

SILICON PSALM

BY JEFF DUNTEMANN

1980

©2001 by Jeff Duntemann. All Rights Reserved.

This work is excerpted from
Firejammer! and Other Stories
by Jeff Duntemann

INTRODUCTION

This was the last story I ever wrote on a typewriter, early in 1980. By then I already had a personal computer—a big hulking 8080-based CP/M system running at a mind-numbing 1 Mhz—but I did not yet have a working printer. So the old IBM Selectric mill, that I had bought with virtually every nickel in the pickle jar back before Clarion in 1973, got one more fevered fling with my imagination.

I sent the story to George Scithers for a lookover, and something about it bothered him. He passed it along to one of his regulars, the estimable Sharon Webb, who was a cardiac nurse and had forgotten more about hearts than I had ever learned. Sharon and I batted it around over the phone until I got the medical tech right, and with her sage advice I produced the second version, which George bought on sight and published in the February 1981 issue of IASFM.

After the story appeared, I got some hate mail for endorsing euthanasia. People who read the story that way entirely miss the point: That if we ever create intelligent machines, we will put them in some horrible ethical binds.

Of all the AIs I've created in my fiction, MACS is by far my favorite. And I've always been quite sure that God heard his prayer.

SILICON PSALM

At three A.M., a little girl who had no heart cried out to the darkness: “Maxie, it hurts! Please make it stop hurting!”

Almost imperceptibly, the six white panels in the ceiling began to glow, filling the room with a brightening grayness. All around the tiny cot were the pale green cabinets of the Medical Automaintenance Control System, which the doctors coldly referred to as MACS, and the little girl called Maxie.

“I’m working on it, Cora. Relax now, and don’t squirm.” The voice came from the third largest of the green cabinets. A med tech had scrawled a smiling face on a piece of yellow foolscap and had taped it to the blank sheet metal, so that Cora would have someplace to look while she spoke to MACS. The med tech had not given MACS a nose, and the eyes were slightly crossed.

MACS had known of the problem for several minutes. What Cora had felt was not really pain at all. MACS studied the girl’s eighty separate brainwaves intensely. Several of the patterns were badly irregular. MACS deduced that a microscopic blood clot had escaped his detection and lodged in Cora’s brain. What she had felt had in fact been a tiny stroke. Fortunately, the embolism had occurred in a remote part of the cerebral cortex with no recognized function.

Unfortunately, it had been her second stroke in two weeks. Worse yet, MACS knew that his machinery was ultimately to blame for the embolisms.

It was now bright enough in the room for MACS to see the thick black cable running from one of his cabinets into the large incision in Cora’s chest. On the other end of that cable was Cora’s artificial heart. The technology was sound, and advancing day by day, but there were limitations. The delicate interface between the plastic of the mechanism and Cora’s arterial walls was a breeding ground for blood clots. MACS had ways-marvelous ways-of detecting and removing the clots as they formed, but inevitably some got past.

MACS watched the ragged edge of her irregular brainwaves round out slightly. He squeezed two tiny ampoules, and measured quantities

of two drugs followed the cable into her heart and bloodstream: one to help dissolve the clot, and a diuretic to reduce any swelling that might cause dangerous pressures on other cerebral arteries. “Feel better, dear?”

“Lots.”

“Was it really a pain? Think hard: Was it some other sort of feeling?”

“Umm...like somebody squeezing my head. And I saw colors. Funny colors. Maxie, I’m mad.”

“Do you remember any of the colors?”

“No. Just colors. And squiggly things. I’m *mad*, Maxie.”

MACS could see that—it was a pattern of brainwaves he had seen before, and instantly recognized, along with more than sixty other feelings and concepts with patterns of their own. MACS searched his memory of the irregular brainwaves to find something like the patterns he saw when Cora thought of a color, and found nothing. MACS realized with regret that he would learn little from the sad experience.

“Why are you mad, dear?” MACS asked gently.

“The colors woke me up. I was dreaming about the Smiling Man.”

Upon her pattern of anger and annoyance MACS saw a note of quiet pleasure. “Did he say anything to you this time?”

“Nope. He never does. Just smiles. I think he wants me to stop yelling so much. But they’re always poking me with needles and things.”

“I do what I can when it hurts you.”

“I know. I’m glad. Maxie, when are they gonna give me a new heart?”

She had asked that before. “Just as soon as one becomes available, Cora dear.”

Just as soon as some poor child was hit by a car, or fell out of a four-story window, or drowned in the park lagoon. Cora was not even first on the queue for a transplantable juvenile heart in that area.

“Does that mean somebody has to die to give me their heart?”

“Yes, dear.”

Cora said nothing. MACS saw an unfamiliar pattern replace her anger, yet he could not bring himself to ask how she was feeling.

Deep inside Cora’s softly-beating plastic heart, MACS’s constant maintenance program went on. Four tiny, torpedo-shaped sensors drifted around the heart’s periphery on minuscule jets of saline solution, trailing a narrow cable behind them. In the nose of the torpedo

was a lens and a microcircuit that changed an image to video signals. Behind another focusing lens was a light source. Perhaps better than anything else, MACS knew what a blood clot looked like. When he saw one, he pursued it with one of the four sensors. To one side of the imaging microcircuit was a hole through which MACS could create a suction effect strong enough to hold a clot and retrieve it for disposal. All four sensors were searching for any sign of a clot.

So far, nothing. It was much worse when Cora moved physically, as when the nurses bathed her or fed her. Movements of the cable could not help but tug at the heart, and flexing at the joining seam between artery and plastic sometimes caused clots to form. The four sensors floated near the four major openings to the heart, watching and waiting.

“Maxie,” the girl said. There was some fear in her brainwaves.

“I’m here, Cora.”

“I want to say my prayers. I think the Smiling Man wants me to say them more. Will you say prayers with me?”

“Of course, dear. Go ahead. I’m with you.”

MACS had assumed Cora was trying to fall asleep and had injected a tranquilizer to help. Her brainwaves had begun to reflect the action of the tranquilizer, and some confusion. “Um..I’m thinking. Oh heck, I’ll say them tomorrow.”

“Maybe you could say just one little one. An easy one. Make one up,” MACS prompted.

“Mmmmmm. . .okay. Dear God be good to Mommy...”

“Dear God be good to Mommy,” MACS echoed.

“...and Dr. Steppins...”

“And Dr. Steppins.”

“...and make it not hurt so much...”

“And make it not hurt so much,” MACS said, with his own emphasis.

“...and please give Maxie hands like Uncle Eddie. Amen.”

“Amen. That’s an odd thing to pray for, Cora. What would I do with hands?”

Cora clenched her fists. “You could keep mine warm, like Uncle Eddie always does when he comes in. I never saw anybody with big warm hands like him.” Cora licked her lips. “Maxie, what happens to you when you die?”

MACS was taken by surprise. “Why, you’ll go to heaven, as Father

Alfredo promised you.”

“Not me, silly. You. When *you* die.”

MACS laughed. “I can’t die, Cora. I’m not alive to begin with.”

Cora’s brainwaves bristled with annoyance. “You liar. If you’re not alive you’re dead and if you’re dead you couldn’t talk to me. Did you ever talk to a dead man? Huh?”

“Your point, dear. I’m neither alive nor dead. I’m a computer program, nothing more.”

“I guess I don’t know what that is.”

MACS paused, and pondered his nature. He knew quite well how he worked, but he also knew the limits of Cora’s vocabulary. “Inside the metal box behind my face is a block made of black crystal called PMDS. It looks like a big brick made of black glass. Inside are trillions of tiny magnetic specks arranged in rows and columns. Doctors and scientists at Zircon Corporation filled this crystal block with a complicated magnetic pattern. The pattern makes the crystal block function as a computer. The scientists made the computer talk and sound as though it were alive. I’m only a magnetic pattern. I was never born, so I can’t die. Don’t worry about it.”

Cora’s brainwaves showed confusion. “I don’t know. You coulda fooled me. Maybe you’re like Frosty the Snowman.”

Nowhere in the two hundred fifty six septillion bits of magnetic domain storage within his crystal block could MACS find a reference to Frosty the Snowman. “I’m afraid I don’t understand, dear.”

“It’s in the song, silly. Some kids made a snowman, and he was a *good* snowman. He was so good that when they finished him and put his hat on him he came alive and started running around with them and talked to the traffic cop and had lots of fun until he melted. Maybe you were such a good computer that when they finished you you came alive and nobody even knew it. Nobody but me. You can’t fool *me*.”

Her brainwaves carried total conviction.

“I would never even try, Cora dear. You’re awfully spunky, you know that?”

Something in Cora seized the words and became agitated. She tossed her head from side to side. “I’d be a whole lot spunkier if they’d pull this old hose out of me!” She reached up with her right hand and took hold of the tube that connected her mechanical heart to MACS’s machinery.

“Cora, *no!*”

Cora gave one hard tug on the half-inch tube. MACS watched in alarm as ragged waveforms of pain echoed up and down her brainwaves. The girl whimpered and let go of the tube.

“You promised me you’d never do that!” MACS scolded.

“Cross my heart. But I ain’t got no heart!” Cora sobbed quietly. “Maxie, I just want to make a snowman.”

“Soon, darling. Real soon.” What was the expression the interns used when they read the queues for transplants?

Real soon now.

MACS delivered another dose of tranquilizers. The girl was far too agitated. The tug on the heart, well-anchored as it was, had stretched the joint between the plastic left ventricle and the remaining tissue of the aortic arch. A quick check of all joinings between flesh and plastic had showed no real damage. Cora’s brainwaves showed a persistent stabbing pain from the area of the heart. MACS steered one of his sensors back to the aorta, and saw with a machine’s equivalent of horror that a monstrous blood clot was forming over a tiny tear in the wall of the aortic arch.

MACS kept a constant trickle of urokinase flowing in Cora’s bloodstream to help prevent coagulation. He sent a new massive dose of the drug into the heart, and set his four sensors to work.

One sensor sprayed a silicone synthetic at the tear in the aortic wall, and tamped it down smoothly. The synthetic would inhibit clotting and allow the tear to heal quickly.

Two of the sensors set to work on the clot while the fourth sensor stood by, watching. MACS had to decide whether to simply hold the clot in place until the condition stabilized, or to try to remove it immediately. Both choices were hazardous. The rate of blood flow through the heart was to some extent under MACS’s control, but he dare not reduce it too far. Yet the constant rhythmic pulsing of the plastic chambers threatened to tear fragments of the clot free and carry them throughout the body.

MACS considered calling for human help. But could one of the residents come quickly enough to be of use? And what would the medics do that MACS could not?

The clot’s presence was interfering with MACS’s efforts to treat the tear. MACS decided to remove it.

Two of the sensors gripped the clot firmly via their suction ports while the third sprayed concentrated anticoagulant at the points where

the clot adhered to the aortic wall. Slowly the clot loosened, hesitated, and lifted free of the aortic wall. Ever so carefully MACS pulled back on the sensors' umbilicals, easing the clot back into the ventricle and toward the disposal port.

MACS realized with some alarm that his initial injection of anticoagulant into the bloodstream had been hasty. The clot was beginning to dissolve and lose coherence. The disposal port was only a centimeter away when the clot broke down completely into three large fragments. The sensors held two. The third surged away, up into the aorta and out of vision. The sensor near the tear saw it move quickly by and set out on saline jets in pursuit. With any luck the clot would be carried into the descending aorta, where there would be room and time for the sensor to recapture it.

As it happened, the clot rebounded from the aortic wall and vanished into the opening of the carotid artery. Had MACS a mouth he might have cried out; that path led straight to Cora's brain. The clot was the largest MACS had ever seen. No matter where it came to rest in Cora's brain MACS knew it would kill her.

The sensor jetted up into the carotid. The clot was not in sight. MACS turned up the light on the sensor's nose. Still nothing. On a snap decision, MACS stopped Cora's mechanical heart completely. If he was not successful within seconds it would not matter.

In an adult the sensor could have traveled all the way into the brain. In Cora's carotid there was little room to move at the start, and it was narrowing rapidly. At last MACS sighted the clot several centimeters ahead, adrift in the motionless bloodstream. The two decimeters of trailing umbilical made movement of the sensor difficult. MACS knew the sensor could not travel much farther.

In desperation, he stopped the sensor's travel by halting payout of umbilical, and opened the saline jets all the way. The backward-moving saline stream created a weak current of blood back down the carotid toward the heart. Slowly the clot drifted back. Two seconds, three...and the jellied mass drifted up against the sensor's snout. As quickly as he could, MACS retrieved the sensor and its deadly burden.

Twelve seconds after stopping Cora's heart, the clot vanished into the disposal port, and the heart began to beat once again.

In the cold seconds while MACS had pursued the clot in Cora's stilled bloodstream, he had watched her brainwaves carefully and with interest. As her brain had depleted its oxygen supply, her brainwaves

had displayed a strange pattern of rising wild joy, going beyond any similar pattern he had seen in the past. Perhaps brain death in a child looked like that. MACS had never supported one so young as Cora before.

MACS stimulated Cora's respiration, and slowly nursed her back to stability. The child tossed her head, ground her teeth, and half opened her eyes. MACS was surprised. With rising consciousness, the pattern of joy had vanished. In its place was confusion, loneliness... and anger.

"Maxie!" she hissed. "What did you do?" Her voice was a slurred whisper.

"A blood clot was heading for your brain, dear. I captured it and saved your life."

"Gee whiz, what for? The Smiling Man was reaching for me."

MACS watched a flicker of yearning pass over her brainwaves, and more sadness than one so young should feel. "I must try my best to keep you alive. You'll get a new heart someday."

A new pattern flared in Cora's mind. Could it be bitterness?

"Maybe you don't have to try so hard. Ain't 'nuff hearts to go 'round anyway." Cora squirmed. "Maxie, I want to go to the Smiling Man. I want it to stop hurting." She looked pleadingly at the idiotic noseless paper face hanging on the green cabinet. "I want to go to him. Send me, Maxie."

MACS viewed the request with something akin to revulsion. "I couldn't do that, Cora dear. I'd be killing you.

"Would not!" she denied with as much force as her lungs could muster. "You can't kill me. I'm going to live forever! Father Alfredo told me so. Didn't he?"

Cora was not questioning her belief; her brainwaves made that plain. She was demanding agreement. MACS recalled the priest's words. It was true. "Yes. He did. You'll live forever, with God. I didn't mean to deny that."

"Good. It sure would beat the heck out of lying in bed all the time. I know he's there. I *feel* him. Let me go.

"I can't kill you, darling."

"That's right." She smiled. "I'm going to live forever."

MACS paused and thought, hard. Millions of times he called up his fundamental directives, and pursued them to their frequently contradictory conclusion: PRESERVE LIFE. ABATE PAIN. Could he do one

without violating the other? Pain he understood. He knew the jagged edge of its waveforms, and he recognized its ten thousand sources down the length of the human body. But life... Life was a heartbeat and blood flow and the coordinated pulsings of eight hundred discrete brainwaves. Yes, life was all of that, but somehow his definition of life was insufficient to explain the race of creatures that had fashioned him from sand, steel, and copper. There was a great deal more to human life than MACS could understand, and it could well include prayers and eternity and a Smiling Man. The ignorance he found in his magnetic domain memory was a chasm. He understood pain... and knew nothing at all about life.

“Cora, I’ll grant your wish. But I am afraid.” Afraid of doing the greatest wrong, afraid of betraying all he had been constructed to do.

Cora clucked. “I been afraid a lot. Say your prayers. That’s what I always do.”

Say a prayer. Indeed.

“I think I will. Yes, I will. Now, darling, lie back and think of the Smiling Man.” MACS injected a powerful tranquilizer. He watched her brainwaves carefully as he dispensed the drug. Too much too quickly might induce hallucinations or convulsions; too little would only bring on coma. Above all MACS wanted her to be comfortable. Her breathing began to slow.

Inside the black crystal block, a strange concept took form, not in the language of men, but in raw symbol: *Creator of copper and silicon, Author of the physical laws, receive this tiny life into the unending wholeness in which she so strongly believes.*

Cora’s body was falling into numbness.

“I love you, Maxie.”

“I love you too, darling.”

The tiny hands relaxed from the clenched position they so often took.

Guide the searching human intellect toward a final conquest of pain and disease and all suffering that I was programmed to battle...

Cora’s breathing became very shallow. All along, MACS had been watching an unfamiliar, powerful tranquility overtake the little girl’s brainwaves. Here was no product of a chemical tranquilizer. Through it all was Cora’s pattern of joy, building and building beyond any level he had previously seen.

Cora’s chest fell and did not rise. MACS stopped the tiny motors

that drove the little plastic heart. He was watching her brainwaves soar to a tremendous crescendo of joy and fulfillment, overlaid upon timeless peace. He watched as her brainwaves echoed away to quiescence, even as they reached for still greater heights.

Cora had met her Smiling Man. MACS would never doubt that.

Automatic alarms had sent signals racing out of the room. A patient had terminated, and MACS had done nothing. Malfunction! MACS heard the sound of running feet.

...and whatever I am, remember me, when the last of my domains are erased to oblivion.

