



Illustrated by Soo Lee

# The Trashpusher of Planet 4

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In the center of the ship, near the AI, a dozen candidates for methane drainer scurried out of the examination room.

“Watch it, trash!” a young chemical engineer snapped as he bumped another student.

“I’m sorry.” Awi Trashpusher Nonumber had a blind spot behind him. Though an adult, only four of the six eyes on his pale, skinny, cylindrical body had developed. The engineer castes had twelve eyes in two rings around their upper tips.

Awi had taken the exam in his usual state of hunger, and his tip now curled forward. Wrapping one tentacle around a waterpipe, he enfolded the pipe greedily. By the time he was temporarily full of water and upright again, the corridor was almost empty.

“Awi! How’d it go?” Roob Mechanical Engineer 3886, barely old enough to be a candidate,

had scandalized his classmates by befriending Awi. Roob's body was the clear yellow of the engineer castes, with more intense color along his feeding stripe.

"I did it!" A shaky ripple coursed up Awi's body. "I knew everything!"

"Thanks for tutoring me." Roob had eight eyes and the beginnings of four more. "I still can't believe that a trashpusher could learn all that stuff so fast."

The pain stabbed Awi. He was a trashpusher, although his mother had been a medical engineer. Too sentimental to cull the trashpusher sent to her, she had mated with him instead—a profound breach of caste. Their offspring, of course, had been trashpushers.

The engineer who had conducted the exam strolled into the corridor and focused his forward eyes on Roob. "Roob, despite your youth, you're going to be a drainer."

"Yes!" Roob swayed, rippling from base to tip.

"Congratulations. You'll help save the ship."

In the previous star system, a micrometeoroid had punctured one of the giant methane-nitrogen tanks that fed the bloodhosts. The engineers, in consultation with the AI, had instituted drastic rationing. Then, as the situation was growing desperate, the ship came upon an eight-planet system—four gas, four rocky—where the outer planets and subplanets harbored methane and nitrogen. Furthermore, subplanet 6-1 had *lakes* of methane. They could easily be drained.

Awi focused all four eyes on the engineer. "Excellent Examiner, do you have my results?"

The engineer drew his body up to maximum height. "I don't waste my time on trashpushers."

"But my exam was perfect! I know it!"

"I didn't mark it." He turned the corner and was gone.

Roob and Awi looked at each other. Awi shook. When his spasms subsided, Awi said, "Why would they have let me in the course if they didn't want me as a drainer?"

"The AI made the list of candidates. My father told me," Roob offered. "The engineers taught the course and gave the exam."

"I wish the AI had a caste," Awi said.

Roob drew back. "I wouldn't be talking like that. I'm sorry about the exam. Thanks again for tutoring me."

"I was glad to." Awi headed toward the corridor that led to trashpusher quarters.

\* \* \*

In trashpusher territory, Awi shuffled toward his family quarters. As soon as he stepped inside, his mother said, "What's wrong?"

Awi relaxed all six stubby legs and thumped onto his bottom. "The excellent examiner didn't even mark my exam."

His mother, her vivid yellow reflecting her origin, ran a tentacle tip over the three bud scars at her base. "Awi! This was your chance!"

"Trashpushers have no chance." Awi's pale father stomped in from the bedroom, leaving prints in the floor mat. "You shouldn't have lifted me off that cull list. And you should have cauterized that bud. You knew a third wouldn't have a foodpipe."

*Cauterize that bud.* Awi had always known he was surplus in every way. But he had never heard his father use the word *cauterize*.

Trembling, Awi scurried out the door. After a few meters, he slowed to a walk. Every door in trashpusher country had once represented a family, although some now led to empty quarters as the adults had been denied offspring. Why couldn't his mother have given him to one of the budless couples? Why couldn't he be someone's first and only bud, with a number, instead of third and nonnumber?

Shortly Awi found himself at the boundary of the pissrunners' territory. Pissrunners had been culled even more than trashpushers during the rationing, and most of the quarters were vacant. Between two locked doors, a corridor led to the hangar. The hangar was subject to more radiation than the upper parts of the ship—thus the pissrunners' quarters adjoined it. Awi had seen the hatch in his unemployed rambles throughout the ship, but it had always been sealed. Now the seal on the corridor's hatch had been broken. If he could not work on a methane drainer, at

least he could see one.

He made his way down the short, cool corridor to a massive open space. A voice from a speaker beside the door said, "Identify yourself," but he ignored it. He would be gone before an engineer could arrive.

Leading away from the hangar's hatch was a narrow strip where two gravity fields overlapped. More piles of dust than elsewhere stuck to the floor. Awi skirted the ribbon of double gravity and strolled past the nearest vessels. Passenger carriers, they would deliver the engineers and the lower castes alike to their new world, when it was found. Beyond them lay an empty drainer mooring and, beside it, the newly commissioned drainer *Firm Resolve*. *Firm Resolve* would join its mate as soon as the new drainers had been assigned. As he strode toward *Firm Resolve*, Awi wondered whether the drainers would become a new caste—drainer engineer, maybe. He could have been one of the first: Drainer Engineer, oh, 12. Was it so silly to imagine?

*I wish I could talk to someone.* He had talked a little to Roob, mostly while explaining the draining machinery to him, and Roob had been impressed. But Roob was afraid that random thoughts would get Awi culled.

Farthest from the bulkhead and to one side rested three scoutships. Two gleamed in the light of the hangar, but *Beautiful Light's* hull was blackened, and a panel the size of Awi was missing. Partially fused machinery occupied the spot. Early in the Ship's journey, the managing AI thought it had found a world, but the planet had been inhabited. After the scoutship returned scorched, the AI expressed profound regret and deactivated itself. Subsequent managing AIs had never sent out a scoutship.

"What are you doing, intruder?" boomed from another speaker.

Awi stiffened his core, swiveling to look at the tiny disc on the wall. "I'm looking at the new drainer."

"Identify yourself."

"Awi Trashpusher Nonumber. I was recently a candidate for drainer."

The speaker was silent. "My data is incomplete. I do not show you in any role in the ship. What is your role?"

Awi stood tall. "I clean out the leftover food in the foodpipes after the trashpushers finish feeding so that no food is wasted." He was astonished at the baldness of his invention.

"That is not a recognized occupation."

"Then give me an occupation! I'd love to have one! I passed the drainer exam perfectly, but the Excellent Engineer didn't mark my exam!"

Silence again. "Proceed to *Beautiful Light* and examine the interior. Report on what needs to be fixed."

Awi scurried toward the scoutship at top speed. *Beautiful Light* had a coating of dust, along with shiny rivulets of solid water. It had not been cleaned in generations.

The hatch slid open as he approached, and he bent his tip to enter. The inside was almost as dusty as the outside, and the atmosphere was even colder. After several seconds, the lights came on, and Awi saw a foodpipe with a layer of dust that had once been blood in its bottom. Could he recover the food? It was at least a hundred years old. He turned to the console.

Leaving *Beautiful Light*, he reported, "The instruments and machinery are dusty, but there's no sign of damage in the interior. The blood in the foodpipe is completely dry."

"Your role is now to clean the interior of *Beautiful Light*. I am assigning you foodpipe T4604 for five days."

A foodpipe! All else left Awi's mind. "When does the food start?"

"After you begin cleaning the scoutship."

"I'll start now." Awi strode toward the bulkhead to find cleaning supplies.

\* \* \*

Awi scrubbed for four days. While he polished the previously blackened hull, a robotic cart of tools rolled to a stop beside him and began replacing the machinery exposed by the missing panel. As he finished his work, he wondered what else he could do—he had another day of food. Maybe the unknown voice would suggest something.

“Excellent Engineer, I have cleaned everything in the vessel that I could reach.”

“I am not an engineer. I am a component of the AI. What were you unable to reach?”

“The pipes under the deck.”

“A crew of microbots will scour those. *Beautiful Light*'s hull panel will be installed tomorrow, and stocking of supplies will begin. You will pilot *Beautiful Light* in three days.”

Awi swayed. “Pilot *Beautiful Light*?”

“Yes. My predecessor promised the engineers long ago not to risk any more scoutships or engineers until we reached a possible world. Although I honor that promise, *Beautiful Light* is not a fully functional scoutship, and you are not an engineer. You learned small-ship controls when you were a drainer candidate, did you not?”

“I learned all the controls, but I have no experience.”

“I will guide the scoutship out of the hangar, and you will have plenty of time to practice when you are outside. Afterward you will investigate the inner planets in this system.”

“I don't know how to investigate planets. I've never seen a planet.”

“Download modules 18-2389-4683 and 19-34-90562 and read them while you are waiting. There are too many unknowns in this mission for detailed training.”

Awi forced himself to stand still, although his tip twitched as though it had a life of its own. “Uh, how long will this mission be?”

“*Beautiful Light* will carry supplies for eight days.”

Awi rippled. Eight days of food, all his own. “I will be ready.”

“Come here when the crew of *Firm Resolve* assemble. You will leave immediately after it does.”

“Yes. Uh, thank you.” Awi scurried into the corridor before the AI replied.

\* \* \*

An hour later, Awi entered his parents' quarters in a daze.

His mother said, “What's the matter, Awi? Didn't you feed?”

“I'm not hungry right now. I'll go to my foodpipe later.” He didn't even stop to savor *my foodpipe*. “I have a mission.”

“A mission? What do you mean?”

Awi rippled from base to tip. “I'm going to pilot the scoutship *Beautiful Light* to explore the inner planets of this system.”

His father stood up. “Rotting bloodhosts. The AI promised generations ago not to scout worlds until we could worldform.”

“*Beautiful Light* is a damaged scoutship, and I'm not an engineer. So the AI is keeping its promise. But we already know this is a rich system, and the AI gave me the mission to explore the inner planets.”

“The AI is usually right,” his mother said. “When I was an engineer—”

“Enough with the engineers. You're a trashpusher now, like me,” Awi's father said. “All this means is that we're not worth worrying about.”

Awi said, “Maybe I can accomplish something. I'm hungry.” He left for his—his very own—foodpipe.

\* \* \*

Three days later, in the hangar, Awi found a line of engineers waiting to enter *Firm Resolve*. The last in line lifted a tentacle.

“Awi! Did they let you become a drainer?”

Awi focused on the tentacle's owner. “Roob! No, I'm going to explore the system in a scoutship.”

Roob beckoned Awi; the rest of the engineers ignored the trashpusher.

“That sounds dangerous. Why is the AI risking a scoutship without a world?”

“*Beautiful Light* is damaged, but not badly, so it's not risking an intact scoutship. Nor an engineer. But I'm leaving right after you.”

Roob drummed two feet on the floor. “You're lucky. I only drain, not pilot. But I'll get to look at the viewscreens for hours before I go to work. Maybe I'll see you leave.”

“Maybe.”

A light flashed, and the line of engineers moved forward. Awi snapped a tentacle good-bye, and Roob returned the snap. When Awi entered *Beautiful Light*, he quivered at the reality of what he was about to do.

“*Beautiful Light* will follow *Firm Resolve* in three minutes,” the console speaker said.

Matching the drainer maneuver for maneuver, *Beautiful Light* followed *Firm Resolve* through the hangar door.

\* \* \*

As black replaced the hangar’s gray in *Beautiful Light*’s viewscreens, a message came from the AI: “Prepare to separate trajectory from *Firm Resolve*.”

Before Awi could reply, he floated from the pilot’s halfpipe into the air. Screaming, he flailed his tentacles and legs. Eventually the tip of one tentacle touched the foodpipe, and he pulled himself toward it.

“Ship, the gravity is gone.”

“Scoutships do not have gravity generators. You were in *Firm Resolve*’s gravity field when you left the ship, and now you are beyond its practical extent.”

Stretching his tentacles to the maximum, Awi painfully reached the halfpipe before letting go of the foodpipe. He buckled himself into the harness and stared at the foodpipe. Would he have to stretch like that before every feeding? Both tentacles felt strained already. And how would he ingest the blood?

As Awi awkwardly rubbed the root of each tentacle with the other, a series of maneuvers appeared on a datascreen, followed by the message: “PERFORM THESE TASKS TO ENSURE YOUR MASTERY OF THE SCOUTSHIP.”

Awi shivered. With a last stroke to each tentacle, he focused all eyes on the controls. At the left was the drive, with small and large increments; next to it were three directions of rotation. All like the simulators in drainer training. He rotated the scoutship, and his environment came into view.

Small, but still identifiable, was *Firm Resolve*. Beyond it floated Planet 6 and subplanet 6-1, balls of unequal size. Planet 6 had yellow streaks, while 6-1 was solid red-orange. Between the two bodies, wide rings encircled Planet 6. As he watched, *Firm Resolve* changed course toward 6-1.

Awi looked at the communication equipment. “*Beautiful Light* to *Firm Resolve*—”

“Do not communicate with *Firm Resolve* while you are practicing,” came from the console speaker.

Awi shut off the transmission and continued the list of maneuvers. A half hour later and much farther from the Ship: “*Beautiful Light* to Ship. I have finished all the piloting tasks.”

A minute later: “Your destination is Planet 4.”

“Four? What about 5?”

After a lag: “Planet 5 is currently on the other side of the star. Planet 4 is the closest of the rocky planets. You’ll find a thin debris field before you get to 4. *Beautiful Light* should be able to avoid the rocks.”

\* \* \*

Near the end of the day, the viewscreen showed multiple objects ahead. This had to be the debris field. Awi adjusted the view: the objects were in an extremely thin disk. He wouldn’t need to slow down if he went over the field. Awi sent *Beautiful Light* above the disk.

By feeding time *Beautiful Light* was back in the plane of the planets. Holding on to a small projection in the cabin, Awi released blood from the tank into the foodpipe and prepared to unfold his meal.

One look at the foodpipe told Awi that feeding was not going to be simple. The day’s ration stayed stuck at one end instead of flowing through the pipe. Awi stared at the dark yellow liquid. Was he going to starve?

Awi tapped the pipe, but the blood stubbornly stayed at one end. Awi finally unbolted the foodpipe, hooked onto the halfpipe with one tentacle, and swung the tube around and around

by the blood-filled end. With centrifugal force the blood flowed down the pipe, and he fed to his satisfaction.

Sleepy, Awi said, “*Beautiful Light*, wake me when we are close enough to Planet 4 to use the forward viewscreen.” He slept until a chime woke him the next day.

The forward viewscreen showed an orange-brown sphere with a large white spot. Awi circled the planet, and another white spot appeared. The planet seemed to rotate around the spots. Awi put *Beautiful Light* into the closest orbit he dared. “Map the planet.”

As the scoutship completed one orbit, a map of Planet 4 appeared on a datascreen. A deep, nearly planet-wide crack roughly paralleled the equator. Details appeared on the map as *Beautiful Light* made another orbit. “*Beautiful Light*, go to the thicker white cap.”

When *Beautiful Light* reached the pole, Awi sent his first report to the ship. “The atmosphere is mostly carbon dioxide, like the ship’s atmosphere but much thinner. Thick layers of dry water and dry carbon dioxide at this pole, with extremely thin layers of iron oxide. I haven’t tested the other pole yet.”

An hour later a query came from the ship: “Investigate temperatures.”

With some difficulty and more reading of module 19-34-90562, Awi had the scoutship record temperatures on the surface. The cold of the night side surprised him. The day side was also cold, but not so much. “Temperatures on the day side are thirty to forty degrees below the ship’s temperature, a little higher at the equator.”

After transmitting the message, Awi looked at the foodpipe. It was early to feed, but there was *so much* food. If he had to be short on the final day, well, he had done that before. He swung the pipe to distribute the yellow blood; later, replete, he settled into the halfpipe. He couldn’t have done better if he’d had his own world.

A *world*. This rocky planet was not far from being a world. The thought took his mind off his satisfaction. Near-habitable temperatures, near-habitable atmosphere, a source of methane in the system—a *world*. With worldforming, of course.

The food turned to a clot in his core. He, Awi Trashpusher Nonumber, had possibly found a world! Was that why the ship’s AI had sent him here? The thought was dangerous, but persistent. The ship’s AI had never in his lifetime sent a scoutship to investigate a planet. The AI was famously unfathomable, but perhaps he had just detected its reasoning.

“*Beautiful Light* to ship. Planet 4 may be worldformable. Request instructions on followup.”

An hour later: “SHOW DATA.”

Awi sent *Beautiful Light*’s profile of Planet 4. This time there was no response.

\* \* \*

Awi circled the fourth planet for the next two days. He let *Beautiful Light* improve its map while he investigated the surroundings. Four tiny moonlets, each a cylinder a couple of meters long, orbited the planet just above the atmosphere. Two larger moons—not large enough to be numbered as sub-planets—orbited farther out. His instructions, when they finally came, said: “EVAPORATE PART OF THE POLAR CAPS AND MEASURE THE GAS.”

How to evaporate dry water and carbon dioxide? The scoutship’s laser was far too small. He could crash some of the tiny cylindrical moonlets, but the moonlets were surprisingly light for their size. The two larger moons were impossibly beyond *Beautiful Light*’s capability.

Eventually he settled on the drive. Leaving orbit, he hovered *Beautiful Light* as close as possible to a spot on the thick cap. When he moved away, a hole bigger and deeper than the scoutship scarred the surface. Readings of the gas released showed mostly carbon dioxide and a little water. The pressure near the pole had risen slightly, although the gas was dispersing rapidly. After debating, he sent: “EVAPORATING PART OF POLAR CAP RAISED LOCAL PRESSURE. NOT SURE WHETHER EVAPORATING BOTH WHOLE CAPS WOULD RAISE THE PRESSURE ENOUGH FOR US TO LIVE.” The second sentence would either be ignored or trigger a new instruction. If the latter, his suspicion might be confirmed.

After the light lag: “DID YOU DETECT NITROGEN?”

Embarrassed at his oversight, Awi sampled the now-dispersed gas. “MINIMAL NITROGEN.”

An hour later the message came back: “Return to the ship immediately and report to Workroom 17.”

Was his mission a success or a failure? Awi sent *Beautiful Light* toward the ship.

\* \* \*

On the way to Workroom 17, Awi stopped by *Firm Resolve*, where a metal staircase descended from the hatch.

“Awi!” Roob appeared at the hatch, lifting both tentacles. “Awi, come here! See what I’ve done!”

“I can’t. The AI wants to see me.”

“The AI? I’ll come with you.”

Workroom 17 was small and circular, with a tall screen covering the wall. The room seemed more welcoming to an AI than to a person. As Awi and Roob stood in front of the screen, the AI said, “*Firm Resolve* has been diverted from draining methane to pumping nitrogen. When the tanks are full, *Beautiful Light* will lead *Firm Resolve* to Planet 4 and scout the optimum location to release the nitrogen.”

Awi quivered. “Release the nitrogen?”

“Nitrogen is essential for all castes of the people and for bloodhosts. Planet 4 needs nitrogen.”

Awi forced himself straight. “To worldform Planet 4, even a drainer’s load of nitrogen isn’t enough.”

Roob stared at Awi.

The AI said, “As with the polar cap, this is a proof of concept.”

Roob turned half his eyes on Awi and half on the speaker in the wall. “AI, could I go with Awi and help him? I’m Roob Mechanical Engineer 3886, and if Awi has found a planet suitable for worldforming, an engineer should be there.”

There was the briefest of pauses before the AI replied. “Go with him. I will add your supplies to *Beautiful Light*.”

As soon as they left the workroom, Awi and Roob body-smacked. “I’m going with you! I’ll have been on two spaceships!” Roob said.

“You’ll have seen a planet that might be worldformable.”

Roob drew his tentacles around him. “Worldforming is an enormous undertaking. I think the AI would have sent an expedition with engineers if it was serious.”

“It didn’t deny what I said.”

\* \* \*

The next morning, *Beautiful Light* departed solo from the hangar. By the time Roob had adjusted to the microgravity, *Firm Resolve* was approaching from subplanet 6-1. The drainer’s chief engineer said, “Show me where to dump this load of nitrogen so I can go back to draining methane, like I’m supposed to.”

“Excellent Chief Engineer, be pleased to follow us to Planet 4,” Awi said. “That’s where you’re discharging the nitrogen.”

“Planet 4?” the engineer said. “Who are you?”

Awi quivered. “I’m Awi Trashpusher No-number. The AI told me to do this.”

“I’m calling the ship.”

Roob said, “I’m Roob Mechanical Engineer 3886. We really do go to Planet 4.”

The engineer cursed. “Crazy inscrutable AI.”

Awi said, “Excellent Engineer, Planet 4 is only a few hours away. Releasing the nitrogen is an experiment. Be pleased to follow us.”

\* \* \*

As they approached Planet 4, Roob asked Awi innumerable questions. Awi didn’t know the answer to most. When Roob asked, “Where would people live on this planet?” Awi answered, “Probably inside a crater under a roof. I’ve got to pilot *Beautiful Light*.”

As Awi sent the scoutship closer to the planet, he thought over his answer. It surprised him—he had answered without thinking. But he could see the advantages of a covered crater. If the cover was transparent, light would come in. The roof would also trap heat.

Finally *Beautiful Light* reached the crater the AI had indicated. When *Firm Resolve* followed, Awi said, “Excellent Engineer, be pleased to release your nitrogen here.”

The engineer obeyed. Liquid nitrogen squirted out of the drainer's nozzle, disappearing as gas immediately. The gas stayed within the crater wall for several minutes, and Awi had *Beautiful Light* measure the partial pressure.

"Excellent Engineer, you have completed your mission. Planet 4 is indeed worldformable," Awi said.

"That's impossible," came back from *Firm Resolve*. "A typical stupid trashpusher idea. If trashpushers ever had ideas. I'll report you. You shouldn't be in charge of even a scoutship."

"I'm here," Roob said. "I will make sure nothing untoward happens."

"Why the AI wasted my drainer on a fool mission when I could have carried four loads of methane is beyond me. I'm leaving."

*Firm Resolve* diminished rapidly to a dot.

\* \* \*

When Awi and Roob were back in the ship, the AI summoned them to Workroom 17 again.

"You will return to Planet 4 and land in the crater where you discharged the nitrogen. You will experience Planet 4's gravity and report on it. You will obtain samples of the surface and subsurface, as well as more precise measurements of the crater wall. Roob will read module 398-8684-0312 about domes and examine the crater for its suitability. Look at the model."

Now the screen showed a schematic crater. As they watched, gigantic transparent triangles and hexagons grew into a roof over it; then a fuzzy gray line appeared where the dome met the crater walls. Roob quivered. "What does the dome over the crater do?"

"It keeps the atmosphere in," Awi said. "The fuzzy gray stuff is a seal."

"Worldforming will take hundreds of Planet 4's cycles around the star," the AI added. "People can begin living on Planet 4 in the meantime with appropriate atmospheric and temperature shields."

"You plan for people to live on Planet 4 before worldforming is complete?" Awi said.

A silence stretched out for most of a minute. "Yes, people need to live on Planet 4 as soon as possible."

Awi wriggled with joy. "I will take Roob to the crater immediately."

"This time your mission will be ten days."

\* \* \*

Awi and Roob approached Planet 4 more slowly this time, returning to the crater the AI had indicated. No trace of the newly discharged nitrogen remained.

"The atmosphere is up a tenth of a percent since we left, and the equatorial temperature is up half a degree," Roob said.

"I guess the nitrogen, plus the carbon dioxide and water gas from the cap, had an effect. Are you ready to sample the surface?"

"What if we get trapped?" Roob asked. "Maybe *Beautiful Light* won't be able to lift off?"

"The AI wants a report. It wouldn't send us if it didn't think we could get back." Awi touched the controls. "Okay, we're landing."

The scoutship touched down near the center of the crater. After weightlessness, Awi felt a comforting pull. He lifted a tentacle. "Roob, how much gravity is this?"

Roob shifted in the halfpipe next to him. "Lighter than the ship, but I don't know how much."

"Can you calculate it for our report?"

"I'm not a physical engineer."

Awi slipped out of his halfpipe and paced around the cabin. "I'll figure it out. Everything feels better—lighter." He danced all six feet through a children's game. "I could get used to this."

"You may have to, if the AI wants to worldform this planet."

Awi and Roob sampled everything on and under the surface of the crater that the scoutship's tools could reach. At the end of the sixth day, Awi sent the information to the ship.

"This is exciting," Roob said. "I wonder what the AI will recommend to the engineers."

"Except for you, the engineers haven't heard of Planet 4. They may not be ready to worldform a planet."

“The engineers usually follow the AI’s recommendations.”

Awi closed his eyes. Did the engineers rule the AI, or did the AI rule the engineers?

\* \* \*

*Beautiful Light’s* trips became longer as Planet 4 moved to the other side of the star, and the engineers finished loading the ship’s tanks with methane and nitrogen. Nevertheless, the AI did not instruct departure. Instead it gave Awi and Roob additional scouting missions. More tiny moonlets arrived at Planet 4, all from the direction of Planet 3. Two of them entered stationary orbits above the crater being considered, and Awi cleared them out when they became dangers to *Beautiful Light*.

As Planet 4 completed its second circuit around the star, the AI made a shipwide announcement: “Examination of this system has proved that it contains the life-sustaining materials we need. Worldforming Planet 4 will produce a world very close in its characteristics to the People’s original home. I therefore propose to the engineers the worldforming of Planet 4.”

In trashpusher country, Awi told his parents that he had helped prepare the AI to make the announcement. His father snorted and went into the bedroom. His mother said, “Awi, you may have a chance.”

Awi said, “At becoming an engineer? I’m happy just scouting in *Beautiful Light*.”

In the hangar, Roob reported the engineers’ reactions to Awi:

“Our destiny is to find a new world, not create one.”

“The ship is secure and mobile. We’d be trapped in a single system if the star becomes unstable.”

“The ship is our world now.”

But the AI never let the discussion die; in fact, it directed the drainers to dump methane and nitrogen onto Planet 4. Subplanets 6-1, 8-1, and even 5-1 through 5-4 contributed gas. As time passed, older engineers vacated their posts and new engineers came forth. Roob Mechanical Engineer 3886 supported worldforming at every opportunity: “This system is incredibly rich. There’s enough methane and nitrogen for bloodhosts many times over. We don’t have to wait for Planet 4 to be completely worldformed; the AI knows how to build an atmospheric dome. Imagine enough space for everyone to spread out.”

Some engineers worried that the lower castes, if not controlled by rationing, would breed rapidly.

“We need the lower castes to perform labor on the world,” Roob said. “They’re valuable. Awi Trashpusher Nonumber has been outstanding in scouting the planet.”

Awi returned from his latest scouting trip with a report: “Planet 4’s warming is self-sustaining now, due to the increased atmosphere. We can continue to increase the atmospheric pressure if we want, and we can replenish the atmosphere that escapes. The subplanets of the gas giants are practically inexhaustible.”

\* \* \*

After hundreds of days of discussion by the engineers, the AI recommended that the ship orbit Planet 4 instead of Planet 6. Once the ship and its resources were convenient to the planet, the AI recruited favorably-inclined engineers, along with various trashpushers and pissrunners, to construct a dome over its chosen crater.

After ten cycles of Planet 4 around the star, the AI was satisfied with the dome. Its transparent roof sealed to the wall of the crater, letting in all available light. Roob and other mechanical engineers constructed a small chamber that could be pressurized and depressurized without disturbing the rest of the dome. Awi transferred a few underperforming bloodhosts to the dome as soon as the pressure and temperature rose enough—one more proof of concept, the AI said. Three medical engineers followed to care for the bloodhosts, and with few people feeding from them, the bloodhosts swelled rapidly.

Worldforming Planet 4 was happening one action at a time.

Eventually the AI proposed a new caste, worldformer, for those who were participating in the project. Roob Mechanical Engineer 3886 would become Roob Worldformer 1, and Awi Trashpusher Nonumber would become Awi Worldformer 2.

The engineers modified the proposal: Roob and other engineers would become worldformer engineers, but the trashpushers and pissrunners would remain just that.

Roob apologized to Awi in the hangar. "I tried to get them to make you a worldformer engineer. You're so much more than a trashpusher."

Awi froze. After long seconds he said, "I am a trashpusher. Trashpushers are more than you think we are. Probably pissrunners, too." He climbed into *Beautiful Light*.

Roob called after him, "What's wrong? You're a wonderful trashpusher."  
"Goodbye." Awi closed the hatch.

\* \* \*

As worldforming proceeded, the environment inside the ship became harsher. The AI reset the temperature downward several times and lowered the atmospheric pressure. Some of the engineers protested, but the AI gave reasons. Awi's parents simply complained.

One afternoon the AI said to Awi, "You will bring the rest of the bloodhosts down starting immediately. Then the passenger vessels will bring down all the castes."

Awi quivered. "Why now?"

"As I optimized the ship over the last few years, it has become less and less comfortable for people. When it is fully optimized, it will be uninhabitable for biological beings."

"Aren't you coming to the world?"

"As I organized myself, I incorporated computing power all over the ship. It is not possible to transfer me now."

"I understand. As long as I can ask you questions, I'll be all right." Awi's quiver subsided.

"My mission was to explore star systems in the Galaxy until the People found a world. You have a world now. I shall resume exploring the star systems in the Galaxy."

"You're leaving?" Awi swayed.

"As soon as the bloodhosts and the passengers are down."

\* \* \*

As *Beautiful Light* lifted off Planet 4 after delivering the final bloodhosts, Awi wrapped his tentacles around his core. He had performed this last, vital task of worldforming by himself. And he was a trashpusher.

He would always be a trashpusher, even if a brilliant one. Awi had not seen Roob since the goodbye, and he had made no effort to. When worldforming was complete, Awi would enter trashpusher territory on the new world. Forever.

But he could be in space. The AI had never rescinded its order to explore the inner planets, only interrupted it.

Planet 3, for instance. Why did the troublesome cylindrical moonlets come from there? For the sake of the People and the new world, he should investigate it. *If he stopped the moonlets, he would be a trashpusher removing trash.* From an entire star system.

Awi lifted his tentacles high, rippling with renewed purpose.