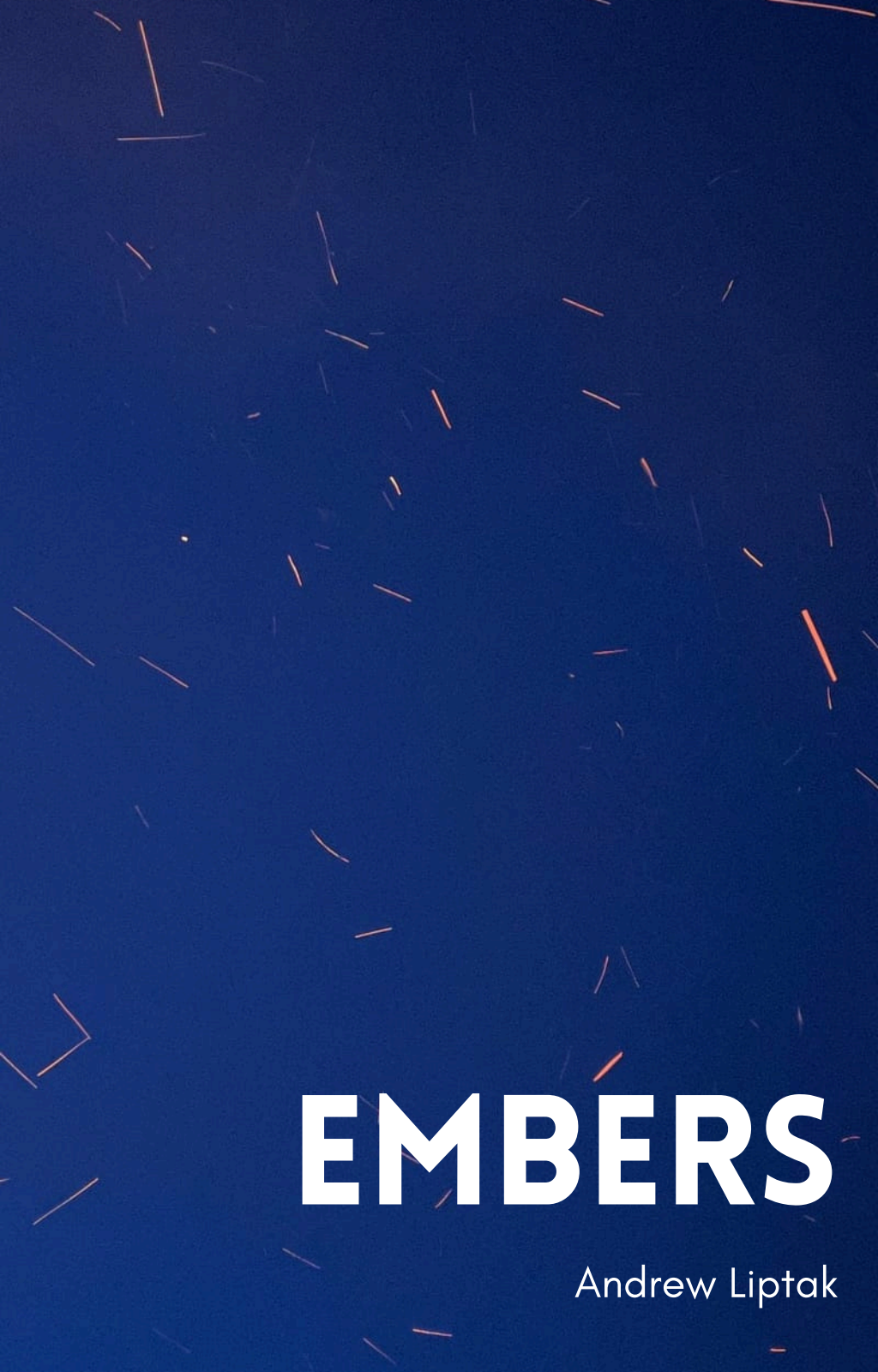

EMBERS

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A Transfer Orbit short story
Published by Andrew Liptak

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To Bram and Iris

Foreword

I keep a notebook in my bag to jot down ideas as they come to me. Sometimes, these are parts of a world: a character, a piece of technology, or a scenario. A while ago, I was reading an article about the persistence of landmines and the efforts to locate and deactivate them.

Around the same time, I had been thinking about war in space, and couldn't shake an image of a military historian trying to untangle the order of battle and to track down where all of the spent rounds and missiles might have ended up.

When I was invited to imagine and explore a post-nuclear future, the story around that kernel of an idea suddenly snapped into place: a way to look at a world attempting to deal with its troubled nuclear baggage in a responsible way, setting aside tribalism for a future where we agree that mutually assured destruction is not a path forward.

This is entirely something up my alley: I got my MA in Military History, where I specifically wrote about how we transitioned from weapons designed to carry nuclear weapons around the world to more peaceful purposes.

The anthology included some other excellent authors: Madeline Ashby, Vincent Ialenti, PAGES Matam, Paul D. Miller (aka DJ Spooky), Annalee Newitz, Malka Older, Tochi Onyebuchi, João Queiroz, Sheree Renée Thomas, and Peter Waring. All of the stories come with audio versions, and I definitely recommend checking them out.

Now

There's a moment before launch when time slows to a trickle. The little details around the cockpit jump right out at you: the shuddering of a loose switch cap, the glare of the touchscreen in front of me, and the creaks and groans of the rocket underneath us as it prepares to leap into space. Rickson, the pilot for this mission, turns from their seat to check up on me, nods when they see that I'm still strapped in, and goes back to whatever it was they were doing as they prepare for liftoff. The cartoonish Gambian rat mascot of Orbital Atomic Assessment and Retrieval division mission patch grins up at me from their left shoulder, riding a rocket around the earth waving a cowboy hat. It's a goofy enough image to take my mind off the impending ride.

"Ready?" They ask.

I nod, and before I can say anything, the rocket lurches and rumbles as it kicks to life, and we're off into the brilliant blue sky.

Then

I only have one clear memory of Oma. I'm at a massive parade, surrounded by cheering people waving bright-colored flags as a line of giant, armored vehicles lumber their way down a street. I couldn't have been more than four at the time, but I clearly remember the sound of the brass military band as it passed by. I remember looking for Oma's face as row after row of soldiers marched by in their dress uniforms.

That memory lurches forward a couple of hours. Oma stands before a wall of flags and uniformed men, and someone places a medallion around her neck. I remember the glint as it caught the light of the sun. She was still wearing it after the ceremony, and it dug into my chest when she scooped me up in a hug. She must have felt my discomfort because she laughed and placed it around my neck. "We've done great things," she told me. "We'll be safe forever."

I didn't notice the uneasy looks my mother and father must have exchanged, because just a couple of months later, we were awoken in the middle of the night. My parents told me that we were going on an adventure, but we had to leave quickly, and I only had a couple of things that I was permitted to grab: a favorite shirt and toys, and the gold medallion. A car drove us to an airfield, and we were ushered onto a plane, which took off into the night, taking us to our new home.

Now

The spaceflight trainer that OAARD assigned me warned me that the second stage cutoff was always a surprise, and they were right. The cabin jolted as the booster cut off and silence enveloped us. As the acceleration fell away, so too did my sense of weight. You've seen the videos, and it's just as delightful and disorienting as you'd imagine. Fortunately, I didn't have the sense of nausea that they warned I might feel.

Rickson stretches and deftly unstraps from their seat, pushing off and sailing up and out into the ship's main compartment, pantomiming as a dancer as they flew past. I fumble with my own restraints, trying to figure them out.

The mission's commander, a olive-skinned woman named Allens, reaches over and helped, unclicking the latch and freed me from the tangle of webbing as I oriented myself. She chuckled at what I'm sure is embarrassment on my face. “Everyone’s a klutz on their first ride up,” she says. “We’ve all been there.” She checked her watch. “You’ve got… 60 hours to get oriented before we arrive on platform.”

She followed Rickson out into the cargo compartment, leaving me to take in the view of the Earth gliding silently below.

Then

I was too young to fully understand why we didn't see Oma again. My parents said she was too far away to visit, but the times we spoke via vidchat were few and far between. Eventually they found excuses to deflect and then those periodic chats fell away. Through it all, I would sometimes get out of the metal from my dresser drawer and trace my fingers over the text in characters that I remembered a little of.

The news was full of serious – looking people speaking in urgent voices. Once I caught a glimpse of a mountain of video clip standing and shouting in a circular room full of people. Dad turned it off and left the room while mom announced that we were going out. We spent the afternoon watching movies at the local theater. When we left to return home, she pulled me aside. " Don't tell your friends where we're from," she instructed. "Don't tell them about Oma."

Now

“So Professor, how did you find this again?”

Rickson moved through the crew compartment practiced ease. They and Allens are contractors from a private space corporation called Olympia Aeronautics, and between them have decades of space flight experience between them. As they explained it, it’s a pretty routine gig: one month on a couple months off as they shuttle whatever payloads they’ve been hired to more. The company did a lot of work with ORAAD’s compliance team back in the day, orbiting the planet looking for telltale signs of radiation or nuclear activity, and they were more than happy to shuttle me up for this mission.

It’s a cozy gig, they told me when we first met. In the decades after the denuclearization pacts of the 2040s, plenty of countries breathed a sigh of relief, not having to devote resources to an arms race that expended trillions of dollars, and instead began focusing on more productive endeavors: massive energy and infrastructure projects, space programs, and the like. Without the drumbeat of a potential threat, demand for maintaining nuclear weapons dried up, and the hardware and the facilities to them just aren’t around anymore. ORAAD’s days of heavy lifting and retrieval ops are decades behind us, but the organization has long-term planning for the worst case scenario embedded in its DNA.

“Accidentally,” I tell them. My main role is essentially traffic control, with a hefty dose of archival research. I wasn’t actually a professor, but Rickson had settled on that nickname shortly after we met, and I didn’t mind it.

“The Cold War and subsequent booms of private spaceflight in the rise of tensions at the early part of the century meant a lot of hardware went up an orbit which… nations and organizations didn’t always keep good track of.”

“So what, this is a rogue nuke?” Rickson asked.

I shrug. “Donno. It’s got the right radar signature, it’s in the right ballpark and orientation. It’s too small and moving too quickly for a visual snapshot on any of our telescopes.” I spread my hands out to take in the cramped compartment. “So here I am.”

“Expensive way to take a peek,” Allen said. I jump a bit: I didn’t hear her approach. “Sorry, I forgot that you aren’t used to moving around here yet.”

I shook my head. “We’d normally just keep an eye on it, but there’s a problem with its orbit: it’s straying too close to the Luna-to-Venus-to-Mars slingshot route.”

“Is it going to hit something?” Allen asked. “Space is pretty big.”

I worked to put the complicated orbital calculations and organizational thinking into a coherent sentence. “ORAAD is… I wouldn’t say paranoid, but let’s say it has a low tolerance for margins.” I explain. “Collision isn’t the first worry here, actually. We — I — was running calculations on some legacy launches from the pre-pact tensions, and ended up running through decades of calculations to find this thing. It likely won’t collide with anything, but their biggest concern is that the data that I pulled is all public: anyone with an off-the-shelf AI system can do what I did, and that there’s a non-zero possibility

that some rogue actor could find it, come to the same conclusions, and figure out how to get out to it. There are plenty of autonomous freighters headed out to the new installations orbiting Venus and on Mars, and someone getting onto one of those ships and getting close enough for a retrieval…" I shrug. "It's an exceedingly small chance, but everyone on the ground figures it's a small price to pay to make sure that doesn't happen."

Rickson whistled. "I'm pretty sure I saw a movie about that once."

I laugh. "Yeah, it's a bit out there. But again, low tolerance for margins."

The astronaut laughed and struck a dramatic pose in zero-g. "Maybe we'll uncover some secret thing out there, and we'll be the basis for a blockbuster vid. Commander, you gotta capture this moment for posterity."

Allen barked out a laugh, and swooped in, taking a selfie with the three of us with her handheld.

Then

Mom and dad didn't tell me when Oma died. I was at college when my feed blipped an alert. I'd set it up to track news from my home country after an argument and youthful umbrerage after my parents redirected yet another question about our family's past one too many times.

I knew the basics guided by the fragments of my memories. She had Risen through the ranks of the military and have been involved with diplomacy as the rest of the world tightened embargoes and sanctions against the country's increasingly radicalized government. But more details were harder to come by. Reading the headline my stomach dropped. Words jumped out at me: hardline. Extreme. Genocide. Oversight.

Years of unspoken answers snapped into focus. She wasn't leading the country as they threatened arms buildups and staged increasingly violent geopolitical flashpoints, but she was the one making sure those actions were being carried out, translating the rhetoric and speeches into policy.

I threw up and went to bed for days unableTo face the world with anything but shame. When I emerged, I went to the registrar and change the focus on my studies from engineering to international law.

Now

The spaceship's thrusters kicked in as the AI made minute adjustments to our course. I looked out the front porch but only caught a glimpse of the Earth and the moon in the corner. We were still too far away for visual contact of our target.

"What are you thinking?"

I was getting more used to knowing where everybody was on the ship. Allen floated upside down in the compartment, cradling a warm drink that she sipped through a straw.

"Just how pointless it all seems," I answered, flipping around to match her orientation. Even if I've acclimated to microgravity, it's still weird to talk to someone who's upside down. "You look back on the Earth and don't see the borders on a map, and remember that we're all so small in the greater scheme of things."

She nodded. "The early astronauts and scientists called that the 'Overview Effect'. The very act of being confronted by our fragility and insignificance in space is a transformative one." She signed, looking out toward the distant Earth and Moon. "It's why some of us keep coming back."

I nodded. "It's part of how OAARD came about. The threat of nuclear annihilation has always been part of the space industry, but when you have more and more people going up into space, eventually, they just get sick of the bullshit taking place on the ground."

"I think I read that somewhere," Allen mused. "Is that how you got involved?"

I opened my mouth to answer and paused, trying to think up the best explanation. "My mother and father fled when they saw the directions things were going back at home," I replied, "They'd realized when they had me that the life that I'd have there wasn't something they wanted, and they chose to leave everything and everyone behind to give me options."

I stared out the window at the tiny ball that was Earth. "I didn't know all of that until later. When I learned the cost… I realized I was in a place where I could help make that decision worth it, make those choices matter. Turns out hunting down old nukes through years of archival research was a pretty comfortable way to do that. Never thought I'd end up in space, though."

Rickson voice broke into my earbuds. "We've got a radar lock on our target. 12 hours to platform."

Then

I thought I'd thrown Oma's medal away. I'd been disgusted with what I realized it represented: a thank you for years of work ensuring a military buildup and genocide of her own people. What justifications did she make when she looked in the mirror every morning, adjusting her uniform? That the journey was for her country? Her family?

Da must have found it, because when I told him and mom about my work tracking down the various weapons that had been launched into space and lost, and my impending mission into orbit, he vanished into the bedroom and returned with a bundle, opening it to reveal that hated adornment. The ribbon was frayed and metal dully polished from handling. He held up a hand when I started a protest. "I know what it meant to her and what it represents," he told me. "And what it meant to everyone else." He placed it in my hand and curled my fingers around it.

"She wasn't evil," he said, "however much I hated her for what she did, and what it forced us to do. She was just someone who made the choices that were before her to protect her world in ways that seemed logical in the moment. She chose poorly and I hate her for not seeing what she overlooked. I haven't — and won't — forgiven her for what she did, but you can learn from her mistakes. That's how we grow."

The next morning, I packed the medal into my carryon as I tried to calm the pre-launch jitters that bubbled up in my stomach.

Now

Our target was smaller than I imagined. Its gray shell glinted against the backdrop of space: a stubby cylinder with an engine cone at one end, and a shroud containing its payload at the other. My breath hitched in my chest when our spotlight caught the familiar flag of my birth country emblazoned on the side. There was still carbon scoring wrapped around the rocket from when it launched, decades ago.

Smaller, but familiar. After my revelation about Oma's work, I'd gone from studying engineering to history and international relations, focusing in on the weapons we'd hurtled into space. I'd spent years studying and modeling various launches that made it into orbit during those tense years. I'd gone through hardware design specifications and launch conditions, and followed those missiles until we figured out where they ended up — usually incinerated fragments in the atmosphere. This was one that vanished after launch, and presumed lost. I hadn't been convinced, and I theorized that it had made some incorrect burns and ended up drifting in space. Now, it sat before me.

My breath hissed in my ears as I stared out through the open hatch at the end of the airlock module. Rickson chattered away as they made the last corrective burns as we caught up and matched the launch vehicle's velocity and heading. I double checked the tether connecting me to the module for the tenth time, finding that it was still firmly attached. Allens was behind me in the airlock, her visor shielding her face from view. We'd practiced our procedures on the ride up, and I was finally a bit more comfortable wearing the bulky white suit.

“Radiation check,” Rickson tells us over our earbuds. I held my breath as we waited for the sensors to finish reading. “Computer tells me that there is a radioactive thing in there, and it matches up with those stats you brought us, Professor. Looks like we’ve found the right target.”

I let my breath out slowly. Up to this point, everything had been theoretical, and automated. Launch, allow physics to take its course, and now, human decision. I swallowed. “How’re the levels looking? Any abnormalities?”

There was a pause. “Nothing dangerous from it directly. We’ll catch more rads on the ride up and back than we’ll get from that thing.”

I ran through my mental decision tree of if-then situations. If the object was our target, check for danger. If none present, proceed with mission. “Okay, let’s go get it.”

Rickson bricks us closer. I swallow and turn to Allen, who flashes a thumbs up. I turn and take a deep breath and gently step off the platform and over to the floating missile. The distance isn’t far: just a few meters, but the seconds it takes to cross feel like minutes. I watch as my target grows closer, and reach out as I get closer. “Contact,” I call out, louder than I planned, as I feel my hand touch the metal shell. I pull a tether from the holder on my thigh, remove the cover strip from one end to expose its sticky epoxy surface, and affix it to the target. We didn’t want to use magnets for this op: we weren’t entirely sure if a strong magnet would mess with the rocket or its payload. “Target secure,” I tell Rickson and Allen after an experimental tug.

“Nice work,” Allen says. “I’m reeling the two of you to the workstation.”

Our mission is two-fold: confirm that my research has been correct and what we've been latched onto is indeed our wayward ICBM, and from there, remove the warhead and bring it back to Earth, while leaving a small scientific package in its place. Before we'd leave, we'd attach a small navigational beacon to it to prevent any future mishaps that could arise.

By the time Allen reeled me back to the spacecraft, she'd deployed the workstation: a small platform that could allow us to secure our larger spacecraft to the missile vehicle, with the right tools and power to start work on it.

Our first step was to make a positive identification. I pulled up a virtual screen in my visor, a list of identifiable numbers and flaws that we'd gleaned from documents long since leaked to intelligence agencies or open-sourced networks. I laid my hands on the object, the first person to do so in decades.

Allen handed me a chunky zero-G screwdriver, and after securing ourselves to the platform, set about taking off the exterior panels. It was slow-going: the screws holding down the cover plate came up one by one, which Allen plucked and affixed to a magnetic patch on her suit. When we finally exposed the rocket's computer, we knew that what we'd found was indeed our target. On the interior of the panel was a familiar name: Oma's: written in her — my — native script.

"Professor, your heart rate just spiked," Rickson said. "Are you okay?"

I nodded to myself. "ID confirmed," I told them. "This is what we came for."

"Well good. Just don't blow us up, please."

That cut through the tension like a rocket through the clouds, and it took us a moment to catch our breaths after laughing.

"Checking power." I pulled a cord from my suit and plugged it into a slot in the rocket's computer. I felt a click as it seated itself, and began running down a list of procedures. The system had long since drained itself, but after a couple of minutes, my suit recharged it enough to blink sleepily to life. A stream of ancient programming language ran across my visor. I'd practiced this with simulators, and read along as it booted up. "The payload is still armed," I told them, skimming the text. "It's as I thought: this thing launched and misfired a transfer orbit. Instead of jetting back down to Earth, it ended up zipping out into space."

"Jesus." Allen said. "Catastrophe averted because of a programming error."

"Stranger things have happened," I said. "This wasn't designed for anything but a demonstration over the Pacific. I don't think it would have actually gone off: just set off a ton of sensors and kick up even more alarms down on Earth. But this… I don't think this was an accident. There's some programming in here that wasn't in the original specs that we recovered from intel. It was added after the fact."

"Weird. Can we finish up now? I don't like the idea sitting on a live nuclear bomb."

"Yeah." I clicked through a virtual screen with my hand and selected a command. The lights on the computer dimmed and blinked out. "Payload is disarmed."

"That's it?" Rickson asked.

"That's it."

“Where’s the kaboom?” They said in a cartoonish voice. “There was supposed to be an earth shattering kaboom!”

“No kaboom,” I confirmed. “We’ll extract the warhead and be on our way.”

Allen and I spent the next twelve hours prying apart the missile and its payload. We physically removed the firing mechanism to prevent any possibility of a detonation, and then carefully packed it away into a lead-lined container to bring home. After that, the scientific package slotted in nicely. Allen handed me each of the screws as I reapplied the cover plate. When it was done, she cut the fabric tether. Rickson hit the thrusters on our ship, and we watched as we drifted further and further apart, until the only thing we could see was the blinking light that we installed.

“You said that you didn’t think that it was an accident the way it ended up here,” Allen said as we watched. “What do you think happened?”

I patted the now-empty pocket that had contained the gold military medal that I’d carried with me. “I think that maybe someone made a choice all those years ago,” I said. “They saw an alternative future ahead of them and decided that it looked a little better than the path they were on.”

“Good for them,” Allen said, and pulled herself back into the airlock.

I watched as the glint of the rocket vanished from sight, then turned and looked down at the distant dot that was Earth.

“Good for her,” I said to myself.

The End

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