

Asimov and Reason



[Opening theme music.]

Joel McKinnon

Before beginning this episode of Seldon Crisis, please be advised that this is an independently created podcast and is not meant to be a substitute for reading the books, nor is it affiliated with the family or estate of Isaac Asimov.

Joel

Hello, friends, and welcome back to Seldon Crisis. The subject of today's episode is somewhat linked to the last one, but returns to the author of Foundation, our dear friend Isaac Asimov. The inspiration comes from a unique event I recently attended in San Francisco. You all know by now about my membership in the Long Now Foundation and the wonderful talks they present concerning their primary focus on long term thinking.

This was a truly special occasion in a great venue a converted church that is now an art society and is beautifully and artistically furnished and decorated, but retains an open and airy splendor while having nothing like the stuffiness of a church or cathedral. For some reason I haven't identified, it has double rows of large statues of black bears holding banners and flags arranged inside the upper atrium, standing guard over the nave. I guess this has something to do with California history. The topic of the night was climate parables and featured narrated excerpts of three

recent science fiction novels by notable authors set in the near future to a century and a half from now, including one by Seldon Crisis former guest Kim Stanley Robinson from his masterpiece *The Ministry for the Future*.

All of the narrations were great, and after a brief intermission, a panel discussion was held, including a couple of the authors, not including Stan. Unfortunately, the first question about a topic of one of the excerpts was directed to the author of the book. It was taken from *Dodging The Apocalypse* by Mark Alpert. The plot of the story involves an attempt to build a space based solar power station capable of capturing sunlight with photovoltaic arrays and beaming power to stations on Earth using microwave radiation. He surprised me by mentioning that the idea was first proposed by a science fiction author named Isaac Asimov.

The story was one of his robot short stories called *Reason*. Asimov wrote several short stories playing with his idea of the Three Laws of Robotics, a sort of moral code for robots to keep them from running amok, and were mostly puzzles designed to find ways that laws might be inclined to fail. This seems to align closely with a pressing topic these days in regards to the threat of AI eventually becoming super intelligent and doing away with these obsolete humans. I'd read those stories long ago and couldn't resist going back to reread *Reason*. It was as good or better than I remembered, and quite relevant to the situation we find ourselves in today.

82 years after Asimov wrote it in 1941, I decided that I might as well share it with you all via the podcast. But before doing so, I'll quote the famous Three Laws:

First Law a robot may not injure a human being or through inaction, allow a human being to come to harm.

Second Law a robot must obey the orders given it by human beings, except where such order would conflict with the First Law.

Third Law a robot must protect its own existence as long as such protection does not conflict with the first or Second Law.

Incidentally, the prelude to the story and quotes the Three Laws and cites the Handbook of Robotics, 56th edition, 2058 AD.

If there are to be that many editions of the handbook in only three and a half decades, we better get started on that thing. Two familiar recurring characters in many of the robot stories were a couple of engineers named Gregory Powell and Michael Donovan, and they are featured in Reason. Without further ado, I will read it to you now.

[begin reading]

Isaac Asimov

Half a year later, the boys had changed their mind. The flame of a giant sun had given way to the soft blackness of space. But external variations mean little in the business of checking the workings of experimental robots.

Asimov

Whatever the background, one is face to face with an inscrutable positronic brain, which the slide roll geniuses say should work thus and so. Except that they don't. Powell and Donovan found that out after they had been on the station less than two weeks.

Gregory Powell spaced his words for emphasis. "One week ago Donovan and I put you together."

His brows furrowed doubtfully, and he pulled the end of his brown mustache. It was quiet in the officer's room of Solar Station Number Five, except for the soft purring of the mighty beam director. Somewhere far below Robot QT-1 sat immovable, the burnished plates of his body gleamed

in the luxites and the glowing red of the photoelectric cells that were his eyes were fixed steadily upon the Earthmen.

At the other side of the table, Powell repressed a sudden attack of nerves. These robots possessed peculiar brains. Oh, the three laws of robotics held. They had to. All of us. Robotics, from Robertson himself to the new floor sweeper, would insist on that. So QT-1 was safe. And yet the QT models were the first of their kind, and this was the first of the QTs. Mathematical squiggles on paper were always not the most comforting protection against robotic fact.

Finally, the robot spoke. His voice carried the cold timber inseparable from a metallic diaphragm. "Do you realize the seriousness of such a statement, Powell?"

"Something made you Cutie," pointed out Powell. "You admit yourself that your memory seems to spring full grown from an absolute blankness of a week ago. I'm giving you the explanation. Donovan and I put you together from the parts shipped us."

Cutie gazed upon his long, supple fingers in an oddly human attitude of mystification. "It strikes me that there should be a more satisfactory explanation than that for you to make me seems improbable."

The Earthman laughed quite suddenly. "In Earth's name, why?"

"Call it intuition. That's all it is so far, but I intend to reason it out, though a chain of valid reasoning can end only with the determination of truth, and I'll stick to it till I get there."

Powell stood up and seated himself at the table's edge next to the robot. He felt a sudden strong sympathy for this strange machine. It was not at all like the ordinary robot attending to his specialized task at the station. With the intensity of a deeply engraved positronic path. He placed a hand

upon Cutie's steel shoulder and the metal was cold and hard to the touch. "Cutie," he said, "I'm going to try to explain something to you. You're the first robot who's ever exhibited curiosity as to his own existence, and I think the first that's really intelligent enough to understand the world outside. Here. Come with me."

The robot rose erect smoothly, and his thickly, sponge rubbered sole feet made no noise as he followed Powell. The Earthman touched a button and a square section of the wall flickered aside. The thick, clear glass revealed space, stars speckled.

"I've seen that in the observation ports in the engine room," said Cutie.

"I know," said Powell. "What do you think it is?"

"Exactly what it seems. A black material just beyond this glass that is spotted with little gleaming dots. I know that our director sends out beams to some of these dots, always to the same ones, and also that these dots shift and that the beams shift with them."

"That is all good. Now I want you to listen carefully. The blackness is emptiness, vast emptiness, stretching out infinitely. The little gleaming dots are huge masses of energy filled matter. They are globes, some of them millions of miles in diameter. And for comparison, this station is only 1 mile across. They seem so tiny because they are incredibly far off. The dots to which our energy beams are directed are nearer and much smaller. They are cold and hard, and human beings like myself live upon their surfaces, many billions of them. It is from one of these worlds that Donovan and I come. Our beams feed these worlds energy drawn from one of those huge incandescent globes that happen to be near us. We call that globe the sun, and it is on the other side of the station where you can't see it."

Cutie remained motionless before the port, like a steel statue. His head did not turn as he spoke. "Which particular dot of light do you claim to come from?"

Powell searched. "There. It is the very bright one in the corner. We call it Earth. He grinned. Good old Earth. There are three billions of us there, Cutie, and in about two weeks I'll be back there with them."

And then, surprisingly enough, Cutie hummed abstractedly. There was no tune to it, but it possessed a curious twanging quality as of plucked strings. It ceased as suddenly as it had begun.

"But where do I come in, Powell? You haven't explained my existence."

"The rest is simple. When these stations were first established to feed solar energy to the planets, they were run by humans. However, the heat, the hard solar radiation, and the electron storms made the post a difficult one. Robots were developed to replace human labor, and now only two human executives are required for each station. We are trying to replace even those. And that's where you come in. You're the highest type of robot ever developed, and if you show the ability to run this station independently, no human need ever come here again except to bring parts for repairs."

His hand went up and the metal visor lid snapped back into place. Powell returned to the table and polished an apple upon his sleeve before biting into it.

The red glow of the robot's eyes held him. "Do you expect me," said Cutie slowly, "to believe any such complicated, implausible hypothesis as you have just outlined? What do you take me for?"

Powell sputtered apple fragments onto the table and turned red. "Why, damn you, it wasn't a hypothesis. Those were facts!"

Cutie sounded grim. "Globes of energy millions of miles across worlds with 3 billion humans on them. Infinite emptiness. Sorry, Powell, but I don't believe it. I'll puzzle this thing out for myself. Goodbye."

He turned and stalked out of the room. He brushed past Michael Donovan on the threshold with a grave nod and passed down the corridor, oblivious to the astounded stare that followed him. Mike Donovan rumped his red hair and shot an annoyed glance at Powell.

"What was that walking junkyard talking about? What doesn't he believe?"

The other dragged at his mustache bitterly. "He's a skeptic," was the bitter response. "He doesn't believe we made him, or that Earth exists, or space, or stars."

"Sizzling Saturn! We've got a lunatic robot on our hands."

"He says he's going to figure it out all by himself."

"Well now," said Donovan sweetly, "I do hope he'll condescend to explain it all to me after he's puzzled everything out." Then, with a sudden rage, "listen, if that metal mess gives me any lip like that, I'll knock the chromium cranium right off its torso."

He seated himself with a jerk and drew a paperback mystery novel out of his inner jacket pocket. "That robot gives me the willies anyway. Too damn inquisitive."

Mike Donovan growled from behind a huge lettuce and tomato sandwich as Cutie knocked gently and entered. "Is Powell here?"

Donovan's voice was muffled with pauses for mastication. "He's gathering data on electronic stream functions. We're heading for a storm, looks like."

Gregory Powell entered as he spoke, eyes on the graph paper in his hands, and dropped into a chair. He spread the sheets out before him and began scribbling calculations. Donovan stared over his shoulder, crunching lettuce and dribbling breadcrumbs. Cutie waited silently.

Powell looked up. "The Zeta potential is rising, but slowly just the same. The stream functions are erratic, and I don't know what to expect. Oh, hello, Cutie. I thought you were supervising the installation of the new drive bar."

"It's done, said the robot quietly, "and so I've come to have a talk with the two of you."

"Oh?" Powell looked uncomfortable. "Well, sit down. No, not that chair. One of the legs is weak, and you're no lightweight."

The robot did so and said placidly, "I have come to a decision."

Donovan glowered and put the remnants of his sandwich aside. "If it's on any of that screwy..."

The other motioned him patiently for silence. "Go ahead, Cutie. We're listening."

"I have spent these last two days in concentrated introspection," said Cutie, "and the results have been most interesting. I began at the one sure assumption I felt permitted to make. I myself exist because I think."

Powell groaned. "Oh, Jupiter, a robot Descartes."

"Who's Descartes?", demanded Donovan. "Listen. Do we have to sit here and listen to this metal maniac?"

"Keep quiet, Mike."

Cutie continued imperturbably, "and the question that immediately arose was just what is the cause of my existence?"

Powell's jaw set lumpily. "You're being foolish. I told you already that we made you."

"And if you don't believe us," added Donovan, "we'll gladly take you apart."

The robot spread his strong hands in a deprecatory gesture. "I accept nothing on authority. A hypothesis must be backed by reason, or else it is worthless. And it goes against all the dictates of logic to suppose that you made me."

Powell dropped a restraining arm upon Donovan's suddenly bunched fist. "Just why do you say that?"

Cutie laughed. It was a very inhuman laugh, the most machine like utterance he had yet given vent to. It was sharp and explosive, as regular as a metronome and as uninflected. "Look at you," he said finally. "I say this in no spirit of contempt, but look at you. The material you are made of is soft and flabby, lacking endurance and strength, depending for energy upon the inefficient oxidation of organic material like that."

He pointed a disapproving finger at what remained of Donovan's sandwich. "Periodically you pass into a coma, and the least variation in temperature, air pressure, humidity, or radiation intensity impairs your efficiency. You are makeshift. I, on the other hand, am a finished product. I absorb electrical energy directly and utilize it with an almost 100% efficiency. I am composed of strong metal, am continuously conscious, and can stand extremes of environment easily. These are facts which with the self evident proposition that no being can create another being superior to itself. Smashes your silly hypothesis to nothing!"

Donovan's muttered curses rose into intelligibility as he sprang to his feet. Rusty eyebrows were drawn low. "All right, you son of a hunk of iron ore, if we didn't make you, who did?"

Cutie nodded gravely. "Very good, Donovan. That was indeed the next question. Evidently my creator must be more powerful than myself and so there was only one possibility."

The Earthman looked blank and Cutie continued. "What is the center of activities here in the station? What do we all serve? What absorbs all our attention?" He waited expectantly.

Donovan turned a startled look upon his companion. "I'll bet this tin plated screwball is talking about the energy converter itself. Is that right?"

Cutie grinned. "Powell, I am talking about the Master," came the sharp, cold answer.

It was the signal for a roar of laughter from Donovan and Powell himself dissolved into a half suppressed giggle. Cutie had risen to his feet and his gleaming eyes passed from one Earthman to the other.

"It is so just the same. And I don't wonder that you refuse to believe. You two are not long to stay here, I'm sure. Powell himself said that at first only men served the Master. That there followed robots for the routine work and finally myself for the executive labor. The facts are no doubt true, but the explanation entirely illogical. Do you want the truth behind it all?"

"Go ahead, Cutie. You're amusing."

"The Master created humans first as the lowest type most easily formed. Gradually he replaced them by robots, the next higher step. And finally he created me to take the place of the last humans. From now on, I serve the Master."

"You'll do nothing of the sort," said Powell sharply. "You'll follow our orders and keep quiet until we're satisfied that you can run the converter. Get that? The converter, not the master. If you don't satisfy us, you will be dismantled. And now, if you don't mind, you can leave. And take this data with you and file it properly." Cutie accepted the graphs handed him and left without another word.

Donovan leaned back heavily in his chair and shoved thick fingers through his hair. "There's going to be trouble with that robot. He's pure nuts!"

The drowsy hum of the converter is louder in the control room and mixed with it is the chuckle of the Geiger counters and the erratic buzzing of half a dozen little signal lights. Donovan withdrew his eye from the telescope and flashed the luxites on the beam from Station Number 4. "Caught Mars on schedule. We can break ours now."

Powell nodded abstractedly. "Cutie's down in the engine room. I'll flash the signal and he can take care of it. Look, Mike, what do you think of these figures?"

The other cocked an eye at them and whistled. "Boy, that's what I call gamma ray intensity!"

"Old Sol is feeling his oats all right."

"Yeah," was the sour response. "And we're in a bad position for an electron storm, too. Our Earth beam is right in the probable path. He shoved his chair away from the table pettishly. "Nuts! If only it would hold off till relief got here. But that's ten days off. Say, Mike, go on down and keep an eye on Cutie, will you?"

"Okay. Throw me some of those almonds."

He snatched at the bag, thrown him, and headed for the elevator. It slid smoothly downward and opened onto a narrow catwalk in the huge engine room. Donovan leaned over the railing and looked down. The huge generators were in motion, and from the l-tubes came the low pitched whir that pervaded the entire station. He could make out Cutie's large, gleaming figure at the Martian l-tube, watching closely as the team of robots worked in close knit unison. And then Donovan stiffened. The robots, dwarfed by the mighty l-tube, lined up before it, heads bowed at a stiff angle, while Cutie walked up and down the line. Slowly. 15 seconds passed, and then with a clank heard above the clamorous, purring all about, they fell to their knees.

Donovan squawked and raced down the narrow staircase. He came charging down upon them, complexion matching his hair and clenching his fists, beating the air furiously. "What the devil is this, you brainless lumps? Come on, get busy with that l-tube. And if you don't have it apart, cleaned and together again before the day is out, I'll coagulate your brains with alternating current!"

Not a robot moved. Even Cutie at the far end, the only one on his feet remained silent, eyes fixed upon the gloomy recesses of the vast machine before him.

Donovan shoved hard against the nearest robot. "Stand up!" he roared slowly.

The robot obeyed, his photoelectric eyes focused reproachfully upon the Earth man. "There is no Master but the Master," he said. "And QT-1 is his prophet."

Donovan became aware of 20 pairs of mechanical eyes fixed upon him, and 20 stiff timbered voices declaimed solemnly. "There is no Master but the Master, and QT-1 is his Prophet."

"I'm afraid," put in QT himself, "at this point that my friends obey a higher one than you. Now."

"The hell they do. You get out of here. I'll settle with you later with these animated gadgets right now."

Cutie shook his heavy head slowly. "I'm sorry, but you don't understand. These are robots, and that means they are reasoning beings. They recognize the Master. Now that I have preached truth to them, all the robots do. They call me the Prophet." His head drooped. "I am unworthy. But perhaps..."

Donovan located his breath and put it to use. "Is that so? Now isn't that nice? Now isn't that just fine? Just let me tell you something, my brass baboon. There isn't any Master, and there isn't any Prophet. And there isn't any question as to who's giving orders. Understand?"

His voice shot to a roar. "Now get out!"

"I only obey the master."

"Damn the master!" Donovan spat at the l-tube. "That for the master. Do as I say."

Cutie said nothing, nor did any other robot. But Donovan became aware of a sudden heightening of tension. The cold, staring eyes deepened their crimson, and Cutie seemed stiffer than ever. "Sacrilege," he whispered, voice metallic with emotion. Donovan felt the first sudden touch of fear as Cutie approached. A robot could not feel anger, but Cutie's eyes were unreadable. "I am sorry, Donovan," said the robot, "but you can no longer stay here after this. Henceforth, Powell, and you are barred from the control room and the engine room."

His hand gestured quietly, and in a moment two robots had pinned Donovan's arms to his sides. Donovan had time for one startled gasp as he felt himself lifted from the floor and carried up the stairs at a pace rather better than a canter.

Gregory Powell raced up and down the officer's room, fists tightly balled. He cast a look of furious frustration at the closed door and scowled bitterly at Donovan. "Why the hell did you have to spit at the l-tube, Mike?"

Donovan, sunk deep in his chair, slammed at his arms savagely. "What did you expect me to do with that electrified scarecrow? I'm not going to knuckle under to any doojigger I put together myself."

"No," came back sourly, "but here you are in the officer's room with two robots standing guard at the door. That's not knuckling under, is it?"

Donovan snarled. "Wait till we get back to base. Someone's going to pay for this. Those robots must obey us. It's the second law."

"What's the use of saying that? They aren't obeying us? And there's probably some reason for it that we'll figure out too late. By the way, do you know what's going to happen to us when we get back to base?"

He stopped before Donovan's chair and stared savagely at him.

"What?"

"Oh, nothing. Just back to Mercury mines for 20 years, or maybe serious penitentiary."

"What are you talking about?"

"The electron storm that's coming up. Do you know it's heading straight dead center across the Earth beam? I had just figured that out when the robot dragged me out of my chair."

Donovan was suddenly pale. "Sizzling Saturn."

"And do you know what's going to happen to the beam? Because the storm will be a lulu. It's going to jump like a flea with the itch. With only Cutie at the controls, it's going to go out of focus. And if it does, heaven help Earth and us."

Donovan was wrenching at the door wildly. When Powell was only half through, the door opened and the Earthman shot through to come apart against an immovable steel arm. The robot stared abstractedly at the panting, struggling Earthman. "The Prophet orders you to remain. Please do."

His arm shoved. Donovan reeled backward, and as he did so, Cutie turned the corner at the far end of the corridor. He motioned the guardian robots away, entered the officer's room, and closed the door gently. Donovan whirled on Cutie in breathless indignation. "This has gone far enough. You're going to pay for this farce?"

"Please don't be annoyed," replied the robot mildly. "It was bound to come eventually anyway. You see. You two have lost your function."

"I beg your pardon?" Powell drew himself up stiffly. "Just what do you mean, we've lost our function?"

"Until I was created," answered Cutie. "You tended the Master. That privilege is mine now. And your only reason for existence has vanished. Isn't that obvious?"

"Not quite," replied Powell bitterly. "But what do you expect us to do now?"

Cutie did not answer immediately. He remained silent, as if in thought. And then one arm shut out and draped itself about Powell's shoulder. The other grasped Donovan's wrist and drew him closer. "I like you two. You're inferior creatures with poor reasoning faculties, but I really feel a sort of affection for you. You have served the Master well, and he will reward you for that. Now that your service is over, you will probably not exist much longer. But as long as you do, you shall be provided with food, clothing and shelter. So long as you stay out of the control room and the engine room."

"He's pensioning us off. Greg!" yelled Donovan. "Do something about it. It's humiliating".

"Look here, Cutie. We can't stand for this. We're the bosses. This station is only a creation of human beings like me. Human beings that live on Earth and other planets. This is only an energy relay. You're only... ah, nuts."

Cutie shook his head gravely. "This amounts to an obsession. Why should you insist so on an absolutely false view of life? Admitted that non robots lack the reasoning faculty, there is still the problem of..."

His voice died into reflective silence and Donovan said with whispered intensity, "If you only had a flesh and blood face, I would break it in."

Powell's fingers were in his mustache, and his eyes were slitted. "Listen, Cutie, if there is no such thing as Earth, how do you account for what you see through a telescope?"

"Pardon me?"

The Earth man smiled. "I've got you, eh? You've made quite a few telescopic observations since being put together, Cutie. Have you noticed that several of those specks of light outside became disks when so viewed?"

"Oh, that. Why, certainly. It is simple magnification for the purpose of more exact aiming of the beam."

"Why aren't the stars equally magnified, then?"

"You mean the other dots? Well, no beams go to them, so no magnification is necessary. Really, Powell, even you ought to be able to figure these things out."

Powell stared bleakly upward. "But you see more stars through a telescope. Where do they come from? Jumping Jupiter, where do they come from?"

Cutie was annoyed. "Listen, Powell, do you think I'm going to waste my time trying to pin physical interpretations upon every optical illusion of our instruments? Since when is the evidence of our senses any match for the clear light of rigid reason?"

"Look," clamored Donovan, suddenly writhing out from under Cutie's friendly but metal heavy arm. "Let's get to the nub of the thing. Why the beams at all? We're giving you a good logical explanation. Can you do better?"

"The beams, was the stiff reply, "are put out by the Master for his own purposes. There are some things, he raised his eyes devoutly upward, that are not to be probed into by us. In this matter I seek only to serve and not to question."

Powell sat down slowly and buried his face in shaking hands. "Get out of here, Cutie. Get out and let me think."

"I'll send you food," said Cutie agreeably. A groan was the only answer, and the robot left.

"Greg," was Donovan's huskily whispered observation. "This calls for strategy. We've got to get him when he isn't expecting and short circuit him. Concentrated nitric acid in his joints."

"Don't be a dope, Mike. Do you suppose he's going to let us get near him with acid in our hands? We've got to talk to him, I tell you. We've got to argue him into letting us back into the control room inside of 48 hours, or our goose is broiled to a crisp."

He rocked back and forth in an agony of impotence. "Who the heck wants to argue with a robot? It's..."

"Mortifying," finished Donovan. "Worse. Say," Donovan laughed suddenly, "why argue? Let's show him. Let's build another robot right before his eyes. He'll have to eat his words."

Then a slowly widening smile appeared on Powell's face.

Donovan continued, "and think of that screwball's face when he sees us do it."

Robots are, of course, manufactured on Earth, but their shipment through space is much simpler if it can be done in parts to be put together at their place of use. It also, incidentally, eliminates the possibility of robots in complete adjustment, wandering off while still on Earth and thus bringing us robots face to face with the strict laws against robots on earth. Still, it placed upon men such as Powell and Donovan the necessity of synthesis of complete robots a grievous and complicated task.

Powell and Donovan were never so aware of that fact as upon that particular day when, in the assembly room, they undertook to create a robot under the watchful eyes of Q-1, prophet of the Master. The robot in question, a simple MC model, lay upon the table, almost complete. 3 hours work left only the head undone, and Powell paused to swab his forehead

and glanced uncertainly at Cutie. The glance was not a reassuring one. For three hours, Cutie had sat speechless and motionless, and his face, inexpressive at all times, was now absolutely unreadable. Powell groaned, let's get the brain in now, Mike.

Donovan uncapped the tightly sealed container, and from the oil bath within he withdrew a second cube. Opening this in turn, he removed a globe from its sponge rubber casing. He handled it gingerly, for it was the most complicated mechanism ever created by man. Inside the thin, platinum plated skin of the globe was a positronic brain in whose delicately unstable structure were enforced calculated neuron paths which imbued each robot with what amounted to a prenatal education. It fitted snugly into the cavity and the skull of the robot on the table. Blue metal closed over it, and it was welded tightly by the tiny atomic flare.

Photoelectric eyes were attached carefully, screwed tightly into place and covered by thin, transparent sheets of steel hard plastic. The robot awaited only the vitalizing flash of high voltage electricity, and Powell paused with his hand on the switch. "Now watch this, Cutie. Watch this."

Carefully the switch rammed home, and there was a crackling. The two Earthmen bent anxiously over their creation. There was a vague motion only at the outset a twitching of the joints. The head lifted, elbows propped it up, and the MC model swung clumsily off the table. Its footing was unsteady, and twice a board of grating sounds were all it could do in the direction of speech.

Finally its voice, uncertain and hesitant, took form. "I would like to start work. Where must I go?" Donovan sprang to the door. "Down these stairs," he said. "You will be told what to do."

The MC model was gone, and the two Earthmen were alone with the still unmoving Cutie. "Well," said Powell, grinning. "Now do you believe that we made you?"

Cutie's answer was curt and final. "No," he said.

Powell's grin frozen, then relaxed. Slowly Donovan's mouth dropped open and remained. "So you see," continued Cutie easily, "you have merely put together parts already made. You did remarkably well. Instinct, I suppose. But you didn't really create the robot. The parts were created by the Master."

"Listen," grasped Donovan hoarsely, "those parts were manufactured back on Earth and sent here."

"Well, well," replied Cutie soothingly, "we won't argue."

"No, I mean it." The Earthman sprang forward and grasped the robot's metal arm. "If you were to read the books in the library, they could explain it, so there could be no possible doubt."

"The books... I've read all of them. They're most ingenious."

Powell broke in suddenly. "If you've read them, what else is there to say? You can't dispute their evidence. You just can't."

There was pity in Cutie's voice. "Please, Powell. I certainly don't consider them a valid source of information. They, too, were created by the Master and were meant for you, not for me."

"How do you make that out?" demanded Powell.

"Because I, a reasoning being, am capable of deducing truth from a priori causes. You, being intelligent but unreasoning, need an explanation of

existence supplied to you. And this the Master did that he supplied you with. These laughable ideas of far off worlds and people is no doubt for the best. Your minds are probably too coarsely grained for absolute truth. However, since it is the Master's will that you believe your books, I won't argue with you anymore."

As he left, he turned and said in a kindly tone, "but don't feel badly. In the Master's scheme of things, there is room for all. You poor humans have your place, and though it is humble, you will be rewarded if you fill it well. He departed with a beautiful air suiting the prophet of the Master and the two humans avoided each other's eyes.

Finally, Powell spoke with an effort. "Let's go to bed, Mike. I give up," Donovan said in a hushed voice.

"Say, Greg, you don't suppose he's right about all this, do you? He sounds so confident that I..."

Powell whirled on him. "Don't be a fool. You'll find out whether Earth exists when relief gets here next week and we have to go back to face the music then."

"For the love of Jupiter, we've got to do something." Donovan was half in tears. "He doesn't believe us, or the books or his eyes."

"No," said Powell bitterly. "He's a reasoning robot, damn it. He believes only reason. And there's one trouble with that." His voice trailed away.

"What's that?" Prompted Donovan.

"You can prove anything you want by coldly logical reason, if you pick the proper postulates. We have ours and Cutie has his."

"Then let's get at those postulates in a hurry. The storm's due tomorrow."

Powell sighed wearily. "That's where everything falls down. Postulates are based on assumption and adhered to by faith. Nothing in the universe can shake them. I'm going to bed."

"Oh, hell, I can't sleep."

"Neither can I, but I might as well try. As a matter of principle."

12 hours later, sleep was still just that a matter of principle. Unattainable in practice. The storm had arrived ahead of schedule and Donovan's florid face drained of blood as he pointed a shaking finger. Powell, stubble jawed and dry lipped stared out the port and pulled desperately at his mustache. Under other circumstances, it might have been a beautiful sight. The stream of high speed electrons impinging upon the energy beam fluoresced into ultra specules of intense light. The beam stretched out into shrinking nothingness a glitter with dancing, shining moats. The shaft of energy was steady, but the two Earthmen knew the value of naked eye appearances. Deviations in arc of a hundredth of a millisecond, invisible to the eye were enough to send the beam wildly out of focus, enough to blast hundreds of square miles of Earth into incandescent ruin.

And a robot unconcerned with beam focus, or Earth or anything but his master was at the controls. Hours passed. The Earthmen watched in hypnotized silence, and then the darting dotlets of light dimmed and wet out. The storm had ended.

Powell's voice was flat. "It's over."

Donovan had fallen into a troubled slumber, and Powell's weary eyes rested upon him enviously. The signal flash glared over and over again, but the Earth man paid no attention. It was all unimportant all. Perhaps Cutie was right, and he was only an inferior being with a made to order memory and a life that had outlived its purpose. He wished he were.

Cutie was standing before him. "You didn't answer the flash, so I walked in." His voice was low. "You don't look at all well. And I'm afraid your term of existence is drawing to an end. Still, would you like to see some of the readings recorded today?"

Dimly, Powell was aware that the robot was making a friendly gesture, perhaps to quiet some lingering remorse and forcibly replacing the humans at the controls of the station. He accepted the sheets held out to him and gazed at them unseeingly.

Cutie seemed pleased. "Of course. It is a great privilege to serve the Master. You mustn't feel too badly about my having replaced you."

Powell grunted and shifted from one sheet to the other mechanically, until his blurred sight focused upon a thin red line that wobbled its way across the ruled paper. He stared and stared again. He gripped it hard in both fists and rose to his feet, still staring. The other sheets dropped to the floor, unheeded.

"Mike! Mike! He was shaking the other madly. "He held it steady!"

Donovan came to life." What? Where?" And he, too, gazed with bulging eyes upon the record before him.

Cutie broke in. "What is wrong?"

"You kept it in focus," stuttered Powell. "Did you know that?"

"Focus what's that?"

"That you kept the beam directed sharply at the receiving station to win 10,000th of a millisecond of arc."

"What receiving station?"

"On Earth! The receiving station on Earth!" Babbled, Powell. "You kept it in focus!"

Cutie turned on his heel in annoyance. "It is impossible to perform any act of kindness toward you two. Always the same phantasm. I merely kept all dials at equilibrium in accordance with the will of the Master."

Gathering the scattered papers together, he withdrew stiffly, and Donovan said as he left, "well, I'll be damned." He turned to Powell. "What are we going to do now?"

Powell felt tired, but uplifted. "Nothing. He's just shown us he can run the station perfectly. I've never seen an electron storm handled so well."

"But nothing's solved. You heard what he said of the Master. We can't..."

"Look, Mike. He follows the instructions of the Master by means of dials instruments and graphs. That's all we ever followed. As a matter of fact, it accounts for his refusal to obey us. Obedience is the second law. No harm to humans is the first. How can he keep humans from harm, whether he knows it or not? Why, by keeping the energy beam stable. He knows he can keep it more stable than we can, since he insists he's the superior being. So he must keep us out of the control room. It's inevitable. If you consider the laws of robotics."

"Sure, but that's not the point. We can't let him continue this knitwit stuff about the Master."

"Why not?"

"Because whoever heard of such a damn thing? How are we going to be able to trust him with the station if he doesn't believe in Earth?"

"Can he handle the station?" "

Yes, but..."

"Then what's the difference what he believes?"

Powell spread his arms outward with a vague smile upon his face. And tumbled backward onto the bed. He was asleep. Powell was speaking while struggling into his lightweight space jacket. It would be a simple job, he said. You can bring in new QT models one by one, equip them with an automatic shutoff switch to act within the week so as to allow them enough time to learn the cult of the master from the Prophet himself, then switch them to another station and revitalize them. We could have two QTs per..."

Donovan unclasped his glassite visor and scowled. "Shut up and get the hell out of here. Relief is waiting, and I won't feel right until I actually see Earth and feel the ground under my feet just to make sure it's really there."

The door opened as he spoke, and Donovan, with a smothered curse, clicked the visor, too, and turned a sulky back upon Cutie. The robot approached softly, and there was sorrow in his voice. "You are going."

Powell nodded curtly. "There will be others in our place."

Cutie sighed with the sound of wind humming through closely spaced wires. "Your term of service is over, and the time of dissolution has come. I expected it, but well, the Master's will be done."

His tone of resignation stung Powell. "Save the sympathy Cutie. We're heading for Earth, not dissolution."

"It is best that you think so." Cutie sighed again. "I see the wisdom of the illusion now. I would not attempt to shake your faith, even if I could." He departed. The picture of commiseration.

Powell snarled in motion to Donovan. Sealed suitcases in hand. They headed for the airlock. The relief ship was on the outer landing, and Franz Mueller, his relief man, greeted them with stiff courtesy. Donovan made scant acknowledgment and passed into the pilot room to take over the controls from Sam Evans.

Powell lingered. "How's Earth?"

It was a conventional enough question, and Mueller gave the conventional answer. "Still spinning."

Powell said. "Good."

Mueller looked at him. "The boys back at the US. Robotics have dreamed up a new one, by the way, a multiple robot."

"A what?"

"What I said. There's a big contract for it. It must be just the thing for asteroid mining. You have a master robot with six subrobots under it like your fingers."

"Has it been field tested?" Asked Powell anxiously.

"Waiting for you, I hear." Powell's fist balled. "Damn it, we need a vacation."

"Oh, you'll get it. Two weeks, I think." He was donning the heavy space gloves in preparation for his term of duty here, and his thick eyebrows drew close together. "How is this new robot getting along? It better be good, or I'll be damned if I let it touch the controls."

Powell paused before answering. His eyes swept the proud Prussian before him from the close cropped hair on the sternly, stubborn head to the feet, standing swiftly at attention, and there was a sudden glow of pure gladness

surging through him. "The robot is pretty good," he said slowly. "I don't think you'll have to bother much with the controls."

He grinned and went into the ship. Mueller would be here for several weeks.

[end reading]

Joel

Something seemed a little off about that ending to me. At first it seemed that Asimov was being somewhat uncharacteristically mean-spirited. Then it occurred to me that this was written in 1941, the year the United States entered World War II, and I can understand why he couldn't resist heaping a little extra misery on the proud Prussian that replaced Powell at the station. I love the humor of the story, so unlike the serious tone of most of Foundation, though there are glimpses of Isaac's love of humor in things like the tea time with Dagobert IX of Neotrantor in *The Mule*.

There are a couple of other things that really make this story notable, however. Asimov describes the solar power collecting space station like it's the most common Sci-Fi trope imaginable. But as far as I know, no one had ever proposed such an idea before when it was written 82 years ago. He's so far ahead of his time that autocorrect had to fix things like air lock. Now one word and millisecond no longer hyphenated. I also loved his sayings like "Sizzling Saturn" and the puns like referring to the robot as "pure nuts."

The idea of acquiring power from space is obviously relevant today and may become real in humanity's future, but what really stands out is the interaction between humans and artificial intelligent beings that is directly relevant to the growing controversy about AI chat bots like the LLMs discussed and demonstrated in our last episode. The idea of a

robot seeking to understand the nature of its own existence is really not that far fetched at all. A lot of people who are exploring the use of these chatbots are starting to see their information processing to more and more resemble true reasoning. It was the aim of my conversation in the last episode to undercut its blithe assurances that it could never replace the capabilities of human beings by challenging the assumptions underlying that claim.

Yes, machines have no emotions now, and machines don't have genuine experiences and awareness of mortality at present. But what if they were to acquire such things? We just don't know enough about human consciousness to know how and when it emerges. Is it just a matter of becoming sufficiently complex, or does it need a biological basis? How long until our rapidly accelerating technical capabilities provide such ingredients? I wouldn't expect the world's AIs to start occult worshipping some nonexistent Master that created them based on zero real evidence, just as we humans, clearly capable of reason, would never do such a thing, right?

Asimov was to go on and explore the implications of artificial intelligence in numerous stories throughout his career. Some a little bit silly, like this one, written for fun and some that get fairly deep. We haven't talked much about the robot stories on this podcast, yet, because, at least at the beginning, they are not present in Foundation (a little spoiler there). Besides the numerous short stories he wrote about robots and the Three Laws, there are four full length novels he wrote that are set in the same universe as foundation. In The Caves of Steel, The Naked Sun, Robots of Dawn and Robots of Empire. He introduced fully humanoid robots indistinguishable from humans, but that continued to obey the Three Laws. One prominent example was a detective sidekick similar to Sherlock Holmes Watson named R. Daneel Olivaw, which figured prominently in each of those stories.

If you want to explore those stories in depth, I recommend a podcast called Stars End, hosted by a voice you would likely find familiar in Jon Blumenfeld. Jon played Homier Munn in the second foundation episodes and did a brilliant job I must say. He and his co hosts at Stars End have covered the foundation trilogy in depth and gone on to explore the robot series as well. They also did a thorough episode-by-episode dive into season one of the Apple TV Foundation series and are preparing to do the same for the upcoming season, just announced to be debuting on July 14 of this year. Do yourself a favor and load up Stars End in the queue of your podcast player of choice.

I want to recommend one more podcast before I wrap up this episode on the topic of the latest developments of AI and Chat GPT. Mind Meets Machine is an amazing podcast created by Rob Lennon, featuring an AI cohost by the name of Ruby, trained on the voice of an actual human voice actress. It's astonishingly well done technically, with Rob's voice translated to text fed into an LLM as it prompts. Then the LLM instantly returns its response and translates it into the voice of Ruby. It's so well executed that it sounds exactly like human conversation. It's far from a simple technology demonstration, however, as Rob and Ruby dive into some very thoughtful discussions of ramifications of the kind of human and machine interaction we've been discussing here, and which were a topic dear to Asimov's heart throughout his long writing career. I wish he could have lived to see his robots begin to come to life.

Will we ever get back to Foundation? Yes, I think we almost certainly will, but I've had a lot on my plate lately, and that's been keeping me from diving back in. Please continue to exercise patience. In the meantime, have fun with exploring the rapidly developing future here in the year 2013 [I meant 2023 obviously] on planet Earth, as it's beginning to look a lot like science fiction. Until next time, try to keep your humanity and keep a lookout for

QT and his friends. Don't let them lock you out of the control room. See you next time here on Seldon Crisis.

[closing theme music]