said, “I believe you understand the situation.” Black said, “I do.”

“Something will have to be done. The ship is too expensive to lose. The bad publicity will probably mean the end of the project.”

Black nodded. “I’ve been thinking that.”

“I hope you’ve also thought that it will be necessary for someone to board the *Parsec,* ﬁnd out what’s wrong, and—uh—deactivate it.”

There was a moment’s pause. Black said harshly, “What fool would go?”

Kallner frowned and looked at Schloss, who bit his lip and looked nowhere.

Susan Calvin said, “There is, of course, the possibility of accidental activation of the hyperﬁeld, in which case the ship may drive beyond all possible reach. On the other hand, it may return somewhere within the solar system. If so, no expense or eﬀort will be spared to recover man and ship.”

Black said, “Idiot and ship! Just a correction.”

Susan Calvin disregarded the comment. She said, “I have asked General Kallner’s permission to put it to you. It is you who must go.”

No pause at all here. Black said, in the ﬂattest possible way, “Lady, I’m not volunteering.”

“There are not a dozen men on Hyper Base with suﬃcient knowledge to have any chance at all of carrying this thing through successfully. Of those who have the knowledge, I’ve selected you on the basis of our previous acquaintanceship. You will bring to this task an understanding—”

“Look, I’m *not* volunteering.”

“You have no choice. Surely you will face your responsibility?” “*My* responsibility? What makes it mine?”

“The fact that you are best ﬁtted for the job.”

“Do you know the risk?”

“I think I do,” said Susan Calvin.

“I know you don’t. You never saw that chimpanzee. Look, when I said ‘idiot and ship’ I wasn’t expressing an opinion. I was telling you a fact. I’d risk my life if I had to. Not with pleasure, maybe, but I’d risk it.

Risking idiocy, a lifetime of animal mindlessness, is something I won’t risk, that’s all.”

Susan Calvin glanced thoughtfully at the young engineer’s sweating, angry face.

Black shouted, “Send one of your robots, one of your NS-2 jobs.”

The psychologist’s eye reﬂected a kind of cold glitter. She said with deliberation, “Yes, Dr. Schloss suggested that. But the NS-2 robots are leased by our ﬁrm, not sold. They cost millions of dollars apiece, you know. I represent the company and I have decided that they are too expensive to be risked in a matter such as this.”

Black lifted his hands. They clenched and trembled close to his chest as though he were forcibly restraining them. “You’re telling me— you’re saying you want me to go instead of a robot because I’m more expendable.”

“It comes to that, yes.”

“Dr. Calvin,” said Black, “I’d see you in hell ﬁrst.”

“That statement might be almost literally true, Dr. Black. As General Kallner will conﬁrm, you are ordered to take this assignment. You are under quasi-military law here, I understand, and if you refuse an assignment, you can be court-martialed. A case like this will mean Mercury prison and I believe that will be close enough to hell to make your statement uncomfortably accurate were I to visit you, though I probably would not. On the other hand, if you agree to board the *Parsec* and carry through this job, it will mean a great deal for your career.”

Black glared, red-eyed, at her.

Susan Calvin said, “Give the man ﬁve minutes to think about this, General Kallner, and get a ship ready.”

Two security guards escorted Black out of the room.

Gerald Black felt cold. His limbs moved as though they were not part of him. It was as though he were watching himself from some remote, safe place, watching himself board a ship and make ready to leave for It and for the *Parsec.*

He couldn’t quite believe it. He had bowed his head suddenly and said, “I’ll go.”

But why?

He had never thought of himself as the hero type. Then why? Partly, of course, there was the threat of Mercury prison. Partly it was the awful reluctance to appear a coward in the eyes of those who knew him, that deeper cowardice that was behind half the bravery in the world.

Mostly, though, it was something else.

Ronson of Interplanetary Press had stopped Black momentarily as he was on his way to the ship. Black looked at Ronson’s Bushed face and said. “What do you want?”

Ronson babbled. “Listen! When you get back, I want it exclusive. I’ll arrange any payment you want—anything you want—”

Black pushed him aside, sent him sprawling, and walked on.

The ship had a crew of two. Neither spoke to him. Their glances slid over and under and around him. Black didn’t mind that. They were scared spitless themselves and their ship was approaching the *Parsec* like a kitten skittering sideways toward the ﬁrst dog it had ever seen. He could do without *them.*

There was only one face that he kept seeing. The anxious expression of General Kallner and the look of synthetic determination on Schloss’s face were momentary punctures on his consciousness. They healed almost at once. It was Susan Calvin’s unruﬄed face that he saw. Her calm expressionlessness as he boarded the ship.

He stared into the blackness where Hyper Base had already disappeared into space—

Susan Calvin! Doctor Susan Calvin! Robopsychologist Susan Calvin! The robot that walks like a woman!

What were her three laws, he wondered. First Law: Thou shalt protect the robot with all thy might and all thy heart and all thy soul. Second Law: Thou shalt hold the interests of U. S. Robots and Mechanical Men Corporation holy provided it interfereth not with the First Law. Third Law: Thou shalt give passing consideration to a human being provided it interfereth not with the First and Second laws.

Had she ever been young, he wondered savagely? Had she ever felt one honest emotion?

Space! How he wanted to do something—something that would take that frozen look of nothing oﬀ her face.

And he would!

By the stars, he would. Let him but get out of this sane and he would see her smashed and her company with her and all the vile brood of robots with them. It was that thought that was driving him more than fear of prison or desire for social prestige. It was that thought that almost robbed him of fear altogether. Almost.

One of the pilots muttered at him, without looking, “You can drop down from here. It’s half a mile under.”

Black said bitterly, “Aren’t you landing?”

“Strict orders not to. The vibration of the landing might—”

“What about the vibration of my landing?” The pilot said, “I’ve got my orders.”

Black said no more but climbed into his suit and waited for the inner lock to open. A tool kit was welded ﬁrmly to the metal of the suit about his right thigh.

Just as he stepped into the lock, the earpieces inside his helmet rumbled at him. “Wish you luck, doctor.”

It took a moment for him to realize that it came from the two men aboard ship, pausing in their eagerness to get out of that haunted volume of space to give him that much, anyway.

“Thanks,” said Black awkwardly, half resentfully.

And then he was out in space, tumbling slowly as the result of the slightly oﬀ-center thrust of feet against outer lock.

He could see the *Parsec* waiting for him, and by looking between his legs at the right moment of the tumble he could see the long hiss of the lateral jets of the ship that had brought him, as it turned to leave.

He was alone! Space, he was alone!

Could any man in history ever have felt so alone?

Would he know, he wondered sickly, if—if anything happened? Would there be any moments of realization? Would he feel his mind fade and the light of reason and thought dim and blank out?

Or would it happen suddenly, like the cut of a force knife? In either case

The thought of the chimpanzee, blank-eyed, shivering with mindless terrors, was fresh within him.

The asteroid was twenty feet below him now. It swam through space with an absolutely even motion. Barring human agency, no grain of sand upon it had as much as stirred through astronomical periods of time.

In the ultimate jarlessness of It, some small particle of grit encumbered a delicate working unit on board the *Parsec,* or a speck of impure sludge in the ﬁne oil that bathed some moving part had stopped it.

Perhaps it required only a small vibration, a tiny tremor originating from the collision of mass and mass to unencumber that moving part, bringing it down along its appointed path, creating the hyperﬁeld, blossoming it outward like an incredibly ripening rose.

His body was going to touch It and he drew his limbs together in his anxiety to “hit easy.” He did not want to touch the asteroid. His skin crawled with intense aversion.

It came closer. Now—now—

Nothing!

There was only the continuing touch of the asteroid, the uncanny moments of slowly mounting pressure that resulted from a mass of

250 pounds (himself plus suit) possessing full inertia but no weight to speak of.

Black opened his eyes slowly and let the sight of stars enter. The sun was a glowing marble, its brilliance muted by the polarizing shield over his faceplate. The stars were correspondingly feeble but they made up the familiar arrangement. With sun and constellations normal, he was still in the solar system. He could even see Hyper Base, a small, dim crescent.

He stiﬀened in shock at the sudden voice in his ear. It was Schloss. Schloss said, “We’ve got you in view, Dr. Black. You are not alone!”

Black could have laughed at the phraseology, but he only said in a low, clear voice, “Clear oﬀ. If you’ll do that, you won’t be distracting me.”

A pause. Schloss’s voice, more cajoling, “If you care to report as you go along, it may relieve the tension.”

“You’ll get information from me when I get back. Not before.” He said it bitterly, and bitterly his metal-encased ﬁngers moved to the control panel in his chest and blanked out the suit’s radio. They could talk into a vacuum now. He had his own plans. If he got out of this sane, it would be *his* show.

He got to his feet with inﬁnite caution and stood on It. He swayed a bit as involuntary muscular motions, tricked by the almost total lack of gravity into an endless series of overbalancings, pulled him this way and that. On Hyper Base there was a pseudo-gravitic ﬁeld to hold them down. Black found that a portion of his mind was suﬃciently detached to remember that and appreciate it in *absentia.*

The sun had disappeared behind a crag. The stars wheeled visibly in time to the asteroid’s one-hour rotation period.

He could see the *Parsec* from where he stood and now he moved toward it slowly, carefully—tippy-toe almost. (No vibration. No vibration. The words ran pleadingly through his mind.)

Before he was completely aware of the distance he had crossed, he was at the ship. He was at the foot of the line of hand grips that led to the outer lock.

There he paused.

The ship looked quite normal. Or at least it looked normal except for the circle of steely knobs that girdled it one third of the way up, and a second circle two thirds of the way up. At the moment, they must be straining to become the source poles of the hyperﬁeld.

A strange desire to reach up and fondle one of them came over Black. It was one of those irrational impulses, like the momentary thought, “What if I jumped?” that is almost inevitable when one stares down from a high building.

Black took a deep breath and felt himself go clammy as he spread the ﬁngers of both hands and then lightly, so lightly, put each hand ﬂat against the side of the ship.

Nothing! He seized the lowest hand grip and pulled himself up, carefully. He longed to be as experienced at null-gravity manipulation as were the construction men. You had to exert enough force to overcome inertia and then stop. Continue the pull a second too long and you would overbalance, careen into the side of the ship.

He climbed slowly, tippy-ﬁngers, his legs and hips swaying to the right as his left arm reached upward, to the left as his right arm reached upward.

A dozen rungs, and his ﬁngers hovered over the contact that would open the outer lock. The safety marker was a tiny green smear.

Once again he hesitated. This was the ﬁrst use he would make of the ship’s power. His mind ran over the wiring diagrams and the force distributions. If he pressed the contact, power would be siphoned oﬀ the micropile to pull open the massive slab of metal that was the outer lock.

Well? What was the use? Unless he had some idea as to what was wrong, there was no way of telling the eﬀect of the power diversion. He sighed and touched contact.

Smoothly, with neither jar nor sound, a segment of the ship curled open. Black took one more look at the friendly constellations (they had not changed) and stepped into the softly illuminated cavity. The outer lock closed behind him.

Another contact now. The inner lock had to be opened. Again he paused to consider. Air pressure within the ship would drop ever so slightly as the inner lock opened, and seconds would pass before the ship’s electrolyzers could make up the loss.

Well? The Bosch posterior-plate, to name one item, was sensitive to pressure, but surely not *this* sensitive.

He sighed again, more softly (the skin of his fear was growing calloused) and touched the contact. The inner lock opened.

He stepped into the pilot room of the *Parsec,* and his heart jumped oddly when the ﬁrst thing he saw was the visiplate, set for reception and powdered with stars. He forced himself to look at them.

Nothing!

Cassiopeia was visible. The constellations were normal and he was inside the *Parsec.* Somehow he could feel the worst was over. Having come so far and remained within the solar system, having kept his mind so far, he felt something that was faintly like conﬁdence begin to seep back.

There was an almost supernatural stillness about the *Parsec.* Black had been in many ships in his life and there had always been the sounds of life, even if only the scuﬃng of a shoe or a cabin boy humming in the corridor. Here the very beating of his own heart seemed muﬄed to soundlessness.

The robot in the pilot’s seat had its back to him. It indicated by no response that it was aware of his having entered.

Black bared his teeth in a savage grin and said sharply, “Release the bar! Stand up!” The sound of his voice was thunderous in the close quarters.

Too late he dreaded the air vibrations his voice set up, but the stars on the visiplate remained unchanged.

The robot, of course, did not stir. It could receive no sensations of any sort. It could not even respond to the First Law. It was frozen in the unending middle of what should have been almost instantaneous process.

He remembered the orders it had been given. They were open to no misunderstanding: “Seize the bar with a ﬁrm grip. Pull it toward you

ﬁrmly. Firmly! Maintain your hold until the control board informs you that you have passed through hyperspace twice.”

Well, it had not yet passed through hyperspace once. Carefully, he moved closer to the robot. It sat there with the bar pulled ﬁrmly back between its knees. That brought the trigger mechanism almost into place. The temperature of his metal hands then curled that trigger, thermocouple fashion, just suﬃciently for contact to be made.

Automatically Black glanced at the thermometer reading set into the control board. The robot’s hands were at 37 Centigrade, as they should be.

He thought sardonically, Fine thing. I’m alone with this machine and I can’t do anything about it.

What he would have liked to do was take a crowbar to it and smash it to ﬁlings. He enjoyed the ﬂavor of that thought. He could see the horror on Susan Calvin’s face (if any horror could creep through the ice, the horror of a smashed robot was it). Like all positronic robots, this one-shot was owned by U. S. Robots, had been made there, had been tested there.

And having extracted what juice he could out of imaginary revenge, he sobered and looked about the ship.

After all, progress so far had been zero.

Slowly, he removed his suit. Gently, he laid it on the rack. Gingerly, he walked from room to room, studying the large interlocking surfaces of the hyperatomic motor, following the cables, inspecting the ﬁeld relays.

He touched nothing. There were a dozen ways of deactivating the hyperﬁeld, but each one would be ruinous unless he knew at least approximately where the error lay and let his exact course of procedure be guided by that.

He found himself back at the control panel and cried in exasperation at the grave stolidity of the robot’s broad back, “Tell me, will you? What’s wrong?”

There was the urge to attack the ship’s machinery at random. Tear at it and get it over with. He repressed the impulse ﬁrmly. If it took him a week, he would deduce, somehow, the proper point of attack. He owed that much to Dr. Susan Calvin and his plans for her.

He turned slowly on his heel and considered. Every part of the ship, from the engine itself to each individual two-way toggle switch. had been exhaustively checked and tested on Hyper Base. It was almost impossible to believe that anything could go wrong. There wasn’t a thing on board ship

Well, yes, there was, of course. The robot! That had been tested at U.

S. Robots and they, blast their devils’ hides, could be assumed to be competent.

What was it everyone always said: A robot can just naturally do a better job.

It was the normal assumption, based in part on U. S. Robots’ own advertising campaigns. They could make a robot that would be better than a man for a given purpose. Not “as good as a man.” but “better than a man.”

And as Gerald Black stared at the robot and thought that, his brows contracted under his low forehead and his look became compounded of astonishment and a wild hope.

He approached and circled the robot. He stared at its arms holding the control bar in trigger position, holding it forever so, unless the ship jumped or the robot’s own power supply gave out.

Black breathed. “I bet. I *bet.”*

He stepped away, considered deeply, He said. “It’s *got* to be.”

He turned on ship’s radio. Its carrier beam was already focused on Hyper Base. He barked into the mouthpiece. “Hey, Schloss.”

Schloss was prompt in his answer. “Great Space. Black—”

“Never mind,” said Black crisply. “No speeches. I just want to make sure you’re watching.”

“Yes, of course. We all are. Look—”

But Black turned oﬀ the radio. He grinned with tight one-sidedness at the TV camera inside the pilot room and chose a portion of the hyperﬁeld mechanism that would be in view. He didn’t know how many people would be in the viewing room. There might be only Kallner, Schloss and Susan Calvin. There might be all personnel. In any case, he would give them something to watch.

Relay Box # 3 was adequate for the purpose, he decided. It was located in a wall recess, coated over with a smooth cold-seamed panel. Black reached into his tool kit and removed the splayed, blunt-edged seamer. He pushed his space suit farther back on the rack (having turned it to bring the tool kit in reach) and turned to the relay box.

Ignoring a last tingle of uneasiness, Black brought up the seamer, made contact at three separated points along the cold seam. The tool’s force ﬁeld worked deftly and quickly, the handle growing a triﬂe warm in his hand as the surge of energy came and left. The panel swung free.

He glanced quickly, almost involuntarily, at the ship’s visiplate. The stars were normal. He, himself, felt normal.

That was the last bit of encouragement he needed. He raised his foot and smashed his shoe down on the feather-delicate mechanism within the recess.

There was a splinter of glass, a twisting of metal, and a tiny spray of mercury droplets

Black breathed heavily. He turned on the radio once more. “Still there, Schloss?”

“Yes, but—”

“Then I report the hyperﬁeld on board the *Parsec* to be deactivated. Come and get me.”

Gerald Black felt no more the hero than when he had left for the *Parsec,* but he found himself one just the same. The men who had brought him to the small asteroid came to take him oﬀ. They landed this time. They clapped his back.

Hyper Base was a crowded mass of waiting personnel when the ship arrived, and Black was cheered. He waved at the throng and grinned, as was a hero’s obligation, but he felt no triumph inside. Not yet. Only anticipation. Triumph would come later, when he met Susan Calvin.

He paused before descending from the ship. He looked for her and did not see her. General Kallner was there, waiting, with all his soldierly stiﬀness restored and a bluﬀ look of approval ﬁrmly plastered on his face. Mayer Schloss smiled nervously at him. Ronson of Interplanetary Press waved frantically. Susan Calvin was nowhere.

He brushed Kallner and Schloss aside when he landed. “I’m going to wash and eat ﬁrst.”

He had no doubts but that, for the moment at least, he could dictate terms to the general or to anybody.

The security guards made a way for him. He bathed and ate leisurely in enforced isolation, he himself being solely responsible for the enforcement. Then he called Ronson of Interplanetary and talked to him brieﬂy. He waited for the return call before he felt he could relax thoroughly. It had all worked out so much better than he had expected. The very failure of the ship had conspired perfectly with him.

Finally he called the general’s oﬃce and ordered a conference. It was what it amounted to—orders. Major-general Kallner all but said, “Yes, Sir.”

They were together again. Gerald Black, Kallner, Schloss—even Susan Calvin. But it was Black who was dominant now. The robopsychologist, graven-faced as ever, as unimpressed by triumph as by disaster, had nevertheless seemed by some subtle change of attitude to have relinquished the spotlight.

Dr. Schloss nibbled a thumbnail and began by saying, cautiously, “Dr. Black, we are all very grateful for your bravery and success.” Then, as though to institute a healthy deﬂation at once, he added, “Still, smashing the relay box with your heel was imprudent and—well, it was an action that scarcely deserved success.”

Black said, “It was an action that could scarcely have avoided success. You see” (this was bomb number one) “by that time I knew what had gone wrong.”

Schloss rose to his feet. “You did? Are you sure?”

“Go there yourself. It’s safe now. I’ll tell you what to look for.” Schloss sat down again, slowly. General Kallner was enthusiastic. “Why, this is the best yet, if true.”

“It’s true,” said Black. His eyes slid to Susan Calvin, who said nothing.

Black was enjoying the sensation of power. He released bomb number two by saying, “It was the robot, of course. Did you hear that, Dr.

Calvin?”

Susan Calvin spoke for the ﬁrst time. “I hear it. I rather expected it, as a matter of fact. It was the only piece of equipment on board ship that had not been tested at Hyper Base.”

For a moment Black felt dashed. He said, “You said nothing of that.”

Dr. Calvin said, “As Dr. Schloss said several times, I am not an etherics expert. My guess, and it was no more than that, might easily have been wrong. I felt I had no right to prejudice you in advance of your mission.”

Black said, “All right, did you happen to guess *how* it went wrong?” “No, sir.”

“Why, it was made better than a man. That’s what the trouble was. Isn’t it strange that the trouble should rest with the very specialty of

U. S. Robots? They make robots better than men, I understand.”

He was slashing at her with words now but she did not rise to his bait.

Instead, she sighed. “My dear Dr. Black. I am not responsible for the slogans of our sales-promotion department.”

Black felt dashed again. She wasn’t an easy woman to handle, this Calvin. He said, “Your people built a robot to replace a man at the controls of the *Parsec.* He had to pull the control bar toward himself, place it in position and let the heat of his hands twist the trigger to make ﬁnal contact. Simple enough, Dr. Calvin?”

“Simple enough, Dr. Black.”

“And if the robot had been made no better than a man, he would have succeeded. Unfortunately, U. S. Robots felt compelled to make it better than a man. The robot was told to pull back the control bar ﬁrmly. *Firmly.* The word was repeated, strengthened, emphasized. So the robot did what it was told. It pulled it back ﬁrmly. There was only one trouble. He was easily ten times stronger than the ordinary human being for whom the control bar was designed.”

“Are you implying—”

“I’m *saying* the bar bent. It bent back just enough to misplace the trigger. When the heat of the robot’s hand twisted the thermocouple’ it did *not* make contact.” He grinned. “This isn’t the failure of just one robot, Dr. Calvin. It’s symbolic of the failure of the robot idea.”

“Come now, Dr. Black,” said Susan Calvin icily, “you’re drowning logic in missionary psychology. The robot was equipped with adequate understanding as well as with brute force. Had the men who gave it its orders used quantitative terms rather than the foolish adverb ‘ﬁrmly,’ this would not have happened. Had they said, ‘apply a pull of ﬁfty-ﬁve pounds,’ all would have been well.”

“What you are saying,” said Black, “is that the inadequacy of a robot must be made up for by the ingenuity and intelligence of a man. I assure you that the people back on Earth will look at it in that way and will not be in the mood to excuse U. S. Robots for this ﬁasco.”

Major-general Kallner said quickly, with a return of authority to his voice, “Now wait, Black, all that has happened is obviously classiﬁed information.”

“In fact,” said Schloss suddenly, “your theory hasn’t been checked yet. We’ll send a party to the ship and ﬁnd out. It may not be the robot at all.”

“You’ll take care to make that discovery, will you? I wonder if the people will believe an interested party. Besides which, I have one more thing to tell you.” He readied bomb number three and said, “As of this moment, I’m resigning from this man’s project. I’m quitting.”

“Why?” asked Susan Calvin.

“Because, as you said, Dr. Calvin, I am a missionary,” said Black, smiling. “I have a mission. I feel I owe it to the people of Earth to tell them that the age of the robots has reached the point where human life is valued less than robot life. It is now possible to order a man into danger because a robot is too precious to risk. I believe Earthmen should hear that. Many men have many reservations about robots as is. U. S. Robots has not yet succeeded in making it legally permissible to use robots on the planet Earth itself. I believe what I have to say, Dr. Calvin, will complete the matter. For this day’s work, Dr. Calvin, you and your company and your robots will be wiped oﬀ the face of the solar system.”

He was forewarning her, Black knew; he was forearming her, but he could not forego this scene. He had lived for this very moment ever since he had ﬁrst left for the *Parsec,* and he could not give it up.

He all but gloated at the momentary glitter in Susan Calvin’s pale eyes and at the faintest ﬂush in her cheeks. He thought, How do you feel now, madam scientist?

Kallner said, “You will not be permitted to resign, Black, nor will you be permitted—”

“How can you stop me, general? I’m a hero, haven’t you heard? And old Mother Earth *will* make much of its heroes. It always has. They’ll want to hear from me and they’ll believe anything I say. And they won’t like it if I’m interfered with, at least not while I’m a fresh, brand-new hero. I’ve already talked to Ronson of Interplanetary Press

and told him I had something big for them, something that would rock every government oﬃcial and science director right out of the chair plush, so Interplanetary will be ﬁrst in line, waiting to hear from me. So what can you do except to have me shot? And I think you’d be worse oﬀ after that if you tried it.”

Black’s revenge was complete. He had spared no word. He had hampered himself not in the least. He rose to go.

“One moment, Dr. Black,” said Susan Calvin. Her low voice carried authority.

Black turned involuntarily, like a schoolboy at his teacher’s voice, but he counteracted that gesture by a deliberately mocking, “You have an explanation to make, I suppose?”

“Not at all,” she said primly. “You have explained for me, and quite well. I chose you because I knew you would understand, though I thought you would understand sooner. I had had contact with you before. I knew you disliked robots and would, therefore, be under no illusions concerning them. From your records, which I asked to see before you were given your assignment, I saw that you had expressed disapproval of this robot-through-hyperspace experiment. Your superiors held that against you, but I thought it a point in your favor.”

“What are you talking about, doctor, if you’ll excuse my rudeness?” “The fact that you should have understood why no robot could have been sent on this mission. What was it you yourself said? Something about a robot’s inadequacies having to be balanced by the ingenuity and intelligence of a man. Exactly so, young man, exactly so. Robots have no ingenuity. Their minds are ﬁnite and can be calculated to the last decimal. That, in fact, is my job.

“Now if a robot is given an order, a *precise* order, he can follow it. If the order is not precise, he cannot correct his own mistake without further orders. Isn’t that what you reported concerning the robot on the ship? How then can we send a robot to ﬁnd a ﬂaw in a mechanism when we cannot possibly give precise orders, since we know nothing about the ﬂaw ourselves? ‘Find out what’s wrong’ is not an order you can give to a robot; only to a man. The human brain, so far at least, is beyond calculation.”

Black sat down abruptly and stared at the psychologist in dismay. Her words struck sharply on a substratum of understanding that had been larded over with emotion. He found himself unable to refute her.

Worse than that, a feeling of defeat encompassed him. He said, “You might have said this before I left.”

“I might have,” agreed Dr. Calvin, “but I noticed your very natural fear for your sanity. Such an overwhelming concern would easily have hampered your eﬃciency as an investigator, and it occurred to me to let you think that my only motive in sending you was that I valued a robot more. That, I thought, would make you angry, and anger, my dear Dr. Black, is sometimes a very useful emotion. At least, an angry man is never quite as afraid as he would be otherwise. It worked out nicely, I think.” She folded her hands loosely in her lap and came as near a smile as she ever had in her life.

Black said, “I’ll be damned.” Susan Calvin said, “So now, if you’ll take my advice, return to your job, accept your status as hero, and tell your reporter friend the details of your brave deed. Let that be the big news you promised him.”

Slowly, reluctantly, Black nodded.

Schloss looked relieved; Kallner burst into a toothy smile. They held out hands, not having said a word in all the time that Susan Calvin had spoken, and not saying a word now.

Black took their hands and shook them with some reserve. He said, “It’s your part that should be publicized, Dr. Calvin.”