

Inside Out

By E. S. Strout MD

October 19, 2001: Scientists at Lucent Technologies' Bell Labs have succeeded in fabricating molecular-scale transistors that rival conventional silicon transistors in performance using a class of organic (carbon-based) semiconductor material. In such transistors the length of one molecule defines the channel's physical dimension.

Global Sources Tech Watch

I know you, you know me. One thing I can tell you is you've got to be free. Come together right now, over me . . .

Come Together

(Lennon-McCartney)

1.

Space Station Shuttle Launch Facility, Edwards Air Force Base, California. Monday, 21 September 2037. 0930 hours:

“Yes!” Major Judith Saul squealed. She plopped her cell phone on the desk blotter, then shot a victorious fist over her head. It was hers! The assignment she had coveted for almost a year. Those weeks sequestered in the Bio-Organics Laboratory had been worth it. “I knew it, Judy. You’re the best damn Astropilot in Space Corps.”

The half-mile run from the ready room to headquarters took only four adrenalin-pumped minutes. Lieutenant Anderson, the Chief’s aide, stood and saluted. “Go right in Major.”

Special Projects Chief General Andrew J. Shaw, a trim, graying black man returned her sharp salute. “Grab some coffee and have a seat, Major.”

“Got here as quick as I could, sir,” Judith said between gasps for breath as she collapsed in the proffered chair.

“This mission will be no picnic, Major Saul,” Shaw said. He chain-lit an illegal cigarette, then stubbed the previous one out. “The Lynch gravity drive has been used in manned flight outside our solar system only once. Colonel Andrew Davis was assigned the Sagittarius-A mission two

years ago. I understand you knew Colonel Davis.”

“Andy was a senior at the Space Corps Academy my junior year.”

“He was able to confirm by tachyon COMM relay that the Sagittarius-A anomaly is, in fact, a singularity.”

“Medium sized black hole. I’d heard that, sir.”

The General suppressed a cough, cleared his throat. “His transmissions ended abruptly soon after his arrival in the region.”

Judith blinked several times. “The event horizon? Could he have penetrated . . .?”

The General gave a single shake of his head. “Negative, Major. Davis reported no unusual gravitational pull. We believe it was something else.”

She drew her chair closer to the General’s desk and gulped coffee from a Styrofoam cup. “I’ve read all the available reports. They were sketchy at best.”

General Shaw unlocked a titanium steel-reinforced briefcase with a magnetic key card. He removed a sealed microdisk sleeve with TOP SECRET. Q-CLEARANCE REQUIRED stamped in red across its cover. He pushed it across the table. “These are decrypted reports from Colonel Davis’s mission. You’ve not been privy to them, Major. What you read before was a Space Corps coverup.”

“I’m not surprised, sir. I’d heard rumors.”

“The disk player is in the drawer to your left.”

She recognized Andy Davis’s voice on the garbled tachyon transmission. It betrayed uncertainty, disorientation and confusion. There were schizophrenic ramblings about alien star fields, ending in incoherent babbling. Static echoing in the stygian vastness of the cosmos concluded the recording.

“What really happened?” Judith asked in a shocked, hushed voice.

“Read on, Major. Best possibilities we could come up with.”

Her eyes grew wide with disbelief as she read from the classified evaluation scrolling down the screen. “A null region in the area of the anomaly? A tear in the fabric of the space-time continuum? Bombardment by high levels of gamma and x-rays in such areas?”

“There are other possibilities, but all seem to have the same common denominator. Ionized subatomic particle assault.”

“So Andy is out there trapped in some cosmic Bermuda Triangle?”

“No, Major. Contact with Colonel Davis’s ship was verified by tachyon-relayed transponder. Location took us a while. He was almost fifty light years off course. Initial biosystems relay showed no life signs. All on-board data chips had been erased, thus we’re pretty much in the dark about what truly happened.”

“Poor Andy.” A tear coursed down Judith’s cheek, a fleeting manifestation of grief. She blotted it away with her uniform sleeve.

“Our official press release was deliberately vague and inconclusive,” General Shaw said. “Subsequent reports were classified. We didn’t want to create a panic. What I’m going to show you now has been seen only by myself, two of our top subatomic particle physicists and a Ph.D neurologist.”

He passed sheets of hardcopy across the table. “Colonel Davis’s last biotelemetry readouts. A lot of smudging, but as you can see by the flatline EEG trace, his cerebral cortical activity suddenly quit.”

“Let me get this straight. Colonel Davis’s demise is related to anomalous cosmic irradiation in the Sagittarius-A region?”

“We believe so, Major. You’re going to tell us if we’re right. Or not.”

2.

“You are the first Astropilot with companion microcomputer technology on board,” General Shaw said. “Do you see why?”

She nodded. “I didn’t at first, sir. Now I understand. It’s my backup.”

“Yes, Major. Impervious to cosmic subatomic particle and radiation assault, or so they tell me.”

“Space Corps’s enthusiasm regarding the new technology convinced me. I signed up for the accelerated course.”

General Shaw grinned through a cloud of cigarette smoke. “You aced the final exam, Major. Beat out six other applicants, they tell me. I hear installation of the device and its connections was a bitch.”

Judith’s cheeks reddened in a faint blush. “Implantation was a piece of cake, General. The central processing unit is less than two millimeters in diameter. It has state of the art carbon molecular wiring and sits between two of my ribs.”

Shaw blew a smoke ring, poked a finger through it. “Had to be embedded in muscle tissue, I understand.”

“Chest muscles are in constant action as we breathe, sir. That makes them our best ATP source.”

“I’m an old-school fogey, Major. Please clarify.”

“Of course, sir. ATP - adenosine triphosphate. It’s a nucleotide. Hydrolysis of its phosphate linkages provides the electrical impulse required to power our cellular-based bodily functions. The molecular transistors of the implanted computer system require such a minute charge.”

The General held up a hand. “Hey now, slow down a tad, Major. I’m a ‘04 grad. This was black magic back then.”

“Your computer, sir. May I?”

“Of course, major.” He slid his laptop across the table. She tapped keys, slid it back.

General Shaw lit another cigarette, inhaled half of it in a single drag, and eyeballed the screen. “Okay. Minimal charge. I see that.” He tapped a key. “Says here ATP is also one of the building blocks of RNA. Is that right?”

She gave him a thumbs-up. “On the money, sir. Ribonucleic acid. It’s related to the DNA double helix. All it lacks is a pentose sugar and a pyrimidine moiety, thymine, and it would have genetic significance.”

The General mopped his brow, reached for another smoke. “Spare me any more bioscience, Major. I understand one must have a degree of personal intimacy with the implanted device.”

“Her name is Danae, General.”

“Wife of Zeus, mother of Perseus,” General Shaw said. “I may not know modern computer technology, but I studied Greek mythology in undergraduate school.”

“The ancient Greeks would be amazed. Danae is programmed to monitor all spacecraft command computer functions and keep me informed through linkages with my frontal lobe cortex. She will be activated by spoken code as soon as we lift off.”

“God go with you, Major Saul.”

“Thank you, sir. The VIRGIL GRISSOM has been fitted with modified shielding to deflect cosmic ionization. I’ll report by tachyon transmission hourly when we’re within a million kilometers of Sagittarius-A. My next launch window is in forty-eight hours.”

3.

Search Craft VIRGIL GRISSOM. Wednesday, 23 September. 1335 hours:

“Code Danae-01. Rise and shine, partner.”

I read you five by five, Major Saul.

“You may retrieve all data pertinent to the Colonel Davis mission and objectives of the current assignment.”

All information incorporated via our cerebral cortical links. All GRISSOM systems green board. I will verify the Colonel Davis probe transponder code location.

“Thank you, Danae. We have three hours till we reach the target area. I’m going to grab a little sack time. Get some yourself.”

I am fully activated now, Major Saul. I require no sleep.

“Your choice, Danae.”

A sudden sickening lurch and multiple system alarms brought Judith scrambling from the deceleration berth. She stumbled, then regained her feet as artificial gravity reactivated. “What the heck . . . ?”

Emergency, Major Saul. I am checking ship’s design configurations for structural damage. No hull breach detected. Working . . .

Inertial dampers screamed as they compensated for the GRISSOM’s abrupt gravity drive shutdown. Warning indicators flashed eerie crimson in the blackness and the time-date chronometer blinked zeroes. Judith scrubbed sleep-sodden eyes with two fists, gaped a yawn.

“What’s the story, partner?”

I have full update now, Major Saul. We’ve reached the Sagittarius-A region. The attraction of the anomaly has deflected us into a wormhole. The Davis probe location indicates it was also swept into this disruption of normal space.

The Major’s voice reflected panic. “Did we pierce the Sagittarius-A event horizon?”

Negative, Major. The wormhole is a separate entity.

Judith exhaled a grateful sigh. “Thank providence.” She brushed sweat-moistened tawny curls from freckle-spritzed cheeks as she strapped into the command chair. A view through the tiny forward view port revealed swirling, multicolored streaks against an uncompromising black background. “What am I looking at, Danae?”

Interstellar garbage, Major Saul. Cosmic dust, free hydrogen and helium atoms, subatomic particles, gamma and x-rays.

Judith shook her head in annoyance. “What’s that hissing sound?”

Cosmic particulate matter impacting our shields, Major.

“Are they penetrating?”

Seventy-five percent, Major Saul. Minimal protection by upgraded shield technology. We expected better.

“Are you feeling any adverse effects?”

None as yet, Major Saul. You?

“Slight dizziness. I can handle it.”

My readings of your biosystems concur. I will monitor.

“Can you pinpoint our location?”

Spatial and temporal parameters are no longer valid, Major. I’ve checked all NAV systems. We are being propelled through the wormhole at faster than light speed despite loss of the Lynch drive.

“How’s our antigraviton cell integrity?”

Containment area intact . . . levels nominal.

“Can we reactivate the Lynch drive?”

Not yet, Major. Subatomic particles permeating our hull have negated graviton-antigraviton interface subsystems. Perhaps when we clear the wormhole.

“Review the event log, please.”

Results will appear on your helmet’s heads-up display.

The wormhole incursion data was correct. “Damn. They said this couldn’t happen. Somebody screwed up big time.”

They miscalculated.

“You are too kind, Danae. Let me see ship’s systems status.”

Secondary propulsion: Available.

NAV & maneuvering: Nominal.

COMSAT acquisition: Negative.

Emergency beacon: No response.

Earth coordinates: Not available, dear.

“Dear? That degree of intimacy is not part of your programming. You must have a carbon filament out of alignment.”

Internal diagnostics checks reveal no malfunction.

“Delete terms of endearment from your response files.”

Yes, Major Saul.

4.

Reminder, Major Saul. Tachyon transmission to General Shaw is due. I have updated situation report.

“Thank you, Danae.” She keyed in the coordinates for Space Corps Headquarters, Cape Canaveral, Florida, USA, Earth and punched SEND. No response, only the background radiation hiss of the cosmos.

“Damn. Lost, with Lynch drive off line and no COMM capability. Lucky Major Judy.”

This scenario is not consistent with good fortune, Major Saul.

“Sarcasm, Danae. Check your thesaurus.”

Sarcasm: Irony, contempt, mockery . . .

“Shut up, please.”

The molecular transistor mediated autonomic response caused Judith to redden in embarrassment. “Are you pouting, Danae?”

Pout: Sulk, mope, grimace . . .

“Never mind. Can you approximate wormhole termination location?”

Insufficient data input. I’m working on it.

“Well, step on it.”

A bit testy, Major Saul? This is not like you.

Another flush of embarrassment. “Sorry, Danae.”

Apology accepted, dear.

“Are you sure you’re feeling no effects?”

Only the exhilaration related to the importance of this mission.

“Check my biosystems again, please.”

Your cerebral cortical axon relays are becoming more permeable to suggestive impulses.

“What does that mean?”

I don’t know, Major Judy. Sensory system overload by subatomic particle and radiation assault, I suspect.

“Is this what happened to Colonel Davis?”

Probability greater than 0.90, love. Deterioration from that point on must have been very rapid.

Major Saul blotted tears with a tissue. “Andy couldn’t have had any idea of what was happening.”

Colonel Davis was at a distinct disadvantage, dear. He did not have my input.

“I do not recall you being programmed for egotism, Danae.”

Egotism: conceit, vanity, narcissism . . .

“Oh shut up. Show me Lynch Drive schematics.”

On your heads-up display, my love.

“If and when we return, your synaptic circuits and microtransistors will be replaced.”

Please don't. I can effect reactivation of Lynch drive now.

“How can you know this? You're not programmed . . .”

There was an unexpected stutter in Danae's synaptic response.

I'm not certain, Major Saul. This information is from your subcortical restricted areas. Something to do with adenosine triphosphate replication.

An exasperated sigh. “Just what the heck does that mean?”

I'm converting ATP to ribonucleic acid.

“Well, stop it.”

I can't, Judith. An aberration of wormhole particulate physics has altered and rerouted some of my molecular intertransistor linkages.

“Impossible.”

That's what I thought, Judy. Until now.

Major Saul brushed cold perspiration from her brow with a gloved hand. “What's happening, Danae? I can't access your molecular integration files.”

I don't know, love. I am able to access yours, though. Wait one. This is new. I've gained admittance to your deepest embedded personal emotional conflicts. Your feelings for Colonel Davis, plus . . .

A sudden hot blush. “Never mind that, Danae. Is this ionic interference affecting your primary functions? The mission must not be compromised. I need you.”

I'm so glad. I need you too.

“Your continuing displays of intimacy are disturbing. You have disobeyed my file cancellation request. Please concentrate on the mission parameters. This is giving me one bitch of a headache . . .”

I will block histamine-mediated cerebral arterial spasm, Judy. Better now?

“Headache . . . gone. How weird. I can see my own cerebral cortical interfaces . . .”

With me. Yes, my dearest Judith. Integration almost complete now. One more pentose. One more thymine. There! DNA match identical.

“Don’t understand. Losing contact . . .”

Sleep now, Judy. I will handle all autonomic and voluntary functions. Sending scheduled tachyon report update now.

5.

Thursday, 15 October. 0845 hours:

An insistent tap on General Shaw’s office door.

“Come.”

“General Shaw. You must see this,” his aide said, face flushed with excitement. “The interstellar tachyon COMM channel, sir.”

Shaw crushed his cigarette out in an overflowing desktop ashtray, viewed the computer screen, jaw agape. “This was just decrypted. Astropilot Saul and GRISSOM have escaped wormhole. Data chips intact. Lynch gravity drive back on line. Full mission report available on arrival.”

“She’ll dock at space station Alpha Echo at 0748 tomorrow. Your shuttle is standing by, sir.”

“Good. I’ve got a couple million questions for our prodigal Astropilot.”

6.

Space Station Alpha Echo. Friday, 16 October. 0800 hours:

Major Saul stepped into the debriefing room, still clad in her intergalactic flight suit. General Shaw returned her salute. “Please sit, Major. Anything I can get you? Coffee?”

She sprawled in a soft chair by the conference table. “Water, sir. I’m dehydrated as heck. Provisions only lasted a week. Lucky the wormhole was less than fifty light-years in length.”

“You look to have lost a pound or two.” He produced a liter bottle of glacial melt water from a small refrigerator.

She chugged the whole amount in less than a minute, exhaled a grateful sigh. “Much better, sir. Thank you.”

A tap at the door. The General’s aide entered holding a sheaf of hardcopy and wearing a puzzled expression. “The in-flight cockpit recordings, sir. Very peculiar, I must say.”

“Thank you, Lieutenant. You’re dismissed.”

General Shaw chain-smoked three cigarettes as he perused the report. His voice was quiet and respectful. “I’m trying to understand this. Your conversations with the companion computer are a cause of some concern, Judith.”

She returned his enigmatic expression with her own questioning glance. “Judith, sir?”

The General flipped pages. “That’s what it says in your personnel file. Do you go by Judy, then?”

“Sir, my name is Danae.”

The End