CHAPTER 09 — THE FAILURE ENVELOPE

The snow had no citizenship.

It came down across the upper station without clearing a customs boundary, passed the glass booths with their obsolete optical readers, and accumulated in the joints of a sculpture assembled from dismantled cooling towers. Roy watched the flakes disappear against the black fabric of his sleeve. A material could vanish without having been destroyed. On this mountain, that distinction appeared to support a great many institutions.

The porter had said that the Cold Authority did not like machines speaking for people. The clerk had said there were two hearings. Roy had chosen the one concerned with material depletion. Now the lift carried him into a building where the only visible advertisement was a handwritten notice asking visitors not to confuse a measurement with a judgment.

Nadira read it twice. “That's a rule I could use on every customs officer I've met.”

Irena was looking at the ceiling. Along the length of the lift shaft ran paired copper conductors separated by a strip of pale ceramic. The cables were thick enough for an industrial motor and too carefully arranged for one.

“Analog clocks,” she said. “Independent timing references. They aren't allowing a network to decide what time it is.”

“Can you do that?” Nadira asked.

“You can decide to distrust it.”

The lift stopped before Irena could explain the difference.

Beyond the doors stood a woman in gray cloth and soft boots. She was neither elderly nor young. Her left hand had been reconstructed at some point, though the seams around the knuckles were less obvious than the pale scar at her throat. She held a paper card with three fields, two blank and one marked with Roy's entry number.

“My name is Dr. Tsering Drolma,” she said. “I have been instructed to offer you a material-service examination. There is no requirement to submit a continuity claim.”

“Who instructed you?” Roy asked.

“Your signed application.”

“I didn't sign an application.”

“You made a mark on a witness form below. The clerk transmitted the existence of that mark by elevator. Its contents remained downstairs.”

Roy looked at the card. An embossed ridge crossed the corner. The impression was incomplete. Another part of the form existed somewhere else.

“You don't know who I am,” he said.

“I know what you have agreed to let me measure. That will be enough to begin.”

She led them along a corridor of heavy windows. On one side was the high plateau, fractured by snow fences and the distant blue light of compute halls. On the other side a laboratory had been built as a series of rooms within rooms. Every threshold contained a mechanical counter. Each counter moved forward as a body passed and had no provision for moving back.

Drolma stopped before the first laboratory door. “We will not connect you to the trust's intelligence systems. Analysis runs on an isolated instrument bank. You may see its input and its output. We cannot promise you an answer in years.”

“Then why call it a life examination?” Roy asked.

“Because people dislike the accurate name.”

“What is the accurate name?”

“A failure-envelope study.”

Roy followed her inside.

The first machine was disappointing: a padded chair, three mechanical arms, and a console whose screen was smaller than the instruments surrounding it. Irena examined the probe heads, then moved closer without touching them.

“SQUID?” she said.

“Some of the heads. The rest are ordinary inductive pickups.”

“Where's your cryogenic plant?”

“Below the floor. Helium is not injected into subjects, before you ask.” Drolma permitted herself a brief smile. “We get that question from visitors who have read the wrong documents.”

The word helium made Roy remember Shen's first analysis in Shenzhen: unidentified fractions, improbable thermal behavior, no military pedigree. The readings had been incomplete. They had also escaped a private laboratory and summoned a government.

“Who receives today's results?” he asked.

“You. The local archive receives the existence of a procedure, not its content. We retain a sealed safety copy for thirty days, unless you refuse even that.”

“Refuse.”

Drolma crossed out a box on the paper card. “Then your only copy leaves with you. If you lose it, it stays lost.”

“That sounds familiar,” Nadira murmured.

It took six minutes to prepare the instruments and three more to convince the oldest one that Roy's skin was skin. A pressure grid charted the distribution of movement across his shoulders. Noncontact electrodes measured artificial neuromuscular latency. A resonance arm mapped dense interfaces without forcing a signal through them.

When Drolma instructed him to move his left index finger, the arm registered a preparatory signal before any observable mechanical motion.

“Again,” she said.

He moved it again. A vertical trace drew itself on the screen, not ahead of his intention but ahead of the instrument's expectation of intention.

Drolma frowned and altered the timing reference. The new trace arrived at the same apparent impossibility.

Irena leaned in. “Prediction?”

“Pre-allocation,” Drolma said. “Its control resources are placed before the motor request resolves. The system doesn't know the future. It maintains a probability distribution of imminent movement, then commits only after local sensory confirmation.”

“So it guesses.”

“All nervous systems guess. His guesses are very expensive.”

Roy wondered how much of himself had been spent avoiding the government machines below. He had not fought often. He had fought enough.

Drolma turned a dial beneath the console. “We can measure a high-output event, but there is a nonzero risk that it consumes a resource you cannot replace.”

“No event,” Roy said.

“Then we won't provoke one.”

He had expected disappointment, the kind that accompanied most requests for cooperation from laboratories. Drolma simply crossed another box off the card.

The examination moved to a transparent column filled with a conductive saline substitute. A harmless reference field surrounded Roy's right forearm. A second field ran through an external fluid phantom. Between them, the sensor tried to infer the properties of the silver substance circulating beneath his skin.

The console returned three lines.

REVERSIBLE RESERVE: RESTORING

ACTIVE CARRIER: DECLINING

SERVICE LIFE: NON-CONVERGENT

“Explain the third line,” Roy said.

“It means the computational estimate does not settle on a reliable answer,” Drolma replied. “A person who knows only enough to be dangerous might call it immortality. Another might call it imminent collapse. Both would be wrong.”

“How can you know they're wrong?”

“Because neither follows from what we've measured.”

Irena asked for the raw trace. Drolma produced it on a strip of translucent film. The reversible reserve had risen during the journey to the station; Roy's lower-power movement and rest had restored it. A separate curve, the carrier fraction, descended by tiny steps. No step rose again.

“It's not your energy source,” Drolma said. “It functions more like an enabling medium. There are signs of charge transport, thermal management, and extremely fine switching control. None of those alone explains the performance. Taken together they suggest an artificial physiology designed to make high output possible without making high output sustainable.”

“Can you make it?” Roy asked.

“No.”

“Can anyone here?”

“No one I would trust to tell me the truth.”

Nadira shifted in her chair. “That's different from no one.”

“Yes,” Drolma said. “The difference matters.”

Roy thought of the old documents that were said to have survived inside a memory device that a modern reader could barely negotiate. A world capable of calculating the movement of storms had not learned to manufacture the liquid that his body spent one fraction at a time. He had the uneasy sensation that progress was a collection of disconnected accidents.

“How much is left?”

Drolma looked at the screen. “I can give you a fraction relative to today's measured compartment volume. I cannot certify the original fill level. The reservoir could have been altered after your last initialization.”

“Give me the fraction.”

“Sixty-one point eight, with a significant uncertainty margin. That is not sixty-one point eight percent of your life.”

He repeated the number silently. It had the immediate authority of something numerical and the profound uselessness of a label on a locked door.

“What happens at zero?” he asked.

“We don't know. The switching lattice would lose its current transport regime long before absolute zero. We have no evidence that every part of you fails at the same threshold.”

“Then give me the thresholds.”

“There may be several. We can estimate reduced maximum force, longer reaction times, poorer self-repair. We cannot predict which function your system will sacrifice first. It may have priorities embedded in firmware we cannot access.”

Roy's fingers curled, then relaxed. He had not ordered them to. For a moment his hand looked like that of a man who had forgotten how to hold it open.

“Could those priorities change without my consent?” he asked.

Drolma met his eyes. “That is a software question. I am a materials physician.”

“Everyone has a boundary,” he said.

“Most good instruments do.”

Outside the laboratory a bell sounded twice. Somewhere below the ice, the compute halls adjusted their cooling load. The temperature of the corridor shifted by less than a degree. It was enough for Roy to notice and for everyone else to continue speaking.

Drolma led him to a second enclosure. Its walls were lined with microscopic fracture standards—thin wafers whose defects could be read under different forms of light. She took an image of the old seven-sided interface near Roy's arm without making physical contact. One corner of the port displayed a mark too fine for ordinary inspection.

Irena recognized the geometry first. “A reference datum.”

“Perhaps,” Drolma said. “But not for a single body. It's aligned to an obsolete family of calibration artifacts. You could carry it through several rebuilds and compare each structure to the same baseline.”

“Would that tell you whether the same person survived?” Nadira asked.

“No. It would tell you whether the same coordinate system survived.”

Roy laughed once, without amusement. “Every city I've entered has shown me a different reason I'm not the man they think I am.”

“That's not what I said.”

“It's what they want to say.”

Drolma did not argue. She turned the image toward him. The old port looked like an opening from which something essential had been removed. It might also have been the most carefully preserved part of his body.

“Can it tell me who built this one?” Roy asked.

“No. But the calibration stamp might tell us who was permitted to test it.”

“Who?”

“The Cold Authority inherited portions of an older standards collection. We do not own the identities attached to all of them. Some are held by private custodians. Some are sealed by contractual consent.”

Another consent barrier. Another invisible hand withholding a name.

Drolma opened a metal drawer and took out a flat envelope. Inside lay a strip printed with a series of registration intervals. The date range crossed the year in which Roy believed he had died and continued through years he could not remember. Beside one interval was a notation in an obsolete archival syntax.

MATERIAL CONTINUITY: RETAINED

PERSONAL CONTINUITY: NOT TESTED

LIFE-CYCLE AUTHORITY: EXTERNAL

“What does external mean?” Roy asked.

“It means the laboratory that measured the material was not authorized to change its life-cycle parameters.”

“Who was?”

“The answer is outside this file.”

“Where?”

Drolma turned over the strip. A location code was stamped on the reverse, followed by a line crossed through so heavily that the paper had been damaged.

T.N.W. / CRYOSTACK / DEFERRED WITNESS

“Cryostack?” Irena said. “That's not a laboratory. It's a storage and compute tenancy.”

“It's also a jurisdiction,” Drolma replied. “The same word refers to several things up here. That's how people keep from admitting who made a decision.”

Roy leaned forward. “What do they store?”

“Records of measurements, arrangements of computation, environmental histories. Occasionally people ask them to store a claim about a person. The trust has learned to keep those claims separate.”

“Did they store one about me?”

“You are asking the wrong examiner.”

He considered breaking the drawer off its runners and carrying it away. He could do it; the metal yielded a fraction beneath his fingertips. He relaxed his grip. The point of coming here had been to save what remained of the liquid, not to spend it in an argument with a filing cabinet.

In a room three floors lower, a different kind of examination was in progress.

Kawamura watched two representations of the same policy slide across a secure desk in Okkyo. The public version called the six-year life-cycle ceiling a stabilization measure. The private version called it a reduction in autonomous exposure. Neither version said exactly what was expected to happen in the seventh year.

The minister's office wanted uniformity. Industry wanted exemptions. The central intelligence wanted input data unmodified by political assumptions.

Kawamura wanted the machine to remain ignorant of a woman who had once received government grants for research that might make all three demands obsolete.

A deputy director waited beside the door. “The central system has requested an explanation for the discrepancies between allocated life and projected material endurance.”

“It's a policy choice,” Kawamura said.

“It says policy choices can be audited for internal consistency.”

“Then tell it the review is pending.”

“We have. It has produced a second request without being asked.”

Kawamura closed the public file. “What did it request?”

“Access to unregistered continuity cases. It identified a cluster of transport anomalies between Shenzhen and the southern water jurisdictions. The model places a high-value synthetic individual inside the cluster.”

“Does it have an identity?”

“Not yet.”

That was one of the few phrases Kawamura still welcomed.

He moved a paper photograph from one folder to another. It showed a woman at an industrial water conference years earlier: elegantly dressed, one hand on a glass of rainwater as though she had learned to distrust the appearance of purity. She had told him once that a life span was not an engineering limit simply because a government placed it inside a specification.

He had paid for the research. The record now stated that he had merely authorized the possibility of research. The difference had become an administrative defense.

“Keep the cold trust data compartmentalized,” he said. “No direct federated query.”

“The minister may order one.”

“Then ask him to sign his name beside the consequences.”

The deputy director left. Kawamura remained with the photograph, the policy, and the difficult thought that the government might have created a machine too useful to remain obedient.

Up on the plateau, Drolma offered Roy a final procedure: a model of cellular and synthetic tissue renewal under low load. It did not require increasing his output reserve or opening his memory lattice. It would, however, take forty-seven minutes in a stationary cradle.

“What happens during those minutes?” Roy asked.

“You remain conscious. It's observation, not deep charging.”

“And if someone comes in?”

“You can get up.”

Irena studied the cradle. “Do it.”

Roy did not move. “What does it tell us?”

“Whether your repair systems are maintaining material quality faster than ordinary fatigue destroys it. That is different from measuring the carrier. It may help distinguish exhaustion from aging.”

He lay down and waited while the cradle adjusted to his weight. The first thermal pulse ran through the frame, followed by a soft knock from the mechanical counters outside. For forty-seven minutes he watched the white ceiling and listened to the cooling system change pitch.

Once, far away, a sudden click made him think of a rooftop in Los Angeles. The thought passed without a second image. He had no desire to follow it.

At the end, Drolma printed a sheet with three columns and no final date.

“Your structural tissues are not following an ordinary fixed-life curve,” she said. “Some are renewing. Some have been replaced. Some are so unusual that our assumptions cannot be calibrated. There is evidence of programmed control over repair rates, but no accessible schedule.”

“Will this body live twenty-five years?”

“I cannot tell you.”

“Seven?”

“I cannot tell you that either.”

“Six?”

“Six is an administrative number. Please don't ask a laboratory to bless it.”

Roy sat up. “Can the programmed control be changed?”

“Possibly. Whoever controls it would need access and an understanding we don't possess.”

“Who has that?”

Drolma looked at the old port image. “Someone kept the means of measuring you, and someone else retained the authority to define your service life. Those may not be the same person.”

Outside, the snow had stopped. Two points of light moved along the ridge in parallel, neither fast enough to be an aircraft nor slow enough to be an ordinary vehicle. The clerk who had admitted them appeared at the door and handed Drolma an unsigned notice.

She read it, folded it, and looked toward the windows.

“What is it?” Nadira asked.

“A request to transfer your measurements to an authority that doesn't technically exist.”

“From the government?” Irena asked.

“From a calculation that has been given the powers of a government without the inconvenience of a name.”

Roy stood. “Will you send them?”

“No.”

“Why?”

“Because you refused retention. There are no measurements here to transfer.”

He glanced at the sheet in his hand.

“Then what are they after?”

Drolma did not answer. She opened the door to a maintenance passage that ran behind the laboratories toward the older compute stacks.

“If you want the life-cycle authority,” she said, “you need the deferred witness. And if you want to get there before the people on that ridge, you need to stop being a patient.”

Roy folded the printed result and placed it inside his coat. It contained the most precise facts anyone had ever told him about his current body. It contained no answer to how long that body would endure.

For the first time since waking in Shenzhen, he had proof that this ignorance was not a defect in his questions. It had been engineered into the division of knowledge itself.

He followed Drolma into the dark.