

"Openshot"

Craig DeLancey

"No no no," T.J. said.

"No. Penguin, no. Just no."

"T.J., they're in trouble," I said to her in as steady a voice as I could manage. Sweat stained my rumpled flight suit even though it was so cold in the capsule now that our breath clouded as we talked, floating this way and that in the microgravity. I envied T.J. her ability to have a crisp, ready-to-fly appearance at all times.

"This is Cutter we're talking about, right? The weapons developer who called Openshot a threat to human destiny?"

I sighed. "This is serious, T.J. Steven Frazier is dead. Cutter and Caldridge are coasting in a decaying orbit. They may be unable to make the exit burn properly."

"Bad situation," Zen muttered. Zen held a cable bundle in his hands -- he was always holding something in his hands, working on it, even during takeoff -- but he looked at T.J., then at me, with his lips pursed, a slight frown on his wide brow. Zen was our lead engineer, a great, placid bear of a man

from New Zealand, and a slightly furrowed brow was the closest he usually came to an emotional display. I was our systems expert. I'm instead a global motley, like the Openshot program itself: my mother's Danish, my father's a second-generation Swede of African descent, and I was raised in Berkeley.

T.J. hesitated. Everyone thought Frazier was a good man. If things had worked out a very little bit differently, he might have been a member of Openshot. Finally, she said, with an exasperated tone that conveyed little sympathy for the stranded team, "look, I'm not saying we shouldn't help them. Even though this is Cutter's team, I say OK, let's help them. But they're relatively stable now, not losing air or power or fuel, right? So, we should land, win this contest, and then help them."

"We don't know what we might need to solve this," I said. "We could end up needing the fuel in our landing module. Or some of its parts."

T.J. narrowed her green eyes. "Hey, speaking of landing modules: you're talking about their command, their orbiting module -- that's what's busted, right? Cutter's landing module is OK?"

I nodded.

"So what's keeping them from landing on the Moon?"

"Insufficient crew," Zen said.

"No," T.J. growled. "Cutter would land alone. It could be done."

"Well," I said. "They know they might need the landing module thrust for their orbit ascent, even for transearth injection -- though it doesn't have enough juice for that. Because right now their orbiting module is dead."

T.J. scowled and changed tactics. "We're halfway to the Moon, damn it." She pointed at the small, triangular window behind her, making her long hair swing a wide sweep through the air as she spun quickly to face it. She was agile in space. She had lost both her legs from the knees down when she crashed some junk heap of a test stealth plane four years before, and in microgravity she ditched her artificial legs and moved through the ship fast and light. Legs just got in the way in space, though her superiors at NASA had not seen it that way.

The window was opaque from condensation, and there was a fine filigree of ice outside, but the faint glow of Luna shone through. "The other teams are months behind us. Only Cutter is in front of us. We can come in first, and get the prize money. One hundred million dollars to get Openshot out of the red. To prove Openshot was right -- isn't that what you dreamed, Penguin? And the Moon -- we can be the first to walk there on our own steam. We're not going to get another chance to be the first to return. Let's walk, and then help them."

It was a good pitch. T.J. supports Openshot, but she mostly just wants to win, to prove to NASA and all those people like Cutter who discounted her that she could fly still and fly better than them. But she knew that Openshot was my life's passion. Still: the numbers were inexorable. I sighed again. "It is safer for everyone if we help them before we attempt any other maneuvers. Now, I've thought it out," I held up my PDA. "And Zen checked and cleaned up my math. They're in our orbital path--"

She couldn't help herself: she burst out, "And why? Because they copied our flight plan. All our plans were public, there on the web, and that bastard Cutter ridiculed us and then he just copied most of our work and launched three days before us."

"Right, OK," I continued, waving my hands in a placating gesture. 'Most' was an exaggeration, but Cutter's team had definitely copied some of our work. "That's right. So they're in our trajectory. We can dock, use just a little fuel. Then see if we can help. And probably still land, if we don't need the lander. Worst case, we use a joint burn to bring them back. But the landing module can go down and back probably even so."

"I don't like it." She spun in place quickly, to align with Zen. "Zen, surely this is going to reduce our chances to land."

He nodded, but said, "small difference." He inhaled deeply and seemed to relax. Put a machine in front of him, or any technical problem like this one, and he was at peace. Hence the name.

"Ground Control agrees," I added. A monitor on the wall by me showed in two graphs the opinion on the Openshot network. The global members of the Openshot team were voting two to one against helping the Cutter Industries Team before landing, an angry red bar dwarfing a soft green one. But Ground Control was recommending that our ship, the Stallman, make the link immediately and attempt to help the stranded team. T.J. frowned at this. That her position was the more popular was no solace. The broader membership of the Openshot program tended to be a bit flippant, to react too quickly. I liked to compare it to the subcortex, generating your quick but base impulses, and Ground Control instead was like your cortex, filtering and directing those impulses.

Nearly ten thousand people around the world were active participants in the Openshot, an opensource engineering project to the Moon. Some were engineers, some scientists, many were amateurs, but they all had devoted their time and some had given money to the project to join the International Lunar Peace Race to be the first non-governmental organization to put a person back on the Moon. The prize money had been staked by a

consortium of space corporations and governments. In two years, working with open plans posted to the web and vetted through these thousands of participants, the Openshot had designed a complete Moon shot. The core Ground Control team, some devoting their entire personal fortunes to the effort, had built the ship.

And nearly all ten thousand Openshot members would be listening now to this debate, albeit with a half a second delay.

I repeated myself softly, speaking only to T.J. "Ground Control agrees, T.J. And it's the right thing. We do this well, and we should still be able to land."

"You don't have what it takes to win," she spat. "You think this is still a hack. We're not hacking here. We're in flight. We're on our way. We're winning. And that means the very idea of the Openshot is winning. But you can't see that."

Silence hung for a moment. Then Zen said, "The right thing."

"Oh, use a damn verb, will you, Zen."

I cringed, but Zen just mumbled, "Not necessary."

T.J. turned, prepared to push out of the room, through the open hatch and into the landing module, to steal the only bit of privacy possible in our ship. But then she stopped in place, and turned slowly, an idea clearly dawning on her face. The displays on the walls were frantically blinking red with dozens

of emergency messages from project members around the world, and no doubt many of them were warnings about what she just realized.

"He'll land," she said.

"What?" I asked.

"Cutter. If we announce we're coming to save them, he'll land. He'll figure he doesn't need the landing module's thrust, and he'll land it and be back before we even arrive."

I had to think that over. It was plausible. Cutter was like T.J.: he wanted to win, and he would not be able to think about anything else but winning.

Zen twisted the cable in his hands, and then muttered, "most likely."

"You tell them we help on one condition only," she said. "We land first. That's it. Anything else, and I'll blow the damn safety hatches and cripple us before I'll let you dock with their Command Module. I'd do it."

"Most likely," Zen repeated.

I nodded very slowly. I didn't want to make that call -- it sounded too much like blackmail to me -- but T.J. had a point. "O.K."

"Damn fortunate one of us thinks about these things," she told me. And then she did push off and leave us to handle the mission replanning.

"Hit the burn," I told T.J. It was thirty hours later. Cutter had accepted our terms. We were strapped into our launch couches and had flipped the modules so that the main engine faced Luna. We needed another quick burn to drop us more quickly into our descent orbit where we could match up with the Cutter Team. Earth shone bright blue through the streaked condensation on the windows before us. Condensation was really getting to be a problem, and all the walls of the module had a sweaty sheen on them. The seats we sat in emitted a faint smell of mildew when we pressed ourselves into them.

"Hit the burn," I repeated.

The Stallman was built on Russian surplus, a prototype module for the D.O.A. second phase of Space Station Freedom. Like all four teams attempting the race, the Openshot had used an Apollo approach, with separate landing and command modules. Rules allowed commercial transport to and from Earth orbit, so no team bothered with an Earth landing module. Our Lunar landing module was docked onto one end of the Russian module, and an engine stack was locked onto the other. But there were two side hatches, part of the space station build-as-you-go methodology meant to allow linking of several similar modules.

We would use one of these to link with the Cutter team's command ship.

We were helmeted, which was safety procedure for any burn, and I watched stats from Ground Control as they projected across my visor. But after the silence stretched on I looked over at T.J. My shoulders turned awkwardly as I bent forward so that she could see me through the narrow view of my helmet. Green lights played in pale faded writing across T.J.'s face. Her hand hesitated over the ignition switch.

"If you don't burn now we might overshoot," I whispered.

"Yeah, Penguin, I was thinking just that," she said. And then she slapped the switch. A dull roar filled the ship. We waited until the onboard computer cut the fuel.

"Good burn," Zen said.

"Sorry to hear that," T.J. told him without looking up.

We spun our ship 90 degrees, letting Luna loom and then fill our view. We talked only over the necessary preparations, watching the ancient companion of Earth in silence the rest of the time, until after two hours Zen said, "There it is," and pointed out of the small window.

Floating a kilometer before us was the Cutter Team's ship, just visible in hard bright contrast against the dark gray of the shadowed Moon beyond.

It was a long white cylinder, built from scratch but otherwise not much unlike our own ship in size. It had only a single docking hatch, though, and so they had removed their landing module to free it up so we could dock. After a moment scanning the scene I saw their lander, a black and gray sphere with six legs, drifting two hundred meters off. They had tethered it to the ship, I think, but no line was visible to the naked eye. It looked safely distant.

"Tricky," Zen said.

"Right," T.J. told us. "It's going take skill to bring this thing in sideways and dock to that dog of theirs. So you two better be nice to me. It's bad enough that my heart ain't it."

"Right," Zen and I both said cautiously.

She did it, of course. Our docking hatches slapped together hard when we finally drifted in for the clasp, but the armatures took hold and we had a lock.

I confirmed the positive seal with Cutter's engineer over radio, but before I finished talking T.J. unbuckled from her seat and drifted down to the dock. I unbuckled and followed.

"I ain't keen on seeing Cutter but if anyone is going to face him first it's going to be me," she said as I drifted next to her.

After a check and a cross check, we slipped our hatch. Nothing seemed to be leaking, and so they opened theirs. In a moment the round top of Cutter's helmet filled the narrow passage. Cutter's helmet was a solid clear dome, like something out of an old 1950s science fiction painting.

He pushed through and drifted into our ship, then aligned with us. It was crowded with the four of us surrounding the hatch. Our legs and arms bumped as we floated towards and away from each other.

T.J. used a closed line to whisper to me, "God, look at his golf tan. He looks like a carrot." I fought down a smile.

Cutter popped his helmet off. He looked at me, at Zen, at T.J., and then he looked at where T.J.'s legs ended at her knees and she had folded her suit back. After an awkward pause he held his hand out with a hesitant smile. We popped our helmets and I took his hand.

"Austen," he said. "Austen Cutter." He was a thin, lithe man, balding with brown hair. He looked muscular even in the suit.

"People call me Penguin," I said.

He took T.J.'s hand. "Colonel Bianco," she told him.

"Colonel," he nodded. He wrinkled his nose. No doubt our ship stank. I had an unusually bad and persistent case of microgravity flatulence, and our collective skills in microgravity toiletry were completely inept. Plus there was the damn condensation and mildew. Cutter shook hands with Zen. Zen pointed at his helmet.

"Ceramic plastic?" Zen asked. He had a dreamy look in his eye. Cutter smiled proudly and handed it over.

"Bleeding edge materials science," Zen said to T.J. in a tone of awe, as if in reply, when she rolled her eyes at him. "Rigid and hard but not brittle. Cracks but doesn't shatter."

"Two verbs! That was almost a sentence," she told him.

Cutter cleared his throat. "Listen," he said. "I want to thank you for coming to help. I know that you are putting your own mission at risk, and Dave and I appreciate it very much. You've really proved a lot of doubters wrong with your project, and I guess it's fair to say I was one of them, but--"

"Let's see your problem," T.J. cut in. She wasn't about to let him seem the slightest bit human. "Zen here is eager to fix you up and send you on your way safely back to Earth." She yanked the helmet out of Zen's hands and slapped it into Cutter's arms.

Cutter frowned and clenched his jaw. I cringed a bit, knowing that was probably a hard speech for a man like Cutter to

start on and a harder one to have thrown back in his face. His eyes shifted to Zen and then to me, as if assessing whether we wanted to hear him keep talking. I tried to look sympathetic but firm. Finally he said, "Right. Follow me."

He squeezed into their ship, Zen following. "Colonel Bianco?" I whispered to T.J. as we waited together for our turns to crawl through the airlock. She was four years out of the U. S. Air Force, so the title was a huge stretch. And there weren't any titles like that in Openshot.

"I'll marry Zen before I let that bastard call me T.J." She hissed back. Then she pushed me through the hatch.

It smelled like roses in their ship, to be honest. Maybe with a faint scent of oil. Very good air filters, I guess. And everything was white and clean and dry. It was enough to make a systems engineer feel inadequate about his designs, except for the little fact that they were dead in space and our humble odiferous ship was still working.

Caldridge, Cutter's lead engineer, floated before us. "Hello," he called, and smiled with what looked like genuine relief. "I'm Dave Caldridge."

We knew his bio. MIT Ph.D. in Aerospace E. Navy pilot. We had another round of shaking hands. Then Zen surprised us by saying, "We were damn sorry to hear about Steven." Steven Frazier had been their second in command, and by everyone's

estimation the brains of Cutter's launch. "He was a good man. Smart. Fantastic engineer. Fun to know. Many people will miss him."

Cutter and Caldridge both blinked and swallowed. I nodded. T.J. looked uncomfortable.

After a moment Zen pointed around the room in what was obviously meant to be a kind of question about their status.

Caldridge cleared his throat. "A fuel line broke," he explained. He pointed at the rear of the ship. "Or maybe a joint in the line cracked. Whichever, it leaked liquid oxygen through an external panel--" He pointed along the wall, indicating the path of LOX between the hull and interior panels. "And that made some of the seals brittle. A backup oxygen tank blew, cracked the hull, and we had a decompression." He finished by pointing at a large black patch on the wall, where it appeared they had covered a hole with a big equivalent of the patch from a bicycle repair kit. "Steven was killed in the depressurization. Austen got his helmet on and then he got mine on me -- I was out cold -- but Steven was uncomfortable in his suit and had taken it off and by the time we got it on him and put his helmet on...."

"Sorry," Zen said again. The rest of us nodded.

"Yeah. His body's in the landing module right now."

Caldridge pointed at another panel. "We turned the fuel line

off at the tank when we figured out the problem, and we could maybe replace the line or joints by scavenging some lines from the landing module. But the hydraulic piping that controls the nozzle cuff broke. One hydraulic line is still good, though, so the cuff is being pressed sideways. If we fired it, it would spin us in a circle."

Zen nodded. "Can't turn off the other hydraulic?"

Caldridge shook his head. "No. The cut-off is behind the panel, and when we started to open the panel, when we just cracked it, it was full of oil that got everywhere. The stuff can gum-up the air filters. We need a way to suck up the hydraulic fluid, and we didn't bring any paper towels."

"Depressurize and open the panel?" T.J. asked.

"I wanted to," Cutter said. "And we were going to, before we thought to contact you. But...." He looked at Caldridge.

"I'm against it," Caldridge explained. "The throttle control hydraulics are in there also. We could blow those too, if we open the panel to vacuum. And the patch in the hull breach is mostly kept in place by internal pressure, and it's the only patch we have that size."

We talked it over. Cutter and T.J. visibly fidgeted while we picked at the details, both of them impatient but not willing to talk to each other while the engineers worked out the possibilities. To me, they were strikingly similar to each

other, though I know T.J. would have killed me if I had said that aloud.

I recorded our conversation and posted it in real time to the Openshot network to get engineers around the world working on it, but the problem was clear. They had a bunch of control lines meant to receive minimal exposure to vacuum that were blowing up and would contaminate the ship if we dug through to them. We couldn't fit everyone in the Stallman, so we had to be careful and fix the Cutter ship.

After an hour our ground team had a plan. "I've got a first proposal," I said. I had network glasses on, and was looking away from them like a blind man as I read messages from Ground Control. "We soak up the oil, then scavenge the hydraulics from your landing module and replace the hydraulics here. If that works, we try the more dangerous repair of the fuel line. We can depressurize the Openshot and leave from there to get to your lander. Then we stay docked, in case your lines blow again. First you burn to both get ascent and first transearth injection, then we flip and we burn to complete transearth injection. We return together."

"And how do you clean the oil up?" Cutter and T.J. asked simultaneously.

"You have to cut your hair off," I told T.J.

"What?"

"What?" Cutter echoed.

"Human hair is very effective at soaking up oil," I told her. "And you're the only one with any hair."

"That's true," she snorted, and made an exaggerated show of looking at Cutter and Caldridge, both of whom had only little halos over their ears. Caldridge laughed amiably. Zen and I had both shaved our heads just before launch.

"Who had this idea?" She asked.

"Uh," I turned my attention back to the net displays. "A fifteen year old girl in Sri Lanka. Her name is Ravijindran Seshadri. She wants to be an aerospace engineer. Her mother owns a hair parlor and they have long noticed that hair absorbs oils very effectively."

"Anybody tell her she's a threat to human destiny?" T.J. asked. Cutter frowned and started to speak, but T.J. interrupted him.

"OK, who has scissors?"

"I have a knife," Zen said.

I cut her hair close to her head, and Cutter pulled off his t-shirt, exposing a well-muscled chest, and knotted the sleeves of it to make a kind of bag. I knew that T.J. liked her long hair, but she managed to not even flinch as I hacked away at it.

She asked, "And when are you and I going down, Zen?"

"Can't," Zen said.

"That's right," I told her. "Two have to scavenge their lander, that has to be Zen and Caldridge. They're the engineers."

"We're all engineers," T.J. said with annoyance.

"You know what I mean," I said. There were engineers and then there were astronauts with engineering degrees.

"OK, so you and I go down while the Ph.D.s tinker."

"We can't expect Cutter to control the orbit module for rendezvous. Those are my systems. They're a little -- personalized."

"So we wait. Then Zen goes down with me after all of this is fixed."

"Not good," Zen said. "Undependable." He pointed a thumb towards the patch on the Cutter ship's hull.

T.J. didn't like where this was going.

"I'm going down alone, then."

"No," I said slowly. "It'll have to be with Cutter."

Cutter smiled, and tried to look agreeable. "I would be honored. And you and I are pilots, Colonel. We're only in the way here."

She spun to face Cutter. I growled in protest as I had to jump back to ensure I didn't stab her with the knife I'd been cutting her hair with. "We're not sharing the prize," she said to Cutter. "Get that clear."

"Of course not," Cutter said. "The prize is yours. If you can land."

"Shit," she said.

"There's a big rock right below you," I told T.J. over radio.

"I see it," T.J. said. "Give me another ten seconds of burn," she told Cutter. The landing module shook, and the roar was clear right through their helmets so that I could hear it in the command module. We had learned from the Apollo missions about the how the landing could stir up a lot of dust, and had radar on the base of the ship, and I was watching that as T.J. took a visual and fed instructions to Cutter. She peered out the window, and glanced at the two bottom-camera views, and held her breath as they drifted past the sharp-looking spire of stone that loomed in the middle of the landing site.

They had dropped smoothly down towards the Lunar surface, burning first the main engine to drive descent and then attitude jets to line them up for landing. The soft gray dust had slowly resolved into different shades, and then into a surface shot with shadows as the boulders and smaller craters came into resolution. Cutter chatted away for the first forty-five

minutes of descent, running twice through the landing procedures, questioning me on the radio and then T.J. Finally he tested the waters with T.J. again.

"Listen, I'm sorry if the things I said insulted you."

T.J. snorted. "Openshot is landing, so what we did puts the lie to everything you said. Right?"

She asked the rhetorical question pointedly and he couldn't resist answering it. "I never said you couldn't win."

"No," she spat bitterly. "What you said was, and I quote, 'the Opensource Rocket Program' -- you couldn't even bother to name Openshot properly -- 'the Opensource Rocket Program will have a tremendously negative --'"

I couldn't help it: I interjected, "Pernicious."

"A voice from the heavens. Thank you, yes: 'A tremendously pernicious effect on humanity and human destiny by destroying the benefits of privatizing space exploration with an unsustainable--'"

"I did not say unsustainable," Cutter interrupted. "I said 'unscalable.'"

"'An unscalable stunt.'"

"I still believe that your approach isn't scalable. Look, you and I and Penguin want the same things."

"You just want to win."

"Sure. So do you. But I want the human race to go into space. And you can't do that with this kind of model. Space is expensive. Where does the capital come from on your approach? Who pays for it?"

I almost answered over the command line, but T.J. answered first, and to my surprise she answered clearly and well. "Do the math. Most of the cost of space exploration goes into design. Opensource makes design better, and it makes it cheaper, and it makes it safer. That's scalable."

"But you have to make ships!" He said. "Who will--"

"Enough," T.J. interrupted. "You have to fly this ship. So talk philosophy with Penguin when you get back to Earth and right now just shut up and take orders."

He'd been silent after that, except to answer commands. T.J. had hardly spoken either, grunting answers to questions and mustering English only to correct Cutter. Fortunately, our two landing procedures were similar -- and Cutter had studied ours, as they were public -- so we could let him control the landing burn throttle as T.J. surveyed the landing prospects visually.

"Good. That's it," she told him. "There's too much damn dust kicked up now for us to see much else."

"Radar shows clear range," I interjected. "Though radar's not much use at this distance."

"Just got to hope we're lucky," T.J. said. "Drift nicely down. Touch it." I heard the shudder of thrust. "OK, again. Again. Wait. Again. We're there. Get ready for touch down. Give me two seconds. Right."

The module trembled as the landing spikes settled into the bright powder. They had a meter per second of speed, some of it lateral, and the lander tilted slightly, as if it wanted to tip, before it fell back and settled.

"Orbital," T.J. called to me. "The Stallman LLM has landed."

"Luna, congratulations," I shouted. Zen laughed and howled behind me.

T.J. and Cutter snapped off their seat straps. "Powering down our engines."

"We have received congratulations from the International Lunar Peace Race Board," I added, reading the message off my visor. "As soon as there is a moonwalk, Openshot has won the contest."

I switched my view to full visual through T.J.'s suit cameras, and saw that she had opened up full net projection on the inside of her helmet screen, just to see the graphs of communication volume moving through the Openshot net channels. She skimmed a few of the congratulations coming in from members.

An engineer in India. A doctor in China. A school girl in France. A former astronaut in Russia.

"Let's depressurize and walk," Cutter said.

"Right," T.J. said. She sounded cheerful. "Let's."

She forced a methodical run through the full checklist, and then they vented the landing module's atmosphere.

"Command, I'm about to open the hatch." T.J. reached for the long, heavy red handle of the manual hatch release. Cutter was in her way, crouching between her and the hatch in the cramped quarters of the lander.

"'Cuse me," she said.

"No."

She pulled back, surprised. "What?"

"No. I'm going first."

"What the hell are you talking about? You can't possibly think the jury will award you the prize that way." She pushed him aside and managed to grip the manual release handle and hold on, but he pushed back and wedged himself into the recess of the hatch.

I cut in. "Luna, this is Orbital. Jury rules are clear. It is the landing module that determines prize winner. You won't get anything for walking out there first, Cutter."

"To hell with the prize," Cutter said. "I just want to be first. I owe it to Steven. I promised him we'd walk first on the moon. And we got here first."

"No you didn't," T.J. said. "You got into orbit first."

"We'd be here already, if you hadn't blackmailed us."

"You couldn't put your lander down because your ship has a shitty design. That's what the contest is about, you ass."

Cutter's voice got calmer. He sounded resolved. "I could have walked here yesterday. And I promised Steven," he looked pointedly at T.J.'s suit legs, which were filled out now with the prosthetics that she had put back on. "I promised Steven one of us would walk first on the moon on our own two feet."

There was a long pause.

"You son of a bitch," T.J. whispered. "Do you realize the whole world is watching you right now, listening to you?" I heard T.J. grunt then as she grabbed Cutter and tried to pull him out of the recess of the hatch, but she had no leverage and it was impossible. Finally, Cutter reached up, and pulled the hatch lever down. Behind him, a pale gray glare shone. He backed out onto the ladder.

T.J. held her breath. I switched my view to the outside lateral camera and watched as Cutter leapt from the top of the ladder, as if afraid T.J. was going to reach out and pull him back in if he didn't rush. He landed hard, and said, after a

grunt, "I return to Earth's moon in memory of Steven Frazier, astronaut."

I switched my view back to inside T.J.'s helmet. She had left the net traffic images playing on her visor, and as she and Cutter had argued the color of the messages had shifted from green to red. I saw there now a long line of messages, bright with urgency tags, with subject lines like, "CUT HIS SUIT!!!" And "RE: HIT THE BASTARD."

"I'm going to kill him," T.J. whispered. With a few violent jerks she pulled the manual hatch release free from the bolt it turned. It was massive, a long steel wrench.

I had override control for all systems, in case someone was hurt and I had to take over. I closed down her net views and her outgoing public lines, and then spoke to her, loud, on a private channel. "T.J., listen to me. Listen. Think of what he just did."

"He stole the walk," she whispered. "And I'm going to kill him."

"T.J., he did something we never could. He just revoked the articles of incorporation for space. He just made the most eloquent argument for the Openshot dream anyone could have made. We got him here using the opensource methods, using cooperation and an open discussion of our challenges. And he had to steal the opportunity from you. Let him go, let him act like he won.

Because we just won. We won the money. And more importantly, we won the argument. Opensource will have a seat at the table from now on. It will be part of humanity's expansion into space. We won everything we wanted, T.J. You won everything."

She said nothing. But she didn't move.

"T.J., leave the wrench, ignore him, walk out there now, and history will say that you were the one who returned. You were the first to prove that space exploration is something everyone can be part of. Go. Prove it. Prove you are the winner."

I was crying now as I said it, the tears clotting awkwardly in my eyes and clinging to my lashes top and bottom after I blinked. Zen had floated up next to me and he put a hand on my shoulder.

"Prove it," he whispered to her.

T.J. put the handle back onto the hatch bolt, and bent down to peer out at the open white surface of Luna. I returned control to her suit, and opened her lines.

She climbed slowly out, and descended the steps silently, in reverence. She stood a long time on the last rung, looking out over the soft powder of Earth's primeval twin. Billions of us had longed to walk there, to run there, to set foot upon that tauntingly nearby world. Some few had done it, and now, now, perhaps our return was the first of many returns.

T.J. stepped down on Luna and said, her voice soft but clear, "For everyone."

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