

Science Fiction/Fantasy

Robot Visions

By Isaac Asimov



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I suppose I should start by telling you who I am. I am a very junior member of the Temporal Group. The Temporalists (for those of you who have been too busy trying to survive in this harsh world of 2030 to pay much attention to the advance of technology) are the aristocrats of physics these days.

They deal with that most intractable of problems—that of moving through time at a speed different from the steady temporal progress of the Universe. In short, they are trying to develop time-travel.

And what am I doing with these people, when I myself am not even a physicist, but merely a—? Well, merely a *merely*.

Despite my lack of qualification, it was actually a remark I made some time before that inspired the Temporalists to work out the concept of VPIT ("virtual paths in time").

You see, one of the difficulties in travelling through time is that your base does not stay in one place relative to the Universe as a whole. The Earth is moving about the Sun; the Sun about the Galactic center; the Galaxy about the center of gravity of the Local Group—well, you get the idea. If you move one day into the future or the past—just one day—Earth has moved some 2.5 million kilometers in its orbit about the Sun. And the Sun has moved in its journey, carrying Earth with it, and so has everything else.

Therefore, you must move through space as well as through time, and it was my remark that led to a line of argument that showed that this was possible; that one could travel with the space-time motion of the Earth not in a literal,

but in a “virtual” way that would enable a time-traveller to remain with his base on Earth wherever he went in time. It would be useless for me to try to explain that mathematically if you have not had Temporalist training. Just accept the matter.

It was also a remark of mine that led the Temporalists to develop a line of reasoning that showed that travel into the past was impossible. Key terms in the equations would have to rise beyond infinity when the temporal signs were changed.

It made sense. It was clear that a trip into the past would be sure to change events there at least slightly, and no matter how slight a change might be introduced into the past, it would alter the present; very likely drastically. Since the past should seem fixed, it makes sense that travel back in time is impossible.

The future, however, is not fixed, so that travel into the future and back again from it would be possible.

I was not particularly rewarded for my remarks. I imagine the Temporalist team assumed I had been fortunate in my speculations and it was they who were entirely the clever ones in picking up what I had said and carrying it through to useful conclusions. I did not resent that, considering the circumstances, but was merely very glad—delighted, in fact—since because of that (I think) they allowed me to continue to work with them and to be part of the project, even though I was merely a—well, merely.

Naturally, it took years to work out a practical device for time travel, even after the theory was established, but I don't intend to write a serious treatise on Temporality. It is my

intention to write of only certain parts of the project, and to do so for only the future inhabitants of the planet, and not for our contemporaries.

Even after inanimate objects had been sent into the future—and then animals—we were not satisfied. All objects disappeared; all, it seemed, travelled into the future. When we sent them short distances into the future—five minutes or five days—they eventually appeared again, seemingly unharmed, unchanged, and, if alive to begin with, still alive and in good health.

But what was wanted was to send something far into the future and bring it back.

"We'd have to send it at least two hundred years into the future," said one Temporalist. "The important point is to see what the future is like and to have the vision reported back to us. We have to know whether humanity will survive and under what conditions, and two hundred years should be long enough to be sure. Frankly, I think the chances of survival are poor. Living conditions and the environment about us have deteriorated badly over the last century."

(There is no use in trying to describe which Temporalist said what. There were a couple of dozen of them altogether, and it makes no difference to the tale I am telling as to which one spoke at any one time, even if I were sure I could remember which one said what. Therefore, I shall simply say "said a Temporalist," or "one said," or "some of them said," or "another said," and I assure you it will all be sufficiently clear to you. Naturally, I shall specify my own statements and that

of one other, but you will see that those exceptions are essential.)

Another Temporalist said rather gloomily, "I don't think I want to know the future, if it means finding out that the human race is to be wiped out or that it will exist only as miserable remnants."

"Why not?" said another. "We can find out in shorter trips exactly what happened and then do our best to so act, out of our special knowledge, as to change the future in a preferred direction. The future, unlike the past, is not fixed."

But then the question arose as to who was to go. It was clear that the Temporalists each felt himself or herself to be just a bit too valuable to risk on a technique that might not yet be perfected despite the success of experiments on objects that were not alive; or, if alive, objects that lacked a brain of the incredible complexity that a human being owned. The brain might survive, but, perhaps, not quite all its complexity might.

I realized that of them all I was least valuable and might be considered the logical candidate. Indeed, I was on the point of raising my hand as a volunteer, but my facial expression must have given me away for one of the Temporalists said, rather impatiently, "Not you. Even you are too valuable." (Not very complimentary.) "The thing to do," he went on, "is to send RG-32."

That *did* make sense. RG-32 was a rather old-fashioned robot, eminently replaceable. He could observe and report—perhaps without quite the ingenuity and penetration of a human being—but well enough. He would be without fear,

intent only on following his orders, and he could be expected to tell the truth.

Perfect!

I was rather surprised at myself for not seeing that from the start, and for foolishly considering volunteering myself. Perhaps, I thought, I had some sort of instinctive feeling that I ought to put myself into a position where I could serve the others. In any case, it was RG-32 that was the logical choice; indeed, the only one.

In some ways, it was not difficult to explain what we needed. Archie (it was customary to call a robot by some common perversion of his serial number) did not ask for reasons, or for guarantees of his safety. He would accept any order he was capable of understanding and following, with the same lack of emotionality that he would display if asked to raise his hand. He would have to, being a robot.

The details took time, however.

"Once you are in the future," one of the senior Temporalists said, "you may stay for as long as you feel you can make useful observations. When you are through, you will return to your machine and come back with it to the very moment that you left by adjusting the controls in a manner which we will explain to you. You will leave and to us it will seem that you will be back a split-second later, even though to yourself it may have seemed that you had spent a week in the future, or five years. Naturally, you will have to make sure the machine is stored in a safe place while you are gone, which should not be difficult since it is quite light. And you will

have to remember where you stored the machine and how to get back to it."

What made the briefing even longer lay in the fact that one Temporalist after another would remember a new difficulty. Thus, one of them said suddenly, "How much do you think the language will have changed in two centuries?"

Naturally, there was no answer to that and a great debate grew as to whether there might be no chance of communication whatever, that Archie would neither understand nor make himself understood.

Finally, one Temporalist said, rather curtly, "See here, the English language has been becoming ever more nearly universal for several centuries and that is sure to continue for two more. Nor has it changed significantly in the last two hundred years, so why should it do so in the next two hundred? Even if it has, there are bound to be scholars who would be able to speak what they might call 'ancient English.' And even if there were not, Archie would still be able to make useful observations. Determining whether a functioning society exists does not necessarily require talk."

Other problems arose. What if he found himself facing hostility? What if the people of the future found and destroyed the machine, either out of malevolence or ignorance?

One Temporalist said, "It might be wise to design a Temporal engine so miniaturized that it could be carried in one's clothing. Under such conditions one could at any time leave a dangerous position very quickly."

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"Even if it were possible at all," snapped another, "it would probably take so long to design so miniaturized machine that we—or rather our successors—would reach a time two centuries hence without the necessity of using a machine at all. No, if an accident of some sort takes place, Archie simply won't return and we'll just have to try again."

This was said with Archie present, but that didn't matter, of course. Archie could contemplate being marooned in time, or even his own destruction, with equanimity, provided he were following orders. The Second Law of Robotics, which makes it necessary for a robot to follow orders, takes precedence over the Third, which makes it necessary for him to protect his own existence.

In the end, of course, all had been said, and no one could any longer think of a warning, or an objection, or a possibility that had not been thoroughly aired.

Archie repeated all he had been told with robotic calmness and precision, and the next step was to teach him how to use the machine. And he learned that, too, with robotic calmness and precision.

You must understand that the general public did not know, at that time, that time-travel was being investigated. It was not an expensive project as long as it was a matter of working on theory, but experimental work had punished the budget and was bound to punish it still more. This was most uncomfortable for scientists engaged in an endeavor that seemed totally "blue-sky."

If there was a *large* failure, given the state of the public purse, there would be a loud outcry on the part of the people,

and the project might be doomed. The Temporalists all agreed, without even the necessity of debate, that only success could be reported, and that until such a success was recorded, the public would have to learn very little, if anything at all. And so *this* experiment, the crucial one, was heart-stopping for everyone.

We gathered at an isolated spot of the semi-desert, an artfully protected area given over to Project Four. (Even the name was intended to give no real hint of the nature of the work, but it always struck me that most people thought of time as a kind of fourth dimension and that someone ought therefore guess what we were doing. Yet no one ever did, to my knowledge.)

Then, at a certain moment, at which time there was a great deal of breath-holding, Archie, inside the machine, raised one hand to signify he was about to make his move. Half a breath later—if anyone had been breathing—the machine flickered.

It was a very rapid flicker. I wasn't sure that I had observed it. It seemed to me that I had merely assumed it *ought* to flicker, if it returned to nearly the instant at which it left—and I saw what I was convinced I ought to see. I meant to ask the others if they, too, had seen a flicker, but I always hesitated to address them unless they spoke to me first. They were *very* important people, and I was merely—but I've said that. Then, too, in the excitement of questioning Archie, I forgot the matter of the flicker. It wasn't at all important.

So brief an interval was there between leaving and returning that we might well have thought that he hadn't left

at all, but there was no question of that. The machine had definitely deteriorated. It had simply *faded*.

Nor was Archie, on emerging from the machine, much better off. He was not the same Archie that had entered that machine. There was a shopworn look about him, a dullness to his finish, a slight unevenness to his surface where he might have undergone collisions, an odd manner in the way he looked about as though he were re-experiencing an almost forgotten scene. I doubt that there was a single person there who felt for one moment that Archie had not been absent, as far as his own sensation of time was concerned, for a long interval.

In fact, the first question he was asked was, "How long have you been away?"

Archie said, "Five years, sir. It was a time interval that had been mentioned in my instructions and I wished to do a thorough job."

"Come, that's a hopeful fact," said one Temporalist. "If the world were a mass of destruction, surely it would not have taken five years to gather that fact."

And yet not one of them dared say: well, Archie, *was* the Earth a mass of destruction?

They waited for him to speak, and for a while, he also waited, with robotic politeness, for them to ask. After a while, however, Archie's need to obey orders, by reporting his observations, overcame whatever there was in his positronic circuits that made it necessary for him to seem polite.

Archie said, "All was well on the Earth of the future. The social structure was intact and working well."

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"Intact and working well?" said one Temporalist, acting as though he were shocked at so heretical a notion.

"Everywhere?"

"The inhabitants of the world were most kind. They took me to every part of the globe. All was prosperous and peaceful."

The Temporalists looked at each other. It seemed easier for them to believe that Archie was wrong, or mistaken, than that the Earth of the future was prosperous and peaceful. It had seemed to me always that, despite all optimistic statements to the contrary, it was taken almost as an article of faith, that Earth was on the point of social, economic, and, perhaps, even physical destruction.

They began to question him thoroughly. One shouted, "What about the forests? They're almost gone."

"There was a huge project," said Archie, "for the reforestation of the land, sir. Wilderness has been restored where possible. Genetic engineering has been used imaginatively to restore wildlife where related species existed in zoos or as pets. Pollution is a thing of the past. The world of 2230 is a world of natural peace and beauty."

"You are *sure* of all this?" asked a Temporalist.

"No spot on Earth was kept secret. I was shown all I asked to see."

Another Temporalist said, with sudden severity, "Archie, listen to me. It may be that you have seen a ruined Earth, but hesitate to tell us this for fear we will be driven to despair and suicide. In your eagerness to do us no harm, you may be

lying to us. This must not happen, Archie. You *must* tell us the truth."

Archie said, calmly, "I am telling the truth, sir. If I were lying, no matter what my motive for it might be, my positronic potentials would be in an abnormal state. That could be tested."

"He's right there," muttered a Temporalist.

He was tested on the spot. He was not allowed to say another word while this was done. I watched with interest while the potentiometers recorded their findings, which were then analyzed by computer. There was no question about it. Archie was perfectly normal. He could not be lying.

He was then questioned again. "What about the cities?"

"There are no cities of our kind, sir. Life is much more decentralized in 2230 than with us, in the sense that there are no large and concentrated clumps of humanity. On the other hand, there is so intricate a communication network that humanity is all one loose clump, so to speak."

"And space? Has space exploration been renewed?"

Archie said, "The Moon is quite well developed, sir. It is an inhabited world. There are space settlements in orbit about the Earth and about Mars. There are settlements being carved out in the asteroid belt."

"You were told all this?" asked one Temporalist, suspiciously

"This is not a matter of hearsay, sir. I have been in space. I remained on the Moon for two months. I lived on a space settlement about Mars for a month, and visited both Phobos and Mars itself. There is some hesitation about colonizing

Mars. There are opinions that it should be seeded with lower forms of life and left to itself without the intervention of the Earthpeople. I did not actually visit the asteroid belt."

One Temporalist said, "Why do you suppose they were so nice to you, Archie? So cooperative?"

"I received the impression, sir," said Archie, "that they had some notion I might be arriving. A distant rumor. A vague belief. They seemed to have been waiting for me."

"Did they say they had expected you to arrive? Did they say there were records that we had sent you forward in time?"

"No, sir."

"Did you ask them about it?"

"Yes, sir. It was impolite to do so but I had been ordered carefully to observe everything I could, so I had to ask them—but they refused to tell me."

Another Temporalist put in, "Were there many other things they refused to tell you?"

"A number, sir."

One Temporalist stroked his chin thoughtfully at this point and said, "Then there must be something wrong about all this. What is the population of the Earth in 2230, Archie? Did they tell you that?"

"Yes, sir. I asked. There are just under a billion people on Earth in 2230. There are 150 million in space. The numbers on Earth are stable. Those in space are growing."

"Ah," said a Temporalist, "but there are nearly ten billion people on Earth now, with half of them in serious misery. How did these people of the future get rid of nearly nine billion?"

"I asked them that, sir. They said it was a sad time."

"A sad time?"

"Yes, sir."

"In what way?"

"They did not say, sir. They simply said it was a sad time and would say no more."

One Temporalist who was of African origin said coldly, "What kind of people did you see in 2230?"

"What kind, sir?"

"Skin color? Shape of eyes?"

Archie said, "It was in 2230 as it is today, sir. There were different kinds; different shades of skin color, hair form, and so on. The average height seemed greater than it is today, though I did not study the statistics. The people seemed younger, stronger, healthier. In fact, I saw no undernourishment, no obesity, no illness—but there was a rich variety of appearances."

"No genocide, then?"

"No signs of it, sir," said Archie. He went on, "There were also no signs of crime or war or repression."

"Well," said one Temporalist, in a tone as though he were reconciling himself, with difficulty, to good news, "it seems like a happy ending."

"A happy ending, perhaps," said another, "but it's almost too good to accept. It's like a return of Eden. What was done, or will be done, to bring it about? I don't like that 'sad time.'"

"Of course," said a third, "there's no need for us to sit about and speculate. We can send Archie one hundred years into the future, fifty years into the future. We can find out, for

what it's worth, just what happened; I mean, just what *will* happen."

"I don't think so, sir," said Archie. "They told me quite specifically and carefully that there are no records of anyone from the past having arrived earlier than their own time—the day I arrived. It was their opinion that if any further investigations were made of the time period between now and the time I arrived, that the future would be changed."

There was almost a sickening silence. Archie was sent away and cautioned to keep everything firmly in mind for further questioning. I half expected them to send me away, too, since I was the only person there without an advanced degree in Temporal Engineering, but they must have grown accustomed to me, and I, of course, didn't suggest on my own that I leave.

"The point is," said one Temporalist, "that it *is* a happy ending. Anything we do from this point on might spoil it. They were expecting Archie to arrive; they were expecting him to report; they didn't tell him anything they didn't want him to report; so we're still safe. Things will develop as they have been."

"It may even be," said another, hopefully, "that the knowledge of Archie's arrival and the report they sent him back to make *helped* develop the happy ending."

"Perhaps, but if we do anything else, we may spoil things. I prefer not to think about the sad time they speak of, but if we try something now, that sad time may still come and be even worse than it was—or will be—and the happy ending won't develop, either. I think we have no choice but to

abandon Temporal experiments and not talk about them, either. Announce failure."

"That would be unbearable."

"It's the only safe thing to do."

"Wait," said one. "They knew Archie was coming, so there must have been a report that the experiments were successful. We don't have to make failures of ourselves."

"I don't think so," said still another. "They heard rumors; they had a distant notion. It was that sort of thing, according to Archie. I presume there may be leaks, but surely not an outright announcement."

And that was how it was decided. For days, they thought, and occasionally discussed the matter, but with greater and greater trepidation. I could see the result coming with inexorable certainty. I contributed nothing to the discussion, of course—they scarcely seemed to know I was there—but there was no mistaking the gathering apprehension in their voices. Like those biologists in the very early days of genetic engineering who voted to limit and hedge in their experiments for fear that some new plague might be inadvertently loosed on unsuspecting humanity, the Temporalists decided, in terror, that the Future must not be tampered with or even searched.

It was enough, they said, that they now knew there would be a good and wholesome society, two centuries hence. They must not inquire further, they dared not interfere by the thickness of a fingernail, lest they ruin all. And they retreated into theory only.

One Temporalist sounded the final retreat. He said, "Someday, humanity will grow wise enough, and develop ways of handling the future that are subtle enough to risk observation and perhaps even manipulation along the course of time, but the moment for that has not yet come. It is still long in the future." And there had been a whisper of applause.

Who was I, less than any of those engaged in Project Four, that I should disagree and go my own way? Perhaps it was the courage I gained in being so much less than they were—the valor of the insufficiently advanced. I had not had initiative beaten out of me by too much specialization or by too long a life of too deep thought.

At any rate, I spoke to Archie a few days later, when my own work assignments left me some free time. Archie knew nothing about training or about academic distinctions. To him, I was a man and a master, like any other man and master, and he spoke to me as such.

I said to him, "How did these people of the future regard the people of their past? Were they censorious? Did they blame them for their follies and stupidities?"

Archie said, "They did not say anything to make me feel this, sir. They were amused by the simplicity of my construction and by my existence, and it seemed to me they smiled at me and at the people who constructed me, in a good-humored way. They themselves had no robots."

"No robots at all, Archie?"

"They said there was nothing comparable to myself, sir. They said they needed no metal caricatures of humanity."

"And you didn't see any?"

"None, sir. In all my time there, I saw not one."

I thought about that a while, then said, "What did they think of other aspects of our society?"

"I think they admired the past in many ways, sir. They showed me museums dedicated to what they called the 'period of unrestrained growth.' Whole cities had been turned into museums."

"You said there were no cities in the world of two centuries hence, Archie. No cities in our sense."

"It was not their cities that were museums, sir, but the relics of ours. All of Manhattan Island was a museum, carefully preserved and restored to the period of its peak greatness. I was taken through it with several guides for hours, because they wanted to ask me questions about authenticity. I could help them very little, for I have never been to Manhattan. They seemed proud of Manhattan. There were other preserved cities, too, as well as carefully preserved machinery of the past, libraries of printed books, displays of past fashions in clothing, furniture, and other minutiae of daily life, and so on. They said that the people of our time had not been wise but they had created a firm base for future advance."

"And did you see young people? Very young people, I mean. Infants?"

"No, sir."

"Did they talk about any?"

"No, sir."

I said, "Very well, Archie. Now, listen to me—"

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If there was one thing I understood better than the Temporalists, it was robots. Robots were simply black boxes to them, to be ordered about, and to be left to maintenance men—or discarded—if they went wrong. I, however, understood the positronic circuitry of robots quite well, and I could handle Archie in ways my colleagues would never suspect. And I did.

I was quite sure the Temporalists would not question him again, out of their newfound dread of interfering with time, but if they did, he would not tell them those things I felt they ought not to know. And Archie himself would not know that there was anything he was not telling them.

I spent some time thinking about it, and I grew more and more certain in my mind as to what had happened in the course of the next two centuries.

You see, it was a mistake to send Archie. He was a primitive robot, and to him people were people. He did not—could not—differentiate. It did not surprise him that human beings had grown so civilized and humane. His circuitry forced him, in any case, to view all human beings as civilized and human; even as god-like, to use an old-fashioned phrase.

The Temporalists themselves, being human, were surprised and even a bit incredulous at the robot vision presented by Archie, one in which human beings had grown so noble and good. But, being human, the Temporalists wanted to believe what they heard and forced themselves to do so against their own common sense.

I, in my way, was more intelligent than the Temporalists, or perhaps merely more clear-eyed.

I asked myself if population decreased from ten billion to one billion in the course of two centuries, why did it not decrease from ten billion to zero? There would be so little difference between the two alternatives.

Who were the billion who survived? They were stronger than the other nine billion, perhaps? More enduring? More resistant to privation? And they were also more sensible, more rational, and more virtuous than the nine billion who died as was quite clear from Archie's picture of the world of two hundred years hence.

In short, then, were they human at all?

They smiled at Archie in mild derision and boasted that *they* had no robots; that they needed no metal caricatures of humanity.

What if they had organic duplicates of humanity instead? What if they had humaniform robots; robots so like human beings as to be indistinguishable from them, at least to the eyes and senses of a robot like Archie? What if the people of the future *were* humaniform robots, all of them, robots that had survived some overwhelming catastrophe that human beings had not?

There were no babies. Archie had seen none. To be sure, population was stable and long-lived on Earth, so there would be few babies in any case. Those few would be taken care of, made much of, be well-guarded, and might not be distributed carelessly through society. But Archie had been on the Moon for two months and population there was growing—and he had still seen no babies.

Perhaps these people of the future were constructed rather than born.

And perhaps this was a good thing. If human beings had died out through their own rages, hatreds, and stupidities, they had at least left behind a worthy successor; a kind of intelligent being that valued the past, preserved it, and moved on into the future, doing their best to fulfill the aspirations of humanity, in building a better, kinder world and in moving out into space perhaps more efficiently than we "real" human beings would have.

How many intelligent beings in the Universe had died out leaving no successor? Perhaps we were the first ever to leave such a legacy.

We had a right to feel proud.

Ought I to tell all this to the world? Or even to the Temporalists? I did not consider that for a moment.

For one thing, they were likely not to believe me. For another, if they *did* believe me, in their rage at the thought of being replaced by robots of any kind, would they not turn on them and destroy every robot in the world and refuse ever to build others? This would mean that Archie's vision of the future, and my own vision, would never come to pass. That, however, would not stop the conditions that were to destroy humanity. It would just prevent a replacement; stop another group of beings, made by humans and honoring humans, from carrying human aspirations and dreams through all the Universe.

I did not want that to happen. I wanted to make sure Archie's vision, and my own improvement of it, would come to pass.

I am writing this, therefore, and I will see to it that it will be hidden, and kept safe, so that it will be opened only two hundred years from now, a little sooner than the time at which Archie will arrive. Let the humaniform robots know that they should treat him well and send him home safely, carrying with him only the information that would cause the Temporalists to decide to interfere with Time no more, so that the future can develop in its own tragic/happy way.

And what makes me so sure I am right? Because I am in a unique position to know that I am.

I have said several times that I am inferior to the Temporalists. At least I am inferior to them in their eyes, though this very inferiority makes me more clear-eyed in certain respects, as I have said before, and gives me a better understanding of robots, as I have also said before.

Because, you see, I, too, am a robot.

I am the first humaniform robot, and it is on me and on those of my kind that are yet to be constructed that the future of humanity depends.

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