THE SCHEMATIC MAN

fiction By FREDERIK POHL *piece by piece, he had programed himself into the computer—now he wondered what would happen when somebody turned it on*

I KNOW I'M NOT REALLY a funny man, but I don't like other people to know it. I do what other people without much sense of humor do: I tell jokes. If we're sitting next to each other at a faculty senate and I want to introduce myself, I probably say: "Bederkind is my name, and computers are my game."

Nobody laughs much. Like all my jokes, it needs to be explained. The joking part is that it was through game theory that I first became interested in computers and the making of mathematical models. Sometimes when I'm explaining it, I say there that the mathematical ones are the only models I've ever had a chance to make. That gets a smile, anyway. I've figured out why: Even if you don't really get much out of the play on words, you can tell it's got something to do with sex, and we all reflexively smile when anybody says anything sexy.

I ought to tell you what a mathematical model is, right? All right. It's simple. It's a kind of picture of something made out of numbers. You use it because it's easier to make numbers move than to make real things move.

Suppose I want to know what the planet Mars is going to do over the next few years. I take everything I know about Mars and I turn it into numbers—a number for its speed in orbit, another number for how much it weighs, another number for how many miles it is in diameter, another number to express how strongly the Sun pulls it toward it and all that. Then I tell the

computer that's all it needs to know about Mars, and I go on to tell it all the same sorts of numbers about the Earth, about Venus, Jupiter, the Sun itself—about all the other chunks of matter floating around in the neighborhood that I think are likely to make any difference to Mars. I then teach the computer some simple rules about how the set of numbers that represents Jupiter, say, affects the numbers that represent Mars: the law of inverse squares, some rules of celestial mechanics, a few relativistic corrections . . . well, actually, there are a lot of things it needs to know. But not more than I can tell it.

When I have done all this—not exactly in English but in a kind of a language that it knows how to handle—the computer has a mathematical model of Mars stored inside it. It will then whirl its mathematical Mars through mathematical space for as many orbits as I like. I say to it, "1997 June 18 2400 GMT," and it . . . it . . . well, I guess the word for it is, it *imagines* where Mars will be, relative to my back-yard Questar, at midnight Greenwich time on the 18th of June, 1997, and tells me which way to point.

It isn't real Mars that it plays with. It's a mathematical model, you see. But for the purposes of knowing where to point my little telescope, it does everything that "real Mars" would do for me, only much faster. I don't have to wait for 1997; I can find out in five minutes.

It isn't only planets that can carry on a mathematical metalife in the memory banks of a computer. Take my friend Schmuel. He has a joke, too, and his joke is that he makes 20 babies a day in his computer. What he means by that is that, after six years of trying, he finally succeeded in writing down the numbers that describe the development of a human baby in its mother's uterus, all the way from conception to birth. The point of that is that then it was comparatively easy to write down the numbers for a lot of the things that happen to babies before they're born. Momma has high blood pressure. Momma smokes three packs a day. Momma catches scarlet fever or a kick in the belly. Momma keeps making it with Poppa every night until they wheel her into the delivery room. And so on. And the point of *that* is that this way, Schmuel can see some of the things that go wrong and make some babies get born retarded, or blind, or with retrolental fibroplasia or an inability to drink cow's milk. It's easier than sacrificing a lot of pregnant women and cutting them open to see.

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OK, you don't want to hear any more about mathematical models, because what kicks are there in mathematical models for you? I'm glad you asked. Consider a for instance. For instance, suppose last night you were watching the *Late, Late* and you saw Carole Lombard, or maybe Marilyn Monroe with that dinky little skirt blowing up over those pretty thighs. I assume you know that these ladies are dead. I also assume that your glands responded to those cathode-tube flickers as though they were alive. And so you do get some kicks from mathematical models, because each of those great girls, in each of their poses and smiles, was nothing but a number of some thousands of digits, expressed as a spot of light on a phosphor tube. With some added numbers to express the frequency patterns of their voices. Nothing else.

And the point of *that* (how often I use that phrase!) is that a mathematical model not only represents the real thing but sometimes it's as good as the real thing. No, honestly. I mean, do you really believe that if it had been Marilyn or Carole in the flesh you were looking at, across a row of footlights, say, that you could have taken away any more of them than you gleaned from the shower of electrons that made the phosphors display their pictures?

I did watch Marilyn on the *Late, Late* one night. And I thought those thoughts; and so I spent the next week preparing an application to a foundation for money; and when the grant came through, I took a sabbatical and began turning myself into a mathematical model. It isn't really that hard. Kookie, yes. But not hard.

I don't want to explain what programs like FORTRAN and SIMSCRIPT and SIR are, so I will only say what we all say: They are languages by which people can communicate with machines. Sort of. I had to learn to speak FORTRAN well enough to tell the machine all about myself. It took five graduate students and ten months to write the program that made that possible, but that's not much. It took more than that to teach a computer to shoot pool. After that, it was just a matter of storing myself in the machine.

That's the part that Schmuel told me was kookie. Like everybody with enough seniority in my department, I have a remote-access computer console in my—well, I called it my "playroom." I did have a party there, once, right after I bought the house, when I still thought I was going to get married. Schmuel caught me one night, walking in the door and down the stairs and finding me methodically typing out my medical history from the ages of four to fourteen. "Jerk," he said, "what makes you think you deserve to be embalmed in a 7094?"

I said, "Make some coffee and leave me alone till I finish. Listen. Can I use your program on the sequelae of mumps?"

"Paranoid psychosis," he said. "It comes on about the age of forty-two." But he coded the console for me and thus gave me access to his programs. I finished and said:

"Thanks for the program, but you make rotten coffee."

"You make rotten jokes. You really think it's going to be *you* in that program. Admit!"

By then, I had most of the basic physiological and environmental stuff on the tapes and I was feeling good. "What's 'me'?" I asked. "If it talks like me, and thinks like me, and remembers what I remember, and does what I would do—who is it? President Eisenhower?"

"Eisenhower was years ago, jerk," he said.

"Turing's question, Schmuel," I said. "If I'm in one room with a teletype. And the computer's in another room with a teletype, programed to model me. And you're in a third room, connected to both teletypes, and you have a conversation with both of us, and you can't tell which is me and which is the machine—then how do you describe the difference? *Is* there a difference?"

He said, "The difference, Josiah, is I can touch you. And smell you. If I was crazy enough, I could kiss you. You. Not the model."

"You could," I said, "if you were a model, too, and were in the machine with me." And I joked with him (Look! It solves the population problem, put everybody in the machine. And, suppose I get cancer. Flesh-me dies. Mathematical-model-me just rewrites its program.), but he was really worried. He really did think I was going crazy, but I perceived that his reasons were not because of the nature of the problem but because of what he fancied was my own attitude toward it, and I made up my mind to be careful of what I said to Schmuel.

So I went on playing Turing's game, trying to make the computer's responses indistinguishable from my own. I instructed it in what a toothache felt like and what I remembered of sex. I taught it memory links between people and phone numbers, and all the state capitals I had won a prize for knowing when I was ten. I trained it to spell "rhythm" wrong, as I had always misspelled it, and to say "place" instead of "put" in conversation, as I have always done because of the slight speech impediment that carried over from my adolescence. I played that game; and by God, I won it.

But I don't know for sure what I lost in exchange.

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I know I lost something.

I began by losing parts of my memory.

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When my cousin Alvin from Cleveland phoned me on my birthday, I couldn't remember who he was for a minute. (The week before, I had told the computer all about my summers with Alvin's family, including the afternoon when we both lost our virginity to the same girl, under the bridge by my uncle's farm.) I had to write down Schmuel's phone number, and my secretary's, and carry them around in my pocket.

As the work progressed, I lost more. I looked up at the sky one night and saw three bright stars in a line overhead. It scared me, because I didn't know what they were until I got home and took out my sky charts. Yet Orion was my first and easiest constellation. And when I looked at the telescope I had made, I could not remember how I had figured the mirror.

Schmuel kept warning me about overwork. I really was working a lot, 15 hours a day and more. But it didn't feel like overwork. It felt as though I were losing pieces of myself. I was not merely teaching the computer to be me but putting pieces of me into the computer. I hated that, and it shook me enough to make me take the whole of Christmas week off. I went to Miami.

But when I got back to work, I couldn't remember how to touch-type on the console anymore and was reduced to pecking out information for the computer a letter at a time. I felt as though I were moving from one place to another in installments, and not enough of me had arrived yet to be a quorum, but what was still waiting to go had important parts missing. And yet I continued to pour myself into the magnetic memory cores: the lie I told my draft board in 1946, the limerick I made up about my first wife after the divorce, what Margaret wrote when she told me she wouldn't marry me.

There was plenty of room in the storage banks for all of it. The computer could hold all my brain had held, especially with the program my five graduate students and I had written. I had been worried about that, at first.

But in the event I did not run out of room. What I ran out of was myself. I remember feeling sort of opaque and stunned and empty; and that is all I remember until now.

Whenever "now" is.

I had another friend once, and he cracked up while working on telemetry studies for one of the Mariner programs. I remember going to see him in the hospital, and him telling me, in his slow, unworried, coked-up voice, what they had done for him. Or to him. Electroshock. Hydrotherapy.

What worries me is that that is at least a reasonable working hypothesis to describe what is happening to me now.

I remember, or think I remember, a sharp electric jolt. I feel, or think I feel, a chilling flow around me.

What does it mean? I wish I were sure. I'm willing to concede that it might mean that overwork did me in and now I, too, am at Restful Retreat, being studied by the psychiatrists and changed by the nurses' aides. Willing to concede it? Dear God, I *pray* for it. I pray that that electricity was just shock therapy and not something else. I pray that the flow I feel is water sluicing around my sodden sheets and not a flux of electrons in transistor modules. I don't fear the thought of being insane; I fear the alternative.

I do not *believe* the alternative. But I fear it all the same. I can't believe that all that's left of me—my id, my ucs, my *me*—is nothing but a mathematical model stored inside the banks of the 7094. But if I am! If I am, dear God, what will happen when—and how can I wait until—somebody turns me on?