

# Reflection

By E.S. Strout MD

Could an advanced civilization go back in time and change the past?

Stephen W. Hawking

1.

Monday, 24 May 2010. Civilian housing area, NASA/Space Corps Complex, Cape Canaveral, Florida:

“What’s the big deal about Syracuse, Dad?” Dennis Haynes’s fifteen year-old daughter Laurel Ann asked.

“It’s just an ancient Greek city, Laurie.” Dennis teased.

“On Sicily.”

An exhaled huff.

“I know that, Dad. Why are you and that geek partner of yours so enthused about it?”

He ruffled her auburn bangs. “A lot of history there, Laurie. A famous Greek lived in Syracuse. Archimedes.”

Laurel booted up her iBook.

“I’ll google him and do his bio for my history thesis.”

“Aren’t you acing history this semester already?”

“Extra credit, Dad. It’ll look good on my application to the other Syracuse for their freshman class in two years.”

He winked. “Not interested in the Gators?”

“C’mon, Dad. That’s a football school.”

He gave her a mock scowl.

“I’m a Florida Gator, kid. Good enough to get me into MIT, then to the NASA/Space Corps subatomic particle physics lab.”

“Where you mess around with weird science. What the heck are tachyons?”

He nodded.

“The tachyon was a theoretical particle faster than the speed of light. Then the solar probe Infinity-1 caught some exiting from the heart of our Sun. We can . . .”

Laurel favored him with one of her Oh Spare Me glances, deftly changed the subject.

“Syracuse has one of the top law schools in the country, Dad.”

“Any law school will be lucky to get you, Laurie.”

“Darn right.” She held out an envelope. “From the Principal of Cocoa Beach High.”

Dennis read, blinked.

“Wow, Laurie. You passed the LSAT! I didn’t think you could take that till senior year.”

Her smile was blinding. “Only if you carry a 4.0 GPA.”

Dennis shook his head in wonderment.

“It’s in the DNA, Laurie. Mom’s a successful attorney. Dad a weird science physicist.”

2.

“Mom called while you were still at the lab. She’ll be home Saturday.”

“All right. How does she like San Francisco?”

“She likes Fisherman’s Wharf and the Embarcadero. But the seminar is boring.”

“Did you tell her about your LSAT? And Syracuse?”

“First thing. She would have preferred Harvard or Yale but she was okay with Syracuse.”

3.

Laurel looked up from the iBook’s screen.

“Any hints on Archimedes, Dad?”

“Look up Roman General Marcellus and the Siege of Syracuse in 214 B.C. The makeup of his battle fleet.”

Laurel turned a brow-wrinkling stare of suspicion on her father. “Ancient history. Something you’re not telling me?”

“Jake and I are working on a project. You’ll be another source of confirmation for us.”

Sigh of exasperation.

“Darn you and that two-first-name geek partner of yours.”

“Jake’s a scientist, love. I’ll admit he’s lacking some social graces.”

She made a face. “He smokes cigars, Dad.”

“But he’s brilliant. How about you get back to Marcellus’s fleet.”

4.

Tuesday, 25 May. Space Corps subatomic particle research laboratory. 1025 hours:

Jake Herman, a 30 year-old rail-thin physicist wearing a brilliant flowered Hawaiian shirt drowned his cigar butt in the dregs of his coffee cup.

“How are you coming with the furnace, Dennis my man?”

The cold fusion furnace was enclosed in blocks of dense heat-resistant polymer and titanium-steel alloy. Haynes viewed the white hot interior through a dark tinted UltraPyrex porthole.

“Getting as close as we can, Jake. Approaching a million degrees Centigrade.”

“Center of the Sun is near twenty million, Denny. How’s the computer model look?”

“We could attract a few tachyons, but fewer than the Sun releases. How are you with that parabolic reflector?”

“Nominal. We’ll need to add more silver to its concave surface. You think a twelve-foot diameter dish will concentrate enough tachyons?”

“We’ll know very soon. Watch the monitors, Jake.”

Haynes pressed a remote switch. There was a brief flare of intensity from the furnace before it shut down. Solid sprays of water hit the reflector dish, clouding the laboratory with steam. The ventilators cleared the space in seconds.

“Yes!” Jake howled as he brushed a film of moisture from the CRT screen. “Subatomic particles in excess of light speed. We’ve got ‘em!”

The two physicists embraced, thumping each others backs.

“This calls for a cigar, Denny.”

“Hell yes.”

Both men lit up, blew clouds of aromatic fumes toward the ceiling.

“Big one tomorrow when we grab one of Archimedes’s mirrors.”

5.

1930 hours:

“Archimedes was the genius of his time, Dad,” Laurel proclaimed. “Father of integral calculus and solid geometry. He discovered the principle of buoyancy and invented the catapult.”

“The siege of Syracuse,” Dennis prompted.

“He’s supposed to have destroyed Marcellus’s fleet with an array of flat mirrors that concentrated the Sun’s rays. Look.”

She handed him sheets of printout.

“Not everybody agrees.”

“Yeah,” Dennis said.

“Some say the ancient historians made the whole story up.”

“They don’t deny that Marcellus had a fleet of sixty quinqueremes,” Laurel continued.

“Five banks of oars each, plus catapults and hundreds of archers. The Roman equivalent of today’s missile cruisers.”

An exuberant high five from her Dad.

“Yes! Thank you, Laurie. That confirms something important. Jake and I are going to . . .”

She gave him one of her patented skeptical stares.

“What are you and old smoky up to? Nothing dangerous, I hope.”

“Laurie, tachyons are new to subatomic physics . . .”

“Hmpf. You watch too much SciFi Channel, Dad.”

“So must Ph.D History Professor Leland Fasbender from Harvard. His department is providing half of the funding. He’s coming here on Thursday.”

6.

Wednesday, 26 May. 1422 hours:

“I’ve got the Great Harbor of Syracuse located, Jake,” Dennis said as he punched in North Latitude, East Longitude figures on the computer.

“Okay,” Herman said.

“The Greek historians only said ‘the dry season’. That could span three or four months by their lunisolar calendar.”

“Summer or early Fall. Not very precise,” Haynes agreed.

“This could take several tries. We’ll be abusing the tachyon furnace some. Let’s try July. Ready?”

They donned reflective goggles.

“Shoot,” Jake yelled.

The blinding flash was followed by a cooling water spray and columns of steam from the parabolic reflector dish.

“The monitor, Jake. Can you see the harbor?”

“I’ll get a print.”

The two physicists stared.

“This ain’t 21st Century construction. And there’s Syracuse’s Great Harbor,” Jake said.

“No ships.”

“See that promontory? That’s where Archimedes will set up his Sun weapon. We’re early.”

Five more tries were negative.

“We should give the furnace a rest,” Herman advised. “A million degrees is a load for it.”

“One more shot, Jake,” Haynes argued. “We’re close.”

“You’re the man, Denny.” Jake said. He refocused the reflector, tapped computer keys. “Check it out.”

Dr. Haynes rechecked the readouts. “Let’s move ahead another couple of weeks.”

Jake pressed more keys. “Two weeks.”

He pressed PROGRAM START.

They wiped water condensation from their goggles as the furnace shut down and the coolant spray quit. Herman blotted moisture from the printout with his lab coat sleeve. “Yikes!” he howled. “Those ships must have four hundred oarsmen each.”

“Quinqueremes!” Dennis whispered in an abashed voice. “Marcellus’s fleet. You can see the catapults and archers. Laurie was right on.”

“See the flash at the promontory, Denny? It’s gotta be one of the Archimedes flat mirrors,” Jake yelled. “Let’s do it now.”

“They’ve already been where they’re going, Jake. No rush.”

“Look here.” Haynes pointed. “There’s multiple areas of scarring and pitting on the reflector surface of the dish.”

“I’ll redo it with more silver, Jake said.”

“Okay, Jake. Gives me time to reinforce the furnace enclosure. Maybe I can coax another few degrees out of it.”

“Professor Fasbender’s coming tomorrow. Our parameters are good.”

7.

1630 hours:

“Where were you, Dad? You got some sunburn,” Laurel said.

“Really hot furnace, Laurie. We’re ready for the final test.”

She handed her Dad several sheets of computer printout. “More on the ancient Greeks. Did you know Archimedes died after the Romans won the siege. Stabbed by a Roman soldier.”

He nodded. “The historians agree on that part. Marcellus honored him with a statesman’s funeral.”

She gave him an odd glance. “Your tachyon experiment has something to do with Archimedes, right?”

He pulled the tab on a Pepsi can, took a long swallow. “Don’t you have some math homework?”

She grabbed the soda can, took a swig. “It’s finished, Dad. Don’t change the subject on me. I can read you like a science blog.”

“Tomorrow. You’ll be the first to know.”

8.

Thursday, 27 May. 1124 hours:

“Professor Fasbender, welcome.” Dennis said. “What does Harvard think so far?”

The white-haired octogenarian smiled, extended a hand. “We are duly impressed, Dr. Haynes. Retrieval of artifacts from the past will certainly add to our volume of ancient knowledge.”

He eyed the huge reflector dish with some trepidation. “And this gets us to ancient Greece?”

Jake blew a cloud of cigar smoke toward the ceiling. “Bet your ass, Prof. Denny needs one more shot to bag one of Archimedes’s mirrors.”

Herman pointed to the rear of the laboratory. ”You’d better watch from there, Prof.”

Haynes pressed a remote. A shield of shatterproof glass descended in front of the guest. “For your safety, sir,” he said.

9.

1130 hours:

“Take a look, Jake. I squeezed a thousand more degrees from the fusion furnace.”

“Wow,” Herman exalted as he read the temperature monitors. “Nice work, Denny. Tachyon production should increase a little.”

Jake Herman took a drag from his stogie, blew the noxious fumes over his head. “Let’s do it.”

“Goggles on. Ready?”

“Make us superstars, Denny.”

Haynes pressed PROGRAM START. An effulgent flash of tachyon-laden nuclear fire blazed from the furnace, reflecting from the concave dish with blinding brilliance.

Radiation alarms sounded a loud klaxon, then went silent.

## 10.

1135 hours:

When the base fire department arrived they found smoldering remnants of the nuclear furnace littering the laboratory spaces. A hole was blown in one wall and part of the ceiling had collapsed. Professor Fasbender peered wide-eyed from behind the intact reinforced glass panel.

“Are you guys okay?” the Fire Chief asked. “Our radiation readings are negative.”

“I think so.” Dr. Haynes rose from his refuge behind a bank of heavy file cabinets, brushed ashes from his lab coat. “Can you get readings, Jake?”

Herman shook off water from the firemen’s hoses, scanned the room with a radiation counter. “Mine matches theirs, Denny. Just background. The reflector dish must have deflected any stray neutrons or gamma rays into the tachyon stream.”

A wild-eyed scan of the spaces by Dr. Haynes. “The reflector dish, Jake. Where is it?”

Haynes scraped away debris from the wrecked computer console. A single water and soot stained photo print lay in the printer tray. “Oh wow. Take a look, Professor Fasbender.”

The bearded figure of Archimedes stood on the promontory overlooking Syracuse’s harbor. A twelve-foot parabolic dish reflector stood close by. He gazed with satisfaction at flaming ships of

Marcellus's fleet. Only a few had escaped.

"Worked much better than his flat mirrors," the History Prof remarked.

"Impossible," Dennis said. He continued his search through mounds of rubble. "Can't happen."

"What's that, Denny? By your left foot."

Dennis kicked away fragments of particle board, lath and plaster. "Big chunk of debris."

He dragged the object out, held it in sunlight from one of the smashed windows. "What the hell?"

A six-by-six foot cedar frame held a flat square of polished brass. It reflected brilliant sunlight and Dr. Haynes's bewildered face. "Professor?"

Fasbender ran a reverent hand over the mirror. "That's not modern craftsmanship, Dr. Haynes."

## 11.

1230 hours:

The presumptive Carbon-14 date on the wood frame and hand crafted mirror was minus 2200 years, plus or minus one hundred. "This is a piece of ancient history," Professor Fasbender marveled. "Explanation, Dr. Haynes?"

"Sir Isaac Newton's Third Law of Motion, Professor," Dennis said with a perplexed grin. "For every action there's an opposite and equal reaction. We just did a swap with Archimedes."

Jake Herman lit up a cigar. "Works for me, Denny."

"I'm afraid to check the history books," Haynes said.

Professor Fasbender smiled, gripped Jake's and Dennis's hands. He laid a current ancient history text open on Haynes's office desk, flipped pages. "Look here. Marcellus had land troops. They won the siege of Syracuse. Archimedes died in 212 B.C. Look around you. Nothing has changed our history."

## 12.

1430 hours:

“Are you okay, Dad?” Laurel asked, tears of relief staining her face. “Fox News had video of the explosion. Your cell didn’t respond. The firemen wouldn’t let anyone close to the lab. Then the ambulances came and some talking head said there may have been casualties.”

He held his daughter close. “I’m fine, Laurie. So is Jake. And Professor Fasbender likes our results. I had to wait for some test results.”

She pulled away and landed a solid punch to Dennis’s chest. “Test results? Dammit! You scared the living you-know-what out of me. I thought you were dead. You could have called.”

“My cell and land line were the only casualties, Laurie. I wasn’t thinking. I apologize.”

She blinked away more tears, sniffled, took a deep breath. “Accepted. I still love you, Dad.”

He hugged her, kissed her forehead. “Anything else of interest happen today?”

Laurel dried her eyes with a tissue, smiled. “This came in the mail.”

Dennis took the proffered envelope, gave it an odd glance. “What’s this?”

“The application forms for the 2012 Archimedes University freshman prelaw class. I sent for them a couple of weeks ago.”

“Hmm. Archimedes University? The logo’s the same,” Dennis mused quietly. “Nothing has changed our history? Yeah, right.”

“What, Dad?”

“Nothing, love. Let me give you a hand with that application. If I can get to Archimedes in Syracuse, so can you.”

The End