THE ASTRONAUT OF WILLENDORF (BEGINNING CHAPTERS)

by

Alison Ross

A Thesis
Submitted to the
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of
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in Partial Fulfillment of
The Requirements for the Degree
of
Master of Fine Arts
Creative Writing

Committee:

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Date: _____ Spring Semester 2021
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Fairfax, VA

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Bachelor of Arts
University of Mary Washington, 2011

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DEDICATION

I would like to dedicate this thesis to all the Professors of the MFA program here at George Mason University. This past year has been a rough time for teachers, and I don't just mean because they had me for a student. They have not waivered in their commitment to making people better writers and exploring all the themes, techniques, and other beautiful intricacies of literature. I am grateful to them, and grateful for them.

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I want to thank my family for all their support over the past six years. They have listed to me talk about homework, essays, research, and deadlines all the time; they have bounced around ideas with me to help fight writer's block; they have encouraged and supported me in so many ways through this entire journey. I am privileged to have such a strong foundation. To the Ross Family: Mitchell Ross (Dad), Janet Ross (Mom), Michael Ross (little brother, no matter how tall you get). None of this would be possible without them.

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ABSTRACT

THE ASTRONAUT OF WILLENDORF (BEGINNING CHAPTERS)

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George Mason University, 2021

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This thesis contains the beginnings of a creative fiction novel. Astronaut and engineer Maria de la Cruz should have listened to her gut feeling when a shady billionaire convinced her to join the crew of his personally funded mission to the planet Venus. Now she's been abandoned by a less than competent and treacherous crew, with limited resources and PTSD. Can she survive long enough to send an SOS to humanity? But that's only half the story. Occasional corporate infiltrator, one-time lobbyist, and sometimes fixer Amber Gray is haunted by the last conversation she had with her long term on-again, off-again girlfriend before she was supposedly killed in a spaceflight accident. Proving a conspiracy is only the first step – can she convince the world to spend billions of dollars and more than 15 minutes of attention on one human being? What odds are more impossible – the unyielding laws of space or getting humanity to do the right thing?

Prologue

They meet like witches, in the amaranth dark of night. They meet like witches – engaging in education, congregating with like-minded fellows, and temporarily immortal as the young at heart or in body often are. The hour is precocious, and the field grass underfoot is slowly becoming damp with condensing dew. Not slippery and dangerous to ankles yet, but waiting in anthropomorphic fashion for a picnic blanket or a beach towel to lie with backs down and wide eyes up, the pupils still adjusting to a lack of any light pollution for miles in every cardinal direction. The student tablets locked into dark mode setting give off a low red glow invoking archaic darkrooms, sealed and secluded, or neon lights winding above and losing their way through city alleyways. Or the lonely shots of phosphorus flare guns, equipment so outdated as to be antediluvian, over a vast and desolate ocean.

The class is a practical one, held outdoors, at night, on the grounds of a vineyard around five hours northwest of the university campus, depending on traffic and weather. Although the vineyard's centennial has already come and gone it is not that old of an estate, having been founded in the years between world wars. Still, vineries are not as prominent in the state of California as they once were. The original owner fled black blizzards, the choking hot dust storms

of midwestern America. The more his nightmares chased him into waking life – the torture of grit scrubbing at his eyes and skin, the sound of elder relatives in the next room gagging for breath, beloved childhood toys and even animals getting loose, lost, and buried – the harder he focused on the lush landscape of his vineyard. It was not the taste of the grapes alone that motivated him, unlike most other wine-loving entrepreneurs. It was the lush promise fulfilled every day of working and living in a picturesque bit of earth, in a way that an orchard, or a grove, or a farm wouldn't allow. Nobody held weddings against a backdrop of rows of vegetables. In addition to their vintage output the grounds had – from the very beginning of their operations – served as the setting to numerous informal live concerts, charity auctions, high school plays, corporate team building exercises, retro movie nights, and parties of every kind. There was even the occasional hosting of astronomy lessons thanks to the isolated location, from basic family-friendly events that ended at modest hours, to amateur gatherings with all kinds of telescopes and tools, and introductory 100-level collegiate classes for prominent schools that could afford the rental fee and buses to shuttle the students.

In this way, it remains one of the very few vineyards to have survived the series of west coast wildfires. The current owners are cognizant, vinegar bitter, that eventually more will come, though hopefully not in their lifetime.

The crone of a professor is already resting in an Adirondack chair, a complimentary glass of Cabernet cradled in hand and almost gone. Margaret

Eckart's been teaching this way long enough to make friends with the tasting room attendants, even as they eventually and individually take new jobs and are replaced, steady as Polaris. The students are spread out around her, like children come to sit at her feet while she reads them a story aloud, but then thrown out like the joints in a Hoberman sphere. That's fine with her; they only need to stay in working range of their earpieces and Margaret's microphone. Her teaching assistant, poor boy, is the one tasked with rounding up the students and setting the scholarly mood – checking that tablet batteries work, reminding them of next week's assignment, taking attendance as students wander off for a bathroom break at the last minute. There's no reason to think the vineyard unsafe, but it is the middle of the night, and they are in an open field. He also hands out school property; earpieces for students who've forgotten or lost their own personal ones. None of them ever want to use the school pieces in the first place. University earpieces are older than the students themselves, with actual cords that have to connect to a boxy power source. And after hours cooped up on a bus they suddenly have access to clean restrooms, overpriced if admittedly scrumptious sandwiches and small bites, verdant ground to roam, and in sight but out of reach is the hefty stock of good wine. Most of them are still too young to legally purchase and consume any of the vintage on display, and there's always the novelty contrast between this elite and showy kind of consumption, and their own teenage understanding of how to enjoy hard liquor, always nicked as it tastes better that way. As long as they're awake and sober tonight she

doesn't care what makes it back to campus tomorrow hidden at the bottom of licensed backpacks or hoodie pouches, all of it machine embroidered and factory dyed with university initials and slogans. She never does.

One of Mother Nature's nasty little children flutters to a rest stop on the professor's bare arm, the buzz past her ear an alarm, and Margaret quickly slaps it dead with her free hand. The price of forgoing a diethyltoluamide body spray, although she has a bottle somewhere for students who want it. It would have had the same effect as the last rounds of wildfires that once and again polluted the tang of the air and the grapes. But the very existence of the insect is a biomarker of the terrain healing, a return to its more natural form, and she loves to breathe deep here along with her wine. It's been just enough time.

She is brushing off the small amount of blood and insect pulp on the hip of her pants – she never wears anything costly that she can't hike in anymore, it all gets thrown in the washer – when her TA hustles over. The dim light from the little Orion Redbeam she lent him bobbles with his movement like a nocturnal fairy unmoored on its own dust. Margaret asks if all the earpieces are working, but he's breathless with a different concern.

"Recreational usage of cannabis has been legal in this state since before you were born," the professor reassures him. It's never been a problem before.

"It's banned on campus!" the boy hisses, more in panic than anger. "Under punishment of expulsion!"

The professor takes a sip, generous but not quite a gulp. “We’re miles away from campus.”

“What if someone snaps a photo and it goes online? Or an administrator smells it all over us when we get back tomorrow?” He quickly corrects himself, and for some reason is trying to whisper. “Later this morning?”

“You recall I had everyone leave their phones on the bus and then locked it? Bright screen light would disrupt how our eyes have adjusted to the darkness.” It’s a requirement listed in bold capitalization on her syllabus, and why she always loses a few more students than normal in the first weeks of the semester. Their smartphones – she still thinks of them that way – are an extension of people as innate and ever-present as a third hand. It’s no wonder they’d smoke a little jolly green to treat the separation anxiety.

The TA agitates in place. “What if someone here is allergic to it? Do the owners allow it, what if they kick us out? What if someone uses a lighter and there’s a fire? A fire, here! I’m in charge, I can be blamed for anything!”

Nobody used paper reefs anymore, not with the price of wood pulp these days, and not with how it was cheaper to just buy chips and candies. But glancing sideways into the black she hears the rustle and chatter of students she hopes are prospective stargazers and scientists, and Margaret sees a few tiny pinpricks of light like atomic tangerine pips. If they were a cleaner color they could be fireflies; a dozen degrees higher into the observable celestial sphere

proper and they could be K-type dwarf stars, and for a moment she imagines a world where they aren't just the ashy ends of common cigarettes.

She wants to sigh, she wants to hug the glass of wine to her chest, but she won't in front of the TA, even if they can barely see each other. The vineyard had gone through years of careful cultivation – of the soil to make the drink palatable again, of inviting excursions like her class to use the land to pay their bills, of the vintner's reputation to make a small yield seem exclusive instead of paltry – the northwest coast would never be truly free of smoke again, not in her lifetime.

"All right, confiscate anything you think is flammable or breakable. Just leave the snacks alone."

The dark fairy light leaves and after a thought, she calls out after him: "If you're still worried about the smell, I have plenty of bug spray you can borrow!"

The professor enjoys another few sips, spaced out in relish, and then fiddles with her headset, mic check, alpha beta gamma. Not for the first time Margaret rationalizes she should go ahead and spend the money on a sleek personal set so she doesn't go through this mess the next time - tangled cords in the dark will be the death of her Zen.

"Hello, can everyone hear me? Everyone still awake as we reach the witching hour?" She laughs a little at her own joke. "I'll start in a few minutes, and give everyone a chance to get settled. As you know, we're here for a uniquely practical lecture about the basics of astronomy. If you haven't picked your lab

partner for the semester yet, now might be a good time to find them and stick with them. If you fall asleep you'll definitely want their notes or recordings – some of what I'll discuss will be on future quizzes. We're going to peer at the night sky the same way ancient astronomers did, from Babylonia to Zhou – without any telescopes or tools, just our eyeballs. One has to crawl before they can leap. And remember to bring back all your trash with you to the lobby, otherwise I won't be able to do this next year!"

Some years later, the two of them would together wax poetic about the movement of that night, and then many years later when separated they would wane prosaic about the same subject. The birds murmur, the fish shoal, but the humans walk in circles. The students are spread out over the grass in loose, wobbly concentric rings around Professor Eckhart, but still well within electronic range of her voice. All but two, like starships in the night, veering off course to crash instead of pass.

Amber Gray situates herself as the furthest away from her peers, comfortable in yoga's savasana pose, simply looking up. Her school earpiece fritzes a little with static pops and hisses, like she's listening to an old vinyl record, and it's preferable to filtering out the sound of low whispers. She's physically far enough away from the rest of the class that she half-expects to see an owl fly overhead, a passing avian silhouette to break the view of the stars they are learning about.

Maria de la Cruz has a similar sentiment, differentiated only by her later position in line for the restrooms. She wanders out where the wine dark field is more open and less populated, wondering if the migrant workers that tend to the grapes during the day are paid better than those who stoop to pick vegetables. In a way that will never happen again, she manages to find the only other far-flung human by not looking at all. Amber's student tablet is at her feet, all the way off her thin blanket on the grass and turned off, and Maria steps right on it. The heel of her boot cracks through the screen, but neither of them ever know that because it slips her like a banana peel and then shoots away like a rocket into the vineyard rows where a migrant worker will later find and take it for her own children. Maria drops down on Amber, half boulder, half octopus.

An appropriate swearing of, "FUCK, my spleen!" is impossible because the blow to Amber's diaphragm and stomach pushes all the air out of her. Her own limbs instinctively jerk up, as when doctors bounce a small rubber-headed hammer on the knees to force a kicking motion, and she ends up striking the attacking dead weight with almost as much force as it made coming down.

Maria slowly rolls off and clutches at where an elbow jabbed just under the side of her jaw, and a knee had caught a kidney, groaning in pain.

"What the—" Amber coughs and curls up, too winded to massage one of her ankles which feels like it's been stomped on. Going widdershins had gotten her kicked in the shins.

Maria completes another full rotation, rolling away and then puts herself fully face-down to the earth, in the prone recovery pose. She keeps moaning, and might as well be a cow with her mouth open to the grass making noise. What the hell, what the hell just happened, and why did it happen to her, why. She doesn't even like dairy.

A small, angry red light bobbles its way over to them to shush at their interruption of the lecture.

When the TA finally leaves, Maria takes deep breaths, inhaling minerals from the soil. The two of them just barely recognize each other as fellow students, but they don't know each other yet. "Sorry," she whispers. She just wanted to get away from the plastic noise. The squeaks and snaps of the other students' snack packaging had been giving her a headache. Her head was the only part of her that didn't hurt now.

Amber whisper-groans in response. "Help me find my earpiece."

The thin cord of the dated earpiece is snapped in two, one short and frayed end still plugged into the headset's battery back, and the longer half of the cord with the actual ear clip is nowhere to be found, even with the dark red light of Maria's tablet. More lost trash.

"Sorry," Maria whisper-says again. She hands over her own university earpiece set.

Amber places it next to her, but then sets the cord down in a straight line. She turns the volume up as high as it'll go, and then lies down so her own ear is

near the plastic earpiece. “Come on,” she whisper-instructs after a deep breath. “We’ll both listen.”

The voice of the professor fritzes in and out through the lone earpiece. The two students are right at the edge of the headset’s range, and her voice is made even tinnier coming from an earpiece unworn by either of them. Both of them are surprised to be unbothered at it.

After a few minutes: “Sorry.”

“Stop saying sorry. Didn’t you ever watch Sorry Swan cartoons as a kid, about how girls need to treat it like a magic word?”

“No, it was stupid.”

The answer is so decisively blunt Amber blurts out a single laugh before she can stop herself, louder than the whisper-level the two of them had been using.

A rare breeze passes over them.

“You can use the headset for yourself.”

“Then you’ll miss what she’s saying.”

“I already know what she’s saying.” Maria paused, and massaged her bruised side. “I read the textbook the professor is using years ago, I already know about parallactic and position angles.”

“Did you.”

Maria knows, from experience, the other girl must be thinking how full of herself she is. She still doesn't understand how simply stating facts is so offensive to people.

And then, Amber reaches over to turn off the headset completely, leaving them both in peaceful silence.

"Me too."

Maria carefully turns on her non-throbbing side, and waits for more. She will not ramble everything she knows in excitement. A good conversation is an even exchange, and the trick is that sometimes other people have hidden treasures of knowledge to offer.

"Well, you've heard the rumors about this class. I thought it would be kind of relaxing, or meditative. Except I gave away my last Sativa Sours, and then someone almost drop-kicked me in the head."

"Sorry."

"Jesus Christ."

The pulse-line of the Milky Way glows above their heads, in browns and purples and twinkling stars. Part of the reason for the crash was because Amber was too absorbed in the view and didn't hear the other girl coming. She's never seen the true night sky before, something that could so easily be a color-adjusted and enhanced visual, if not for the fact that she was looking up at it with her own eyes. It is tremendous, humankind's first altar, and Amber begins to feel

something. An emotion too big for one consciousness and it isn't pleasant. It could also be the bruises on her insides.

Humor is a classic for deflection, or starting conversations.

"That's my favorite constellation, over there – the Christmas tree."

Maria frowns, and turns on her back again. "That's not a real constellation."

"Sure it is." Amber traces a line-dot pattern only she can see. "The trunk, the branches, and the star on top. The key is to find space with different colored stars grouped close together – they're the decorations."

"You can't just make up constellations like a child." It comes out louder than a whisper. The TA doesn't come this time.

"Why not? I'm as qualified as any ancient astronomer. Who's to say the sign of Cancer in the western zodiac is any more official than… Amber's Lobster." She pointed at a red dwarf that helped make up the tail.

"The lobster!?" Maria whisper-hisses.

"What, are you allergic to shellfish or something? What's the big deal?"

She vibrates with frustration – the 'deals' are too many in her mind, and they crowd so badly that none can escape into a single defined and voiced rebuttal. "It's just stupid. Joking like that is – it's lesser than astrology."

"Constellations are astrologic."

"No, no—" Maria turns again on her side to face this girl. "Constellations are physical representations of mythology and belief systems. The belief that

they're actual avatars or have any kind of influence on the physical world is nonsense, but where the nonsense beliefs change or stay the same compared to other societies of different locations and time periods, that shows human understanding of the cosmos throughout history."

"If they represent something then they're open to interpretation and can have multiple functions or purpose." Amber physically turns as well, into the argument. "This is like, basic Schrödinger stuff."

"That makes no sense."

"It's semantics."

"This is a natural sciences class." Maria scowls. She's had enough of friendly girls who talk, and smile, and don't contribute to group projects. High school's over, and she won't do their work for them anymore. She'll stand up for herself even while lying prone and sore on the ground. "You sound like you're on a waitlist for one of those liberal arts courses like how to cultivate your internet identity. I'm sure that's a great use of your parents' money."

"Excuse me? Why are you bringing up my parents and money, now who's making no sense?"

"Well, you're obviously not here on a scholarship."

Amber tenses over her whole body, and has to concentrate to relax herself. Words don't pass through her like air, not yet, and there's still a moment of fyke netting before she can catch whatever people throw and release it. She can take slut or whore, she can take bitch with or without frigid and all its sister

swearwords, and of course she can't forget dyke and carpet muncher. But this is a dismissal of her proud mind, and for what? For what she's always been; outwardly friendly but unafraid of confrontation, in a pretty shell that other people deem fuckable. This has always been the worse of blows, the wind and salt in a papercut that never completely heals.

She delivers a verdict, whisper-low, but delivered with an airy tone as if commenting on the weather. "You're full of shit."

Maria sparks from the mouth like a fire coming to life.

"No, really. Some guy thousands of years ago gets high on peyote and decides the lights in the sky look like a set of balance scales, and that makes it scientific law? Why is my interpretation any less valid? Do you really think a bunch of giant, shining balls of plasma millions of miles away from us care about what patterns we draw around them? Anyway, they're millions of miles apart from each other too. A constellation is just an optical illusion."

The darkness becomes oppressive, and Maria is keenly aware whose fault that is. She usually can't tell the shifting emotional states of a conversation, and this would be a triumph except it is so, so uncomfortable. She wills herself not to walk away, to tough it out, and she sits up to rock back and forth, shake out the last of her aches and twinges from falling.

One tiny part of the other girl's admonition sticks out, the antidote in the poison Maria drew.

"Opium."

“I’m sorry?” Amber cringes at her turn of phrase, even though in the dark they can’t really see each other’s faces.

“Apology accepted. Just because I’m Latina doesn’t mean I’m Mexican. Or Cuban, for that matter. Peyote is a cactus found in Mexico and along some areas in the state of Texas. The astronomers of, for example, ancient Greece, if they did use any substances for so-called ‘visions from the Gods’, couldn’t have used a drug all the way over on the American continent. The most popular drug for many civilizations before the common era would have been the opium derived from poppy flowers.”

Amber blinks, and then takes a long, over-exaggerated sigh in deflation. “Sorry my hypothetical, psychoactive drugs were historically inaccurate. Good grief.”

There’s a beat.

“You shouldn’t say sorry so much.”

One of them grins, though in the dark, who could say which one?

Maria pulls out her student tablet and taps it on. Her hands, like fine seismic detectors, can feel the low hum of the computer while it’s active. Instead of exchanging their names over a handshake, they do so after Maria gives Amber her tablet and agrees to take on the consequences of losing the other one.

Amber taps to the frontispiece of their digital tome. The graphic there is a curious spirograph sometimes known as the pentagram of Venus. Between the

symbol, the consumption of various mood-altering substances, and the glowing text of the tablet, “I feel a little like we’re all about to start chanting to the moon or something.”

Maria turns her head with a puzzled expression that Amber intuits more than she sees. She taps the screen again to make the graphic take up entire screen and holds it up for display.

“Maybe to Lucifer,” counters Maria, using an archaic name of the planet that was once thought to be split in two – the morning star, and the evening star. It’s not often her Catholic background and scientific dedication can come together like this.

She reaches up an arm to clasp one edge of the tablet, and the two girls hold it up over their heads, sharing the slight weight.

The visually and mathematically pleasing arcs and loops of the spirograph make a five-petaled, agentic flower. Rendered in clean lines, the outline of the spirograph is a continuous route, a series of dance steps so smooth it never stops or starts. In it, there is at last the wild witch dance of naked bodies around a great bonfire: the pattern generated by two bosom planets as they chase and run from each other, revolving around the sun.

Eventually the muscles in their arms tire, and they go back to looking up at the sky. Conversation comes easier now that they’ve gotten through their first fight of many. That night is a good memory.

The two of them sit with each other as the bus drives back to campus, heads bowed and close enough to share the same breath. The sun rises and shines through the cracks between window shades, and while everyone else sleeps Maria and Amber commit each other's dawning features to memory. Both of them know about meeting people in real life after only knowing them through text or voices across the internet – this is fizzy different. They whisper animatedly with hands in the air about the future projects they'd work on together as lab partners. By the winter holidays they are actual partners, and friends too – although what kind of friends, there isn't a word in English to properly convey. That night, the first arc of the dance loops around them, a fishhook that becomes a hoop, in an ever-growing series of spirals.

~*~

Chapter One: Fernweh

Of all the objects in space, the beatifically named *Space Weather Follow On-Lagrange 1* satellite was an old standby. A buoy anchored by gravity at the first Lagrange point between Earth and the Sun, SWFO-L1 served as the first and as yet still the only remaining warning system for solar magnetic storms. It had outlasted all other functioning solar observation robots – instead of launching new and separate probes, agencies had begun transitioning to sending supplies and machinery instead, like a smaller version of the old International Space Station. It began the size of a dory boat and over the years became covered with the mechanical barnacles of gadgets and gizmos aplenty.

The Hizashi was the only other satellite out there known to still be running; it sent information on a regular basis but would no longer accept communications or commands. Plans for more satellites that would replace older versions in decaying Earth orbit, or operate in the Lagrange point between Venus and the Sun, were considered. They were discussed, written, and in one case at the ESA given approval and begun production. But in the last 15 or so years, nothing else had been successfully completed and launched.

Nothing that looked towards the Sun, at least.

And this was simply due to mundane realities of life. Most childhood dreams – say, of becoming an astronaut – fade like nothing else does over adolescence. A solution of affection and memory that dries out over time in the

Sun. So too, do many grown-up dreams of practical or ambitious efforts to Make a Difference and Discover Truths, dissolving under pressure and agitation. Not all – Neil Armstrong was a very real human being, and not a fictional hero – but most.

There were concerns over government space agency funding rising above 0.9% of the total annual national budget, eating into the approximate average of 14-16% that was normally allotted to various branches and programs of the military. There were changes in government officials and administrations, some of them even democratic and peacefully transitioned. Melting permafrost and recurring epidemic waves slowed physical production. To say nothing of the succession of super hurricanes consecutively striking too soon and too close to each other for safe payload launches.

Of course, by the time anyone considered that a satellite more than 30 years old might need a robot apprentice, there was also the one extraordinary aspect of reality heavily influencing everything related to outer space: by then, all anyone could think or talk about was going to Mars.

The influential Wernher von Braun, first of Hitler's Nazi *Schutzstaffel* and then of Eisenhower's NASA less than a decade later, had wholeheartedly promoted the idea even before the Apollo 11 lunar mission succeeded. In the 1950s it was a crazy pipedream. In the 1990s it was a noble aspiration. In the 2020s it seemed the time was ripe for trying, and by the 2050s the swarm of humanity was rotting for want of it, like gnats on a dry apple core smelling out

new fruit.

One temple still kept the old ways, worshiping the Sun over the red planet as ancient civilizations did; observing solar winds, energetic particles, and the interplanetary magnetic field. Located in northwest Boulder, Colorado – between the city and the snowy mountains – was a building leased to the National Oceanic and Atmospheric Administration. The weather outside was almost always delightful, but the weather inside was frightful. The temple was beige-bricked and nondescript and not noticeably any different from a municipal building. But it housed one of the original nine environmental prediction centers of the U.S. government. And like planetary weather monitoring centers, that monitored 24/7 for the advance of tropical cyclones that would strengthen into typhoons and hurricanes, this weather center monitored day and night all of the data output of SWFO-L1 for a coming solar storm of such enormous calamity that it could put to shame all the super hurricanes of the modern age combined. *If* it ever hit the Earth, and became a geomagnetic storm.

Minjun Park, sophomore university intern, had another tempest on his mind as he hurried from his shared workstation to the room everyone called Mission Control. It wasn't even a fourth of the size of the real thing in Houston, and NASA was a completely different department. His high school friends had sometimes teased him, though never maliciously, over what seemed like cross-eyed career goals. Everyone thought strictly of space travel and the Eisenhower mission. But once he began higher education his new peers understood what

he'd already grasped; Earth weather prediction was the precursor to space research, as much of its foundation as ancient astronomy.

He was a little surprised there wasn't a meme for it already, and if he had the extra time he'd make one himself to sell stickers and buttons and patches. Something with a jellyfish, to commemorate all the *Aurelia aurita* launched into space to finish out their lives in microgravity. And all their jellyfish offspring born in space couldn't swim properly at home in Earth gravity oceans – the poor things flopped around in water like they were constantly having some kind of stroke or epileptic fit.

'Mission Control' of the Space Weather Prediction Center had the largest display of screens in the building. It was where people could gather and see what the specialized cameras saw, the old versions of supercomputers processing information transmitted from 1,500,000 kilometers out in front of the Earth. He, like everyone else, was hoping to see the graphic representation of what the numbers were already saying. It was a good distraction from the semi-final he had to take later in the week, as yet unstudied for.

A network analyst he sometimes worked with caught up with him at the stairwell. "Oh, hi Minjun. I like the whales," she said, and pointed at his colorful tie. "I heard about the CME just now. Are you going to see it too?"

He smoothed down the silk of his prized possession. "Thank you, and yes. I have an off-topic question for you: do you consider undergraduate efforts to take classes across a multitude of academic disciplines outside of your chosen

major a mindful enrichment like CU maintains, or just a stressful waste of time and energy?"

"What?"

"Never mind."

On the right floor the chatter picked up in amount and pitch as more people crowded the hallways, all heading towards Mission Control. Minjun made small talk with his immediate supervisor, and then a different analyst he knew better. He could hear people saying '2012', but did they mean the year or the number? He heard 1859 as well – the year of the Carrington Event. They must mean the year, then. The mere mention of it woke up the employees better than the free communal kitchen coffee, jolting them to action and gossip. He asked Jamal, friendliest of all the systems administrators, probably because he was nearing retirement with a guaranteed pension and a townhouse almost paid off, what was so important about 2012.

"How do you work here and not already know everything about Carrington-level storms?" Jamal asked back. "That's all the newbies want to talk about, their color-coded 26-step plan for surviving the apocalypse because they're so much smarter than everyone else. But do they know how to run a simple cloud sweep?"

Minjun narrowly avoid someone's elbow and focused on the other man's voice. He wondered if it was a deliberate decision not to raise his volume as everyone chattered around them, although he had no idea why Jamal would do

that. He couldn't hear the other man well at all. "No, I know about the Carrington Event of 1859. But nothing happened in 2012."

"Exactly. We were *very* lucky. Better technology let us know just how close it was for humanity. The CME hit where the Earth had *been*, nine days before. It was like we got a glimpse of another timeline, one where everything went wrong, and everyone probably had an evil beard."

"Oh, I know that reference!"

"I could tell by the tie. And do you think most people realized how narrowly we slipped by a trillion-dollar disaster? Nope. Too busy preaching about the Mayan calendar predicting the end of days."

The doors to Mission Control were bottlenecked and Minjun was separated from Jamal. His boss's boss was already in there yelling over everyone else. Once inside the intern backed up as far as he could and tried to squish himself in a divot between workstations at the back wall. Nothing seemed to be happening, except for everyone still trying to come in. The people who already worked in the room just sat at their workstations, not even typing, getting squished on both sides in their worn but comfortable office chairs by everyone coming in. A few of the drop ceiling tiles were missing, exposing the building's ductwork. One was right over Minjun's head.

Next to him was a woman sitting at her workstation. Pushing from just the balls of her feet on the floor, she swiveled her chair back and forth a few centimeters each way. Glancing sideways at Minjun, "First day?"

“Uh, not really.”

She wore a shining lapel pin in the shape of a lute, with the description ‘BARD’ underneath it. Minjun didn’t believe in omens, but he did believe in taking every advantage when presented.

“I see you’re a fan of the Bard. I’m taking a class on him. Question: what do you think about Ariel *besides* the whole 400 years of gender presentation fluidity?”

Without pausing her swiveling, “The mermaid?”

“Never mind.”

Lately he was as good at recognizing advantages as he was as recognizing gargantuan solar magnetic storms that all of his job’s equipment was pointed at. The semester’s chosen humanities class was only more evidence.

It wasn’t difficult to begin to comprehend what the excitement was about, listening to the talk of the room. To begin with, the Sun was not some static source of light – not like a lightbulb or even a campfire. It only seemed that way because it was so far away. Most people wouldn’t think to read a paperback or gaze over a field of tulips by the light of an exploding thermonuclear bomb, yet that was reality. The traditional source of all natural light on earth came from constant, unending nuclear fusion. The Tsar Bomba yielded about 50 megatons upon detonation in 1961; the Sun produced the equivalent of about one trillion megatons every second. Shockwaves and radiation were the least of the Sun’s outturn, which continually overflowed and spilled out over every object in the

system of sol.

The *what* studied in the building was solar material; all kinds of flotsam, jetsam, lagan, and derelict released from the Sun. Coronal clouds and coronal rain, Hyder flares and solar flares, spicules and cosmic rays. The Sun whipped itself up and occasionally shot out particles like an angry storm; like a tsunami filled with debris and seaweed and *Vibrio vulnificus*. Other interns from other departments studied the *what*, and they were the ones who had interpreted the unusual readings currently driving the whole building crazy.

Today's solar special was the most dramatic of eruptions: a coronal mass ejection – a CME. Or a Great White Shark, as Minjun sometimes thought of them. A formidable force of destruction and something deserving of legendary status, except that new estimates of sharks put their number as high as 5,000 in the wild which made them very safe from extinction and not at all rare anymore. This was also not counting the specimens you could see in aquariums behind 100cm thick acrylic panes. And they weren't vicious ocean serial killers with a craving for human flesh; humans were no more special than any other source of food or perceived predator. If people left them alone, *Carcharodon carcharias* usually left people alone in return. A living contradiction of the unexceptional and astonishing. Just like CMEs: mind-bogglingly enormous and powerful solar eruptions happening, depending where in the solar cycle it was, once every few days to a few every single day. But if it didn't impact the Earth, it didn't impact anyone on Earth.

The *when* was the area Minjun interned in, the speed of solar stuff, *stuff* being his chosen word for it as he continued to learn about it. The instruments were clocking the *when* at a rate of approximately 512 km/s – which was pretty slow. The storm of the Carrington Event had made it from the Sun to the Earth in less than 24 hours, which meant it had been moving at a rate closer to 1500 km/s. But recent solar surface activity had been quieter than usual for what was supposed to be the peak of the 11-year solar cycle. No earlier flares had blasted the way clear like a fiery hot and speed-of-light version of a Zamboni, as in 1859. The wave of plasma and particles had to travel over more of a shag rug instead of an ice rink.

The *who* and the *why* of the event bordered on philosophical, transcendental, and religious, and was scrutinized somewhere else.

Minjun smoothed his tie and used the pointer fingers from both hands to make an 'airing out' motion to his work short collar. He had to do so with both elbows tucked in; he still brushed into other people but at least he wasn't outright poking them. Oh, but why did he have to think of ice right then? Mission Control might be one of the larger rooms, but they could've used a few ceiling fans. Global warming had nothing on civil servants and government supercomputers of the Space Weather Prediction Center. It hadn't been this humid and crowded at the last Sonic Bloom fest he'd gone to.

Deputy Program Manager Bernthal threw up both his hands, palms facing outward. "Everyone SHUT UP!"

Minjun cringed at the urge to back up with nowhere to physically go. He'd never seen someone in charge act like this outside of K-drama shows. The only boss he'd ever had before was his own mother and father. The older man was grey in the face but vibrating with energy. When everyone quieted down, he gestured to the back of the room and someone shut off the lights. In the partial light of equipment sensors and one window Bernthal gestured again to the employee sitting down beside him.

She seemed to take a moment and then, in Minjun's admittedly uneducated opinion when it came to drama and the theatre, she theatrically gesticulated to click a few things on her keyboard and the personal workstation screen.

The view from the main solar camera bloomed onscreen. Although some instruments looked directly at the Sun, as with x-ray or ultraviolet light, this one had a large blank dot in the middle of the screen that covered the Sun. The camera wasn't broken; a coronagraph was deliberately made that way. This camera allowed for observation on the halo of the Sun in the same way the moon let people do during a full solar eclipse.

Wisps like steam moved out and around the outline of the sun, evocative of summer heat shimmers, as the digital clock numbers in the corner of the screen counted the seconds and milliseconds. And Minjun saw it, along with everyone else.

He'd forgotten the *where*.

Most CMEs or solar stuff looped and popped out of the side of the Sun. A stereotypical child's drawing of the outdoors might have a smiling sun in one upper corner, stick-straight rays coming out of the yellow circle. If the beaming sun had curly hair instead, with bright curlicue ringlets constantly bouncing and tangling and frizzing, occasionally falling out as hair naturally did – that would be a more scientifically accurate picture. But of course, hair was what could be seen on the sides and the top of the sunny head. Nothing grew out of the face. Usually.

Even on physically large and high-definition television screens, the visuals of event captured on video was subtle to the human eye. Like the long-exposure effect in a very old and time-lapsed video of flower petals opening outward; or the exhalation of a freezing breath in 360 degrees, complete with 'snow' falling seconds later in the form of high energy particles striking the camera lens and leaving static scratches. It was evidence of a colossal solar eruption bursting out an entire environmental miasma, a volcano not of ash or caustic gases but billions of tons of electromagnetically charged plasma and particles, and all of it collected in a moving solar cloud a hundred times larger than the Earth itself.

Dead on to the camera. Directly towards Earth.

And if it were about 200 years earlier – say, around 1859 – the only thing anyone not working the telegraph system would notice when it passed over Earth would be the magnificent auroras, borealis falling and australis rising to unite over the tropics in a global display of neon colors from the massive geomagnetic

storm.

But now? The technology that made the modern era the most advanced in history was precisely what was threatened, and the reliance on it the Achilles' heel that could throw humanity back into the middle ages. A geomagnetic storm of this size and strength could, and likely would, create a worldwide blackout. Every single satellite in orbit would fail. Power grids would fry out. Telecommunications would become nonexistent. All planes in the air would go black and glide on nothing but the wind until finally crashing – not dead until they finally left the air for the ground, which was how birds died as well, in nests or in avian fights but never right in the middle of flying. All ships on or under the ocean would go dark and dead in the water. Hospital generators would eventually run out of fuel, and even toilets would no longer flush because of urban water services that normally ran on electric pumps. All of humanity would suddenly revert back to a pre-industrial era. To even before 1859 – they at least had the telegraph system.

The visual clip was not quite ten seconds long, and it played over and over and over again. There was no audio of course, but then, the real thing was such a loud explosion that it probably existed above what the limit of sound actually was.

A CME played a planetary game of duck-duck-goose, and Earth – well, what was the phrase about geese and cooking?

Someone asked a question Minjun didn't process, and then dozens of

people were calling out. He felt his mouth go the opposite of dry, struck temporarily dumb. He scrambled too late when he felt a wet blob of spit escape his open lips, and flailing to try and wipe it with a sleeve only helped to put dribble on his silk tie. Right on the illustrated pure white crest of an ocean wave. It had been a gift to himself when he landed the internship. Minjun glanced around as inconspicuous as he could fake it and nobody at all was looking at him. He cupped his hand over his tie in a loose fist.

"I want those projections ASAP!" his boss's boss shouted over the din. "I'm enacting a media blackout as of this moment! If this leaks I will find you, and I will fire you and your entire family!"

"And your little dog too," said the BARD-pin wearing woman.

Clutching the end of his tie he made his way out of Mission Control, but instead of going back to the room he shared with two other interns he went to the restroom instead. He held his tie the entire walk over, almost like a leash he needed to guide himself on the right path. Minjun put his phone to the side of a sink, pressing the quick button for a number still listed as HOME three years later. He hit the speaker button and listened to the repeat of the digital ring while trying to yank the tie off from around his neck.

There was the tiniest of clicks, and then his mother's voice greeted him.

"Mom," he breathed. "Thank god. Where are you? Are you with Dad?"

"Of course not, it's almost 10AM, he's at work. I don't go into the store until this afternoon. Why, what's wrong?"

Minjun ran his tie under cold water and shouted over the rushing sound, more than was necessary. “I need you to go to the store. Not our store, I mean like Costco Club or Walmart. Get as much canned food and bottled water and first aid supplies that will fit in your car. Do we still keep in touch with that racist asshole neighbor who said Jewish space lasers were going to castrate all the baby boys in conservative American suburbia once we took ‘In God We Trust’ off dollar bills?”

That neighbor had told Minjun the end of days was nigh, and he should join the neighbor and the rest of his prepper crew in a completely fitted underground bunker system hidden somewhere in the Rockies. He would specifically allow Minjun to join since as a light skinned Asian, he was purest of the oriental strains and best suited to serving in the natural hierarchy of the coming utopia, but without need to exhaust the same amount of resources the rightful crew members did. He was intelligent enough to handle all kinds of tasks and could easily earn his keep; his people had evolved to eating a cuisine of animal scraps and offal, so the meat that hunters procured wouldn’t need to be further divided among followers; and while capable as a man he could be trusted in the company of their women and children.

Not immediately punching his racist asshole neighbor in the throat had always been Minjun’s greatest teenage regret, but his actual response of staring blankly and then walking away very fast might come in handy if he was considering finding and asking a favor of said racist asshole.

“What? Language, Minjun! Why?” she said. “We don’t get hurricanes or tornadoes here; we live in Lakewood. Did you see something on the satellites at your job that worries you?”

“And a metal trash can!” The soap dispenser at the sink he was using was empty, and so was the next one. He kept dashing until he found one that worked. Unsurprisingly, it was the furthest one away. “Tell Dad to go buy one of those galvanized trash cans and metallic tape, not duct tape or electrical tape, it has to be metallic tape!”

“What on Earth has got you so worked up? You sound like one of those tinfoil hat conspiracy theorists – *Minjun Park, if you’ve gotten into drugs –!*”

“Tinfoil, of course! Mom, get a new roll of aluminum too.” They could make little Faraday cages in a trashcan Faraday cage. He took a paper towel and pushed the little soap nozzle to dispense a pearly drip of soap on it, then attacked the end of his tie. All that did was break up the cheap paper towel and leave grubby pits of paper stuck all over the tie. Minjun let the tie soak again under the cold running water and scraped off what he could with his fingernails. Even after scrunching and wringing it out over the sink bowl, when he held up the tie to look at the end point water droplets ran down his arms from his wrists to his elbows, underneath the sleeves of his work shirt and wetting the fabric to his skin. He grabbed more paper towels and tried to blot away the uncomfortable sensation, not unlike the effect of already-cooled sweat, over the backs of his hands and up the sleeve forearms.

Then he brushed over the tie as well since it was still soaking wet, except that left pilling again. He'd just repeated the same mistake from 15 seconds ago.

"What am I *doing*?" he said out loud.

His mother's voice was tinny and exasperated. "That's what I'm asking you!"

Minjun bowed his head. "I'll call you back," he said, and tapped the red END button. He balled up the wet tie and put the slick fabric between his teeth to scream without being heard. Someone else came in and he turned away hoping they wouldn't see his face, moving to hide inside an empty stall to get the panicking over with. Much later, he left the stall and the restroom, nonchalantly dumping his tie in the trash bin on the way out.

The best thing to do was research for a few hours himself and then call his parents back with a clear plan. There were about two full days to work with before a permanent, global blackout. He ignored the intermittent pings and vibrations of his watch that normally alerted him to walk 100 steps or check his work email, and began to learn more about wilderness living and post-civilization survival than he ever wanted. Opinions differed on whether one had to be a warrior prepper who could defend his property with the arsenal of an entire guerilla unit, or a gritty granola prepper who spindled and weaved because textile arts were the true foundation of society. Both sides agreed on stockpiling an extraordinary number of *things*, and possibly an alpaca.

A few hours later it was all over.

“Hey,” said Jamal, leaning on the doorframe. “Are you going to the standup meeting? Just ‘cause it got pushed back from this morning’s chaos doesn’t mean you should skip.”

Minjun was fixated on his screen, which showed the receipt page for a new, all-inclusive first aid kit that could roll like a suitcase as well as be carried, to be picked up at the sporting goods store in town. It was $499. He’d clicked to purchase it seconds ago. It was the eleventh thing he’d bought so far. He was on a roll and about to smack into a wall.

He slowly turned to his coworker. “What?”

Jamal glanced at the screen, visible from the door. “There is no apocalypse. It got canceled. Didn’t you see the message from Bernthal? I thought the whole ‘Gen Æ’s don’t check their email’ thing was a stereotype.”

Minjun stared into the distance as if he could see through and beyond Jamal’s head. After a few moments, he turned back to his computer screen, clicking through to the work email application, where he saw the TO ALL email:

>> Subject: CME status update, ALL CLEAR

Good afternoon everyone,

At 10:37AM MST this morning our equipment detected a Carrington-level CME with a preliminary trajectory towards Earth. We have now determined that the CME will not come into contact with the Earth, but progress through Earth orbit approximately 60 hours ahead of our projected location—

“Oh no,” said Minjun, in a whispered moan. There was no coming doomsday. Everything was fine. This was really, really, bad.

“This happens more often than you think. You gotta wait until all the numbers clear before color coding.”

“I really thought I wouldn’t have to pay credit card bills next month. Or ever again,” Minjun continued. He turned to Jamal, and then his voice began to climb from a whisper to a fevered whine. “Why did everyone go so crazy if it was likely no big deal? Isn’t that something they should warn us about when we start? Something like, I don’t know, here’s the kind of hazing you might expect to encounter, but don’t panic and always check your email?!”

The older man took a deep, contemplative breath. “Have you ever truly considered what the daily life of a civil servant is like? Stick around, and your ties are going to be the most exciting thing about your job. What happened to yours, anyway?”

“Trash. I should probably go get it back now...”

Jamal made a face of mild disgust, and only said to get moving.

Minjun felt the great weight of wisdom keeping him in stupor, heavy in a work chair long past its ergonomic peak, but the call of stable employment eventually roused him to tread down the hall for the daily meeting. The room wasn’t quite as big as Mission Control and far less crowded, with almost everyone from his section already sitting around the conference table.

As people spoke he didn’t pay much attention. Surely he could get refunds

for most if not all of the items. Cancellation less than 24 hours after buying was a common enough feature. Minjun might not even have to alert his parents, other than to come up with a plausible reason for his temporary insanity. Sleep deprivation from staying up late studying, maybe? Crawling under the covers of his bed and staying there for a few months was suddenly very appealing.

But that reminded him of another CYA to take care of; namely, contacting his family when the Deputy PM had forbidden it. Even if he'd never gotten around to spelling it out, Minjun had signed a contract and his calls were traced and logged while in the building. Which was fine when all he did was look up how to make rice when the cooker broke or listen to his girlfriend talk for three hours, but the timing was so close to this supposedly ordinary apocalypse-inducing CME that anyone with half a brain paying attention might think it was worth checking out.

Well, he didn't want to become one of those people worth paying attention to, with someone listening in and recording and judging all his voice calls, or worse; slowing the WiFi every time he used a VPN.

There was the general call near the end for any comments. "I was just wondering," said Minjun, "The whole 'media blackout' thing, that's no longer applicable, right?"

His supervisor physically waved off the comment with a hand, and then followed up with, "It's immaterial, nobody's calling. Nobody cares. You can Tweet about it all you like, as long as you hashback to the official NOAA account."

“Okay then, I just – wait, what do you mean nobody cares? It might not be top-screen news, but something that big will be all over the news soon.”

A few seats down Jamal pinched the bridge of his nose. Some analysts smiled at Minjun sympathetically. Answering the question would make the meeting go even longer. Not answering would mean it was time to get back to work.

“It isn’t going to hit us, so there’s no reason for mainstream to care,” said Natalie. He knew her name but couldn’t remember what she did for work.

Minjun felt the same kind of tension he’d experienced that morning building again, and he was already sick of it. “How can that be? If an asteroid even 1/100th the size of the CME flew by Earth via the same trajectory it would take over the holy trinity! I mean,” he stammered and corrected himself, “The news. Sorry.”

First he had ruined and trashed his own silk tie gift, probably now buried under paper towels of germs and snot to go with his spittle, then he spent thousands of dollars he didn’t have for nothing, and now he was using slang like an eleven-year-old proto-influencer in between getting braces and acne. In the workplace he’d competed so hard to get an internship in. Maybe there was something out there in retrograde.

“I’d put it this way: an asteroid is something we can see,” his supervisor explained. “And something we can easily picture in our mind, like a rock getting hurled through a window.”

“But we can see the CME!”

“We can *detect* the CME,” Jamal said. “How well do you think the average person can comprehend the danger of a giant space cloud that makes pretty lights in the sky? It doesn’t even affect the human body.”

“But it *would* affect us—"

Their supervisor stood up, effectively ending the meeting and cutting him off. Other people began to get up too. “Minjun, you’re getting out of our scope here. We detected the possibility of a global geomagnetic storm but thankfully confirmed it wasn’t so, and that’s usually what happens. That’s part of the job. If you have further questions you can email me to talk about them at a separate time.”

As people filed out, one of the other interns stopped by Minjun’s side. “If you’re that disappointed at the lack of any doom and destruction, you’ll be pleased to know the CME is going to pass between Earth and Mars where the last Mars lander is going to be. We did have to contact JPL about that, so it’ll probably make news by tomorrow morning.”

Minjun blinked, recalling that there were other objects in the solar system besides the Sun and the Earth. “Right. The lander. How will that effect the mission?” Not well, obviously.

“Who knows? Maybe they won’t be able to remotely turn it back on after shutting it down so the CME can pass it. Maybe the CME will fry it completely. Maybe the shuttle will be delayed another 26 months, putting it even further

behind schedule!"

"Why do you sound so happy by all those probabilities?"

She frowned. "They're probabilities whether I'm happy or nervous or nothing about them. You're the one getting emotional because the world isn't ending. I thought knowing about something going wrong after all might calm you down, because I'm not going to finish filing reports for you if you get behind."

She walked out as well, leaving him alone in the smaller, colder conference room.

Minjun considered it then: the Mars lander.

There were four of them. Well, technically there were about two dozen, but the only ones that counted were of a quartet, like teacups anticipating the pot. His mind automatically turned back to a memory from years before, to another cosmic kind of viewing put on a large screen, with tons of other people squirming around him and emotions high. All to watch the first of four. He remembered the build-up of excitement to the launch of the first lander, all the way back when he was still in elementary school. It was part of what inspired him to take a STEM-inspired path in higher education.

The Eisenhower program was spaced out over a decade, with four landers arriving ahead of the manned shuttle that would finally put man on the rusty surface of Mars. Everyone colored in simple graphics of the planet and a shuttle, a smiling, suited, simple astronaut outline with no identifying features or name. The astronauts hadn't been chosen yet. There was a life-size replica in the main

school hallway that could have come from the Air and Space Museum. The gleam of the lander's white metal was such a contrast to the dark red dirt and rocks around it. Even back then he knew that wasn't how it was supposed to look, shiny and pristine, but he was enthralled all the same. It was easy to imagine the real thing with a 6'x6' cut out platform copy of a real alien planet. The entire student body spent half a day in the gymnasium to watch the launch on the jumbo screen, the strong smell of industrial cleaning solutions and human sweat not enough to stop any of the students from eating their popcorn, although maybe from enjoying it.

International delight over Martian landers was long-gone by now; the 3rd lander had a complete failure of launch and pushed the entire schedule back another two years. Almost a decade later, when the astronauts were originally supposed to be touching down but the 4th lander was going instead, they were now a boring step of stellar infrastructure. Everyone was already looking ahead to the main event coming next.

There was *attention*, sure, especially because of the kid. Not the same, though.

Minjun turned the light off and closed the door as the last one out of the room.

"I get it now," he said to no one at all, speaking truthfully but only partially right. When he finally fetched his tie, hoping a dry cleaner could save it since he wouldn't be attempting self-care again, it had become soggy enough that the silk

feel gummy. This was not how he pictured being the hero scientist at the beginning of a disaster movie. The only disaster going on at the moment was his life.

Minjun imagined for a moment, as someone who had never travelled past his landlocked home, that the awful smell was evocative of beached sargassum seaweed. That one day he might find himself dreading a final essay on Jean Rhys' seminal book, the present stress over Shakespeare long gone and forgotten, just another day at the office.

~*~

Like most of the teams at the Jet Propulsion Laboratory, the ones working on the Fernweh Lander were dedicated to nerdy decoration of personal space. Fabric cubicle walls were perforated multiple times over to hold up as many comic strips as memos and schematics. Toy models of X-Wing Starfighters and Colonial Vipers sat next to miniaturized Opportunity Rovers and Mangalyaan Orbiter collectables. They guarded stacks of printouts. Ceramic mugs half-filled with cooled coffee or tea offered such pearls of wisdom as, "I Wish I Was Wrong But I'm An Engineer", or, "<I TRIED TO CHANGE THE WORLD, BUT I COULDN'T FIND THE SOURCE CODE>". There was the ubiquitous e-frame, wheeling through family photos at a rate of once every 90 seconds; an entire photo album in one 5"x7" frame.

And every workspace, whether or not they already had a plant, whether or not that greenery was a messy biological reality or a neat plastic replica, whether

that plant was still alive or long dead, also had a model of a little red fern leaf growing out of a shiny white ceramic pot. It could be purchased by civilian visitors at the gift shop.

The copyrighted red fern leaf symbol, technically just a single frond, was a product of the Public Relations team. Pop culture had mostly ignored the different, customized mission graphics of the 20th century; designed by the crew, for the crew, and only the crew, they were distinct from the greater NASA seal. Even the proudest American likely wouldn't recognize the Apollo 11 patch worn by Armstrong, Aldrin, and Collins during their mission. But as the 21st century journeyed towards its midway point, someone in PR realized that no Mars-destined missions ever had them, because none had been manned. Robots didn't get merit badges. But it was a non-issue with a profitable solution.

Now, when each space probe was approved for design and building, the general announcement to the public was accompanied by a contest that thousands of graphic illustrators responded to. A handful of options would be picked, and then American citizens could vote on their favorite. The winners never minded that the prize money was a pittance, or that they were legally required to waive all rights as the creator, or even that an in-house team would often go over the winning entry to polish the image. They got credit and bragging rights; NASA got free publicity and new inventory for the gift shop every couple of years.

It was on the stationery, the cheap ballpoint pens, and had already

replicated through pop culture. The fern had occasionally taken the place of the maple leaf icon on Canadian flag memes, or a line drawing version of the *Cannabis indica* plant colored in 0xFF0000. NASA and ISRO had co-opted the 3rd generation meme about the lander symbol as a test for red-green color blindness, For Science.

The little red fern could be described as the only ornament in the office of Maria de la Cruz. Technically she should have been in a cubicle as well, even as a lead engineer, but the project manager from another team had embraced open concept working and traded with her. It was small and windowless. It resembled a tidy janitor's closet with nothing to indicate outside location or weather – it could be from a school in either of the Dakota's, or a corporate office in one America's top ten most populated cities. If could be a perfect summer's day or snowing thick and clumpy outside and the temperate inside, especially under the air vent, would always remain the same and give no clue. It could have been confining and uncomfortable and uninspiring.

But it had a door that closed, which made the whole space a marginally effective sound-proof barrier easily improved with the use of an expensive noise cancelling headset. Cruz had even modified a doorbell system normally made for use by the deaf or hard of hearing. Next to the taped handwritten sign instructing, "DON'T KNOCK", a button on the outside of her locked office door when pressed would flash a light and send a push notification to her desktop and tablet. Of those who actually made it inside her office, some would inevitably comment on

its bareness and encourage her to ‘make the space hers’.

The magical, invisible process by which small talk worked made Cruz want to grind her teeth, something she grew out of years ago, although just the want of it gave her a headache all the same. Her office was clearly filled with *stuff*, and both the space and all the objects clearly belonged to her. This was Where She Worked.

The furniture officially belonged to JPL. That was the desk, the rolling chair, the bookcase, all the pens and paper. They still belonged to her in a different way so long as she worked there.

Her desk was covered in files and her shelves were covered in manuals and reference guides dimensionally large enough that it was easier to read the physical copies and not through an e-reader. On the wall were copies of all her diplomas, bachelors through doctorates, old discarded schematics that still contained a glimmer of something useful and cleaned-up final schematics to be proud of.

In one drawer were all kinds of common over-the-counter painkillers, stress balls, a plug-in heating pad and camping tear-open hand warmers. The humidifier in one corner and the dehumidifier stacked in another were both hers. Her main blanket she kept in another drawer with a pair of very soft house slippers. She almost never needed the de-humidifier but took the blanket home every other week to clean.

Cruz’s mother had given her a candle a couple years ago, something

colored a shade of blue that didn't occur naturally in wax, named "Oasis Waves". It smelled awful, like cheap beach sandals, but the purpose was never to actually light the wick. It never would have generated enough heat. The glass cap with a strong rubber seal meant Cruz could control when she wanted to smell it. She kept the candle in a bottom drawer because she appreciated her mother's clever and thoughtful gift, even if she could never actually use it.

Her mind was comfortable here, at the generative core of her work, but her body often needed help to keep up.

There were no family photos – Cruz had such a large extended family that it would have covered all the walls in her tiny office, a ridiculous collage that would have been both inappropriate and distracting. Every time the greater Cruz families got together she tried to get a single photo of everyone, but each time a few people would be missing. First she argued for digitally adding in people, and that was shot down for being fake and incredulous. Then she argued for an official reunion with the specific purpose of making a record of the family at a certain point in space and time.

That idea Cruz even got a little excited over – they could gather human metrics and publish a booklet far superior to the holiday letters sent out once a year! An actual report on *la Casa de Cruz*, identifying lengths of marriages, ages of children, rates of college matriculation, opinions on who cooked the best version of *pepián de pollo* (gathered anonymously, of course). That was also shot down. So family photos lived as ones and zeros in the servers of the cloud,

and not in color on her walls, and would remain as such until she could finally get the full and correct version.

A photo of her father deserved a place in her office, but of the few copies she had of his likeness, none were good enough. She'd been meaning to commission a drawing of him for a while, but it still hadn't happened. Maybe once the craziness of this final lander phase at work was over, and everyone's attention finally turned to the crewed shuttle phase.

There was a single family painting - little Eitan had finger painted it for her. It was supposed to be the red fern symbol of NASA-ISRO's Fernweh, but he'd used the turkey-handprint method in nothing but red paint and abstract creativity. It was completely devoid of any artistic potential, let alone talent, and uncanny enough that people visiting her office often left soon after looking at it. Even if he hadn't been the only child in the family to give her a handmade picture, for that alone he'd be her favorite nephew.

On her desk, between the corporate telephone and her left-most monitor, was a simply framed photo of her and Amber, Skógafoss roaring down behind them. The tour guide had hesitantly taken their picture, upon request – neither of them performed selfies – and captured a moment of open happiness in everlasting form. Well, as eternal as the photo would be. The simple inkjet print would degrade in less than a decade, although that was just a matter of printing out a new copy from the digital version. The digital original would eventually degrade as well, although not until long after they were both dead. She and

Amber both agreed that making a permanent physical copy, like an Ilfochrome print contained in acrylic, was stupid.

They'd broken up twice since that romantic getaway. Cruz had shoved the frame into the back of a desk drawer during their last break, but that had only made every person coming into her office comment on it. Empty, they commented. Crammed, they commented. She supposed she ought to be more compassionate to people who were her intellectual equals, peers with the same clear values and lofty goals. If not for the fact that she wouldn't be able to do her work or see the people she loved a semi-regular basis, Cruz probably would have moved to some deserted island long ago.

The daydream used to be a distinctly tropical island far away from regular civilization, with tattooed ladies in sarongs waving giant palm leaves and making sure she always had enough sunblock on, plus remarkably strong and fast WiFi. But the Maldives had sunk underwater well before she graduated high school, and the Pacific Islands had been following since. New high islands were undoubtably out there, but the open steaming ocean was a billionaire's playground now, with dozens of their artificially created islets.

Her present problem was located in a different kind of ocean; infinitely larger, and colder, and older, although she'd acquiesce that they were both filled with all kinds of indecipherable and hidden noise.

A notification buzzed on her watch, but not her work email app. It was from Davis, just for her and not sent to the entire team. Typing in her fingerless

gloves, she clicked through the GUI to the app. The subject line was the entire message; there was no content in the body except his automatic email signature.

>> Subject: Do we have confirmation yet?

Cruz ignored it. A pun interrupted her thoughts: we'll get there when we get there. They couldn't exactly stop and turn this car around to go back home.

The coronal mass ejection had hit the lander like a tsunami over a matchbox car.

They had shut down all systems before the wave of particles passed over and through the lander but getting them back online again was proving difficult. Worst of all, the CME had physically moved the lander away from its original trajectory.

At least the 3rd Mars lander had just been delayed. Eisenhower had planned and allowed for a delay as long as it kept to a general decade-long schedule. They'd lost time and millions of dollars in the single digits, but not years, and not millions that went into the triple digits. However, if the 4th and final lander simply shot past the red planet – well, Cruz didn't exactly know what would happen. NASA-ISRO could fire everyone and replace them with a new team of personnel for Mars Lander four point two. They could indefinitely suspend the mission to raise new funds. They could cancel the rest of the mission outright. They could send another lander in two years, further pushing out the schedule. They could do nothing at all, and send a crewed shuttle with the tools of only three landers.

There were multiple reasons why the final lander was considered least important of the four.

She clicked a button to run a diagnostic again. The hum of her laptop ran smooth. Now, *that* was crowded with stuff – the outside of her laptop that is, not any actual disk space on the computer. No, her work laptop she kept clear and running like a perpetual motion machine, but the top lid of it was covered in stickers for her favorite coding music channels, sci-fi symbols, short and geeky aspirations, and one profile sticker of Chief Engineer B'Elanna Torres.

The cool green light of her doorknocker flashed once, and a notification popped up at the bottom-right hand corner of her screen. She could have checked it to see who it was, but that was for when she wanted to be picky about who she talked to for the day. They couldn't afford that right now.

On the other side of her door was Rahul Moorjani. He was one of her counterparts, another aero-mechanical engineer.

"We've lost the Skycrane," he said. "We've got some internal controls, but it won't detach and fly."

Cruz breathed in too fast and hunched over with hands on her knees to breathe back out. "Okay," she said.

"Okay?" Rahul repeated. "This is not okay!"

She stood back up. "I was obviously talking to myself to get through this not-okay situation, not commentating on the state of the crane."

"Ah. Right."

“If you’ve confirmed its status you should follow protocol; tell Davis in person and he’ll inform the team.”

“I did,” said Rahul. “He’s multitasking like an octopus. I figured telling you in person would be a little faster than waiting for his next email.”

A chime came through on both their watches, and Cruz’s computer station. Rahul had indeed been faster, by about three minutes.

“What are we going to do?” he asked.

“I’m going to run my final check after another diagnostic and then give the results to Davis,” said Cruz. “I don’t know what you’re supposed to do now.”

“You know what I mean! Our lander’s been knocked off course and most of the maneuvering controls are shot. It’ll probably go the way of the Voyager probe,” said Rahul. “In that it’s the much crappier, shorter-lived spin-off of the original.”

She enjoyed the sudden urge to slap him, but didn’t give in. “What’s wrong with you? One week ago this was the crowning achievement of both of our careers, and now it's just crap? Because of a factor completely outside anyone's control? You're a scientist, you know that there's knowledge and value even in failed experiments. Even if Fernweh doesn't safely land on Mars 100% intact that doesn't erase the work we've done over the past three years."

"Doesn't it though?" Rahul groused.

Cruz had no answer for that, and he took the silence as a signal to keep complaining.

“It’s all going to hell,” said Rahul. “It’s one thing to know intellectually that anything can go wrong at any time, and we might not succeed, but this is everything going wrong at once, and after all the mess with the last lander too. I’m doing whatever the opposite of buttering up is, to make the inevitable crash easier. They’ll probably cancel the entire mission. Wouldn’t you?”

“I’d say no, never give up, never surrender, but it’s not my money or my decision.”

A special kind of chirping sound came from Cruz’s computer, and she went to sit back down at her station.

Rahul was right by her shoulder. Cruz’s entire body paused. “Do you mind?”

“Pretend we’re astronauts. What’s the status?”

“That the simulations are working correctly and there’s still no data degradation found, so now I can run my quadruple check on that status. *Back up*.”

He lifted his hands in the way that meant ‘I yield’ and stepped back. “Why aren’t you more upset?” he asked.

“I’m upset. I’m upset and angry and disappointed and some other emotions I can’t identify right now. I still need to do my job, and I don’t think acting like everything is already over and a total loss is the way to react.”

It was almost as if he was enjoying the downward spiral.

When her analysis came to a point that she didn’t need to guide it by

hand, Cruz took a moment to think of what to say to her obviously distraught coworker. “We still have the heat shield and controls for that are responding normally,” she said.

“That won’t mean anything if we shoot past Mars.”

Well, she tried. She even allowed him to stand in her office, saying and doing nothing, like a weirdo, while she kept working.

As Cruz focused on the numbers coming in, she didn’t see the range of facial expressions Rahul made when he stopped to look closer at the pre-school finger painting on the wall.

Minutes later, she just stood up and walked out.

“What is it?” Rahul moved around to look at the results on her screen. “Oh!”

The walk to Davis’s office took only a few more minutes, and Rahul trailed behind her.

“Why are you sticking so close to me?” she asked.

“Everyone else started drinking from a fancy looking bottle of Scotch that Benny snuck in. They didn’t even get cups; they’re passing it around to take turns drinking from it and sharing around all their spit and mouth bacteria.”

Both of them shuddered in tandem.

“I know you don’t drink either. I suppose I came over to escape.”

“I drink alcohol.”

“What? When? You never drink when we can get you to come out with us,

or the rare fancy shindig. I've heard you ask for a soda when we had access to what the cool kids call 'top shelf' stuff."

"I drink when I feel like it. I don't feel like doing it in front of most people."

They walked by a set of office cubes, and Cruz stopped. Rahul almost walked into her. She turned around and stepped, much slower, to the opening of one cubicle, and then Rahul could smell what she had seen.

One of the physical scientists had a hearty fire going in his trashcan, where a few printouts could still be observed.

"You're going to set off the sprinkler system!" Rahul screeched.

The physical scientist put up a derogatory hand sign.

Cruz grabbed an extinguisher from the wall and put out the fire, liberally dousing the budding pyromaniac as well. She put the extinguisher down, held her breath, and walked in to take the box of matches out of the man's hand. It was over before most people would be able to process the series of events.

"Wait up for me!" called Rahul in between coughs, as they resumed the trek.

~*~

George Davis, project manager of the entire final lander project, was hunched over his desk. His office was would be described as more traditionally welcoming, or impressive, and Cruz thought those were contradictory descriptions. He had large frameless windows that let the light of Pasadena, California stream inside the room. It had to make looking at anything on his

computer screen difficult, but despite that he was in the middle of talking to people through it, although Cruz couldn't tell how many. He was also talking to the two other physically present people in the room with him, not including Cruz and Rahul a step behind her.

"Tell me you have good news," he said, without looking up at her.

"I have good news," said Cruz.

His head snapped up, and the others turned to her.

"That better not be sarcasm," he said.

"We still have command control for the parachute," Cruz reported.

Davis sighed in slight relief. "Well, that's something."

"Sure," piped up one of the other team members in his office, "If we only want to send the lander paragliding through the atmosphere."

"What did I just say about sarcasm? Until I tell you otherwise, don't attempt to be funny in this office."

Lou Banks shrunk in on himself a fraction. "Sorry," he murmured, but Davis's attention was already somewhere else.

"We're still waiting on the final trajectory numbers," he was telling someone, or multiple someones, on his screen. "We only just got permission for visuals from the UAE satellite."

Cruz turned to leave and return to her space, only for two more people to half-collide, half brush by her in their rush to get in Davis's office.

The speed either meant something terribly wonderful or terribly wrong,

even among all the other wrongs of the day. The day also seemed to be one for two, as in pairs of people. Rahul had saved her from being the odd woman out. Davis was by himself, but that seemed natural.

She had the odd impulse to text Amber. For once, Cruz had naturally thought of her during the workday, without the influence of Fernweh's PR.

One of the women thrust out a set of printouts at Davis's head. Kamala Ramamurthy, aerodynamics engineer.

"What is it?"

She only shook the papers harder in front of his face.

"I have been up for two days without sleep and I doubt my ability to read my own name, I swear to God if you don't just tell me–"

The other woman spoke up: "We're still going to Mars!"

Davis grabbed the printouts and started scrutinizing them.

A tinny voice came from Davis's computer; if his face was displayed on the other side, Cruz couldn't tell. "But the lander was confirmed to have moved off course; we can't be on anything near the original trajectory."

"Just a few degrees difference while it's still far enough away could send it past Pluto, it's a miracle it's still reaching the planet at all," Davis muttered. "I SAID–"

He shouted over the online protests that nobody could hear what he was saying.

"What *is* the new trajectory then?" asked one of the coders, one half of the

pair that had been in Davis's office before Cruz arrive.

"It's pretty funny, actually," said Kamala. Davis jerked a centimeter in her direction while a vein pulsed on the side of his temple, then stopped.

"The end-point isn't too far from our original location. Technically it still falls within range of the crewed touchdown in approximately 26 months. We're still aimed at the Mawrth Vallis, but–"

"But we're coming in too steep and too hard," Davis finished, his eyes back on the printouts. "The angle is wrong for entry."

And they didn't have enough response from maneuvering controls. It was going to crash.

Davis dropped the papers and crossed his arms. "I suppose the Martian crew could scavenge through the wreckage and maybe get something useful out of the raw materials. Wasn't there a book about that?"

He waited, as if giving a moment of silence to the lander. "I'm about to take this upstairs. Then I'll have to write the hardest email of my life, to a hard-working team that devoted years of their life to a complete belly-up. If anybody has ideas, speak up now."

There was another moment of silence. Then, from Rahul: "Abandon ship?"

Instead of chastising him for levity as Cruz expected, Davis snapped a finger and pointed at her colleague. "Making it lighter – yes, that could work. Maybe. I'm very tired."

"Probably not," said Cruz, but her comment was overrun and quickly

forgotten at the explosion of new comments, high in pitch and swift in pace. Everyone was excited again.

“Do we even have the legal authority to deliberately discard contractor property?”

“We’ll let the legal team handle that,” said Davis. “If we can land with *anything* intact, then we sacrifice everything else.”

“Can we even touch down with just a parachute? Before cranes they used a parachute plus airbag system – ah, we don’t have any cushioning. Hm.”

“How much time do we have before the lander reaches the Martian exosphere?”

“We still have to calculate risk for pieces coming apart too soon during entry respective to other orbiters. If we’ve got an eye on the situation, we don’t want to throw a lander bolt into it and blind it. That could turn into an international situation.”

“What would we even choose to jettison after the heat shield goes? There are almost a dozen separate rovers or kits or pieces of equipment, worth tens of millions of dollars each.”

“Well,” said Cruz at that question, and she thought of all things on board. At more than a thousand total combined kilograms they included the outer hull, the safety layers, the heat shield, the inner mechanical guts, the cradling of different contractors’ robotics and equipment, the entire Skycrane that took up a third of the space, the parachute, the PR team’s time capsule, and the kid. Who,

frankly, was also of the PR team. And that wasn't even everything.

"We should definitely ditch the body," she said.

Silence during a conversation, she had learned long ago, was uncomfortable for people, and why they tended to continue with small talk. *Natura abhorret vacuum*; *videlicet*, a long break in speech during information conversation was unnatural.

The coder covered her open mouth with a hand, in true old-fashioned etiquette and not performative shock. Cruz figured it was genuine because no one was paying any attention to the other woman; they were all staring at her. She had ripped open a void and occupied the center of it.

Davis poked at something on his touchscreen. He finally said, "Everybody be alert for the invite email. Meeting in twenty, I want everyone in the room. No calling in from your computer. If this is our only option we need to carefully choose what stays and what goes, and choose fast."

He closed the screen top of his main laptop and carried it out of the room. They parted to make way for their project manager and followed rank, and Rahul skipped ahead to pester Davis about something. The other people in pairs all went ahead of her.

Cruz merely put her hands in the uncomfortably short pockets of her pants. If anyone looked they'd see her rhythmically clenching her hands into fists, one of them over a stress ball, but the time for staring into her like AI lasers boring to the heart of a tumor had already passed.

~*~

There was no actual human corpse within the lander. That would be preposterous. There was no body of any kind on the lander, animal, vegetable, mineral, or otherwise.

But the cremated remains of Jayden Bryce Myerson, aged nine years, four months, and five days, were contained in the most airtight, multi-layered, and sealed urn in human history. Public opinion of what was being done with Myerson's remains was somewhat fractured. His poor parents, losing their long sought for rainbow baby; his deranged parents were using their ill, and then dead, child for attention. It was a unique challenge to work into space exploration, looking forward into a future where humans were born, lived, died, and buried away from Earth; it was a something that had no place in current scientific experimentation, and humankind was reaching like Icarus. It was a grand gesture; it was a soulless publicity stunt. Most of society felt positively towards carrying the ashes to Mars ahead of the official manned mission to fulfill a dying, boyish wish to be the first human on Mars, but arguing about the effort and the ethics and the optics easily took up a great deal of space and sound online. *Natura abhorret vacuum*.

Besides necessary power sources and tools, older space probes had already carried things like people's names to Mars in the form of text etched on microchips. Fernweh had made room for an actual time capsule in the payload, a 0.293 m^3 container of nothing but representations of human emotion. The

combined NASA-ISRO public relations team wanted, as with every launch, to captivate the general public's attention. The challenge this last lander had presented was that it could have easily become the most ignored rocket launch in both space agency's histories. Who would care about the very last of multiple landers to Mars ahead of the planned manned mission? Some of the astronauts were already guest starring on morning talk shows and vidcasts.

Then the Number 1 entry submission came in, intertwined with a Make-a-Wish request. The PR team at least knew to keep their exhilaration behind closed doors, off-mic and off-camera.

Cruz wasn't the first or last person in but declined to take a seat. She leaned back against one of the glass window-walls, mindful of how long she often spent hunched over a keyboard. It was the largest conference room at JPL, the one that often doubled as the press room because of the rows of seating behind the giant table. It was polished to an uncomfortable sheen. The natural reflection of light made the room an excellent spot for the lens of picture and cameras to do their work at press releases or virtual conferences. Her back pressed against the glass grew slightly warm, and kept the sun out of her eyes, but the rest of the grand room didn't heat up in spite of all the light and the growing mass of people. It made the front half of her body shiver.

The sealed package of carbon dust made her peers act or speak like they were sending the sick little boy alive to Mars. As if that wouldn't be a horrific fate. Myerson hadn't been a trained astronaut; he would have suffered emotional

trauma from being separated and quarantined from his family, he likely would have been injured in the initial launch, and he most certainly would have died before a shuttle reached Mars. Cruz once came by the office late at night to witness a coworker gently patting the container and singing a lullaby to it.

Amber had suggested she mentally think of the thing as The Body. Not a full, live human being, not a few grams of an inert, dark powdery substance, but something in between. That only made the remainder of Myerson seem like a ghost, stuck between life and death, although putting the advice into practice seemed to make coworker chitchat go easier.

As long as the nomenclature had stayed in her head, unspoken. She really should have known better.

Mars probes were insentient robots millions of miles away, programmed to 'think' of nothing but Martian scientific progress, and their social channels on Earth were all managed by a team of humans in public relations to create the semblance of a cute and anthropomorphized machine. Millions of people felt warmly, lovingly, defensively, of cold and rusty machinery that thought nothing of them at all.

"Do we have everyone?"

Davis spoke into a headset, and his voice echoed from the speakers in the room. He was clear to those in person and those calling in. "Can everyone hear me? Those dialing in, can you see me?"

Space burial of human cremains wasn't even new; thousands of people,

dead and literally burnt past a crisp, had become afterlife astronauts. Almost every space-faring nation had at least one company that offered the services, like Jameson & Co. A few grams of their ashes would be packed tight into sealed containers with dozens or hundreds of other passengers and launched into space as secondary payloads. Most would enter low Earth orbit for approximately 45 minutes and then safely burn up in the atmosphere upon re-entry – ashes to ashes.

She'd wanted to do that for her father. A grave she could look up to every single night, no matter where she was on planet Earth, knowing she was viewing his final resting place. Not just 'among the stars', and she hated that insipid phrase, but forever between her and the night sky. Cruz could have tied her emotions of the wonders of space to his memorial. She understood the value of a marker, even if she didn't agree with the traditional manifestations. Crypts, mausoleums, sepulchers, underground tombs – dead in the dark, filled with emptiness, gone and taking up space.

She understood the need for her mother and brothers and sisters and family to connect with some tangible thing or some physical place tied to him, even if what remained was just an association in the mind. To grieve in an intangible and different way than grieving at home, at work, in a car or bus, taking a shower, eating breakfast, lying in bed at night.

Cruz had never been back to visit his grave, not since the burial. What for? To stand in dirt and rocks and scrub weeds, knowing his remains were so

close but out of sight? Knowing what it must look like under the outer stone coffin and the inner wood coffin and the wrappings, bugs and bacteria and time, knowing what was happening in the dark. It made the skin of her brain crawl like beetles. If he was gone, he should be gone. Anyway, she knew better than to actually voice the thought of space burial to her mother, or anyone else in the family. It never would have happened.

A more expensive service would take someone's ashes for a celestial ride and return them safely to loved ones, to live out their undead existence on Earth, maybe as a smooth glass paperweight or a vinyl record playing their favorite song. For even more money, some had joined Dr. Eugene Shoemaker in what was now a very exclusive graveyard on the moon. For yet even more money, you could send part of your dead self past the moon into deep space.

Nothing at her job – at a company paired with NASA working on space exploration – should be making her think of all this.

"Okay," Davis said. "Do we have everyone?"

It certainly seemed like it. Everyone from EDL – Entry, Descent, Landing – was there. There were other key players for the lander and its various payloads there. On the screens around the room were the faces of contractor representatives and other JPL employees, too many to clearly display in a grid, and their profile screens jumped around randomly from background noise. A soccer team's worth of PR representatives were there, headed by Eric Thorne. The director of the entire Eisenhower mission was on screen and present. There

were at least three dozen people physically present. Waldo could have been in there, somewhere.

They all gave Davis their silence, and he laid it out: “Approximately 40 hours ago a CME hit the Fernweh lander on its way to Mars. We have lost the majority of communications and controls, and the lander itself was physically pushed off its original trajectory. Although it is still aimed at the Mawrth Vallis the angle of entry is wrong and cannot be corrected. The most probable outcome is that the entire lander will crash and explode.”

Cruz wondered if the reason no company specializing in space burials existed in Russia was out of respect for cosmonaut Vladimir Komarov. The optics of such a burial were probably different in Russian society. For all his other accomplishments, he was the first man to die in space. Physically, from parachute failure; from the splat of blood and muscle to the surface of the Earth, from chemical reactions that sparked the pyre. Rightfully, from the arrogance of politicians who overruled concerns of numerous design faults in favor of appearing strong on the international stage of the Cold War. Cold indeed; the equations of politicking were colder and more brutal than any laws of science.

She could remember with perfect clarity her experience as a child seeing the infamous photo, not realizing at first what she was looking at; men in uniform staring down impassively at an aggregated lump of rock, described by the head of the Soviet space program at the time as “an irregular lump 30 cm in diameter and 80 cm long”, then reading the caption and description of the open casket

funeral, and wondering for a few more innocent moments where the body was supposed to be in the photo.

Cruz had to reach into her pocket and start squeezing the stress ball again, under the table. It wasn't nearly enough, and her other hand clenched over nothing. Why did she do that? Why did she have to think of that? First papa, and now the Russian and that photo. Every muscle of every limb wanted to spasm in discomfort like a body trying to expel a poison.

No, don't think about bodies.

Not Komarov's athletic figure melting in on itself trying to return to Earth, not Myerson's innocent little frame burning up in the dark and final chamber of a crematorium. Cruz was no longer a child and she didn't need to flee from her own thoughts.

"We can't use the Skycrane to properly decelerate, and the parachute is our only working option. The parachute was never meant to be the one and only thing slowing down the lander; it *can't* slow down the lander to a safe stop. Not at the current weight, that is.

"So, we are going to attempt the equivalent of a Hail Mary while jumping off a cliff: jettisoning most of the lander's innards to lessen the weight."

There was a smartboard behind him that would show up clearly on the computer screens of the people remotely tuning in, and repeated on screens throughout the room at different viewing angles. Davis rapped it with a knuckle to activate it, and with a stylus wrote down a quick list. The smartboard turned his

handwriting into sans serif font each time he finished with a word. Numbered and simplified, it was easy for Cruz to focus on:

7. Time Capsule

6. The Garden

5. Pack Mule Rover

4. Water Reclamation System

3. Water Analysis Workstation

2. The Drill

1. Myerson's Ashes

She wondered what drove the ordering of the big-ticket items. It wasn't by weight or completion date.

"This isn't like Apollo 13," Davis said. "We can't pick and choose what parts and scraps from different projects to keep. There's no Frankenstein's monster solution. We pick one thing off this list to try and save. And by we, I mean Hardison," who was the Eisenhower director, "and I have *already* picked it, and we're only doing this meeting to cover our asses."

Cruz looked up sharply at that, and back at the list.

"This is to make sure my sleep-deprived brain hasn't missed anything. We scrap the rest. And we do it knowing it'll probably all crash and burn anyway."

They didn't start voting things off the island right away. The director wanted to know if they had considered using the HIAD somehow – the Hypersonic Inflatable Aerodynamic Decelerator, used in the first Martian lander.

But, even with the ability to move it on the ground, they couldn't aim Fernweh towards it, and it still wouldn't be enough cushion for a heavy payload coming in at hundreds of kilometers per second.

Next was the issue of the Skycrane. Technically it rested in the top of the lander's frame, the heavy crown atop a pile of jewels, because it was supposed to hold and then lower all the other items to the surface. The only reason it wasn't on the list was because once there was touchdown the crane was programmed, like previous Skycranes, to fly away on its own, ironically discarding itself.

"We've been working on that," said Irene Creevy. "We don't have thrusters or anything to keep it in the air as originally intended, but we have basic internal stabilizer controls. It should be possible to force everything around into a kind of breech position and jettison the crane first."

Staring at the smartboard, Cruz rearranged the numbered items in her mind in order of significance.

The director gave his authority for Irene's team to start. The ones physically present in the room worked their way out, and there was a quick professional game of musical office chairs.

"All right, let's run through this," Davis continued. "Of the components on the lander, I've listed out the key ones in order of importance. If we have any dissent speak now or forever hold your peace."

Cruz understood nothing at that moment but her sense of hearing; the hum of electricity in the room and the slight sighs of her fellow scientists in the

unspoken beat of the conversation.

“Nothing? Good.”

“Wait,” said Cruz, and it came out as a whisper.

“Apologies Thorne, but I think the time capsule is a goner.”

The lead of the Fernweh PR team nodded. “We figured as much. Cross it off.”

Davis drew a line through item number seven. If it needed to be perpendicularly corrected by the smartboard Cruz couldn’t tell.

“Wait a minute,” she said again, a little louder, and someone turned to look at her.

“Next,” said Davis. “Hydroponics. We sent backups of backups of food stuffs on the second lander; this was the tertiary backup.”

She had to do it. She had to puncture the fabric of conversation, a black hole, a terrible void, the experience of being looked at and heard and known.

“It was also supposed to be a reprieve of mental health, sort of like a natural meditative area, but the astronauts can always take their own—”

“HEY!”

It was a shout but her voice broke on the single syllable. There were no sighs this time, but the hum of electricity seemed harder in her ears. Still – she was steering the conversation now.

“What the hell do you mean, you’ve already chosen, and that list is in order of importance? So, we’re going to prioritize some ashes over scientific

equipment? You know we're not picking things from a burning house, we're trying to kickstart the spread of human civilization through the solar system. What good is a space urn going to be years from now when the crewed shuttle goes to Mars?"

Davis had a look on his face she couldn't identify at all. It was easier to scrutinize because everyone else was staring at her. His were the only eyes that weren't trying to meet hers. She heard someone else mutter, "Damn," from somewhere in the room.

"No, Maria, I am not kidding, and I would like to remind everyone that this meeting is being recorded as per protocol. For the record, we also choose the Myerson urn because it's the smallest and lightest item on board."

She pulled her arms up, not quite crossing them, but running her palms over her bare forearms, making friction for heat. "Well, you should have led with that, then. And put the list in order of size, weight, and density."

"What does it matter?" someone from the Skycrane team asked. "It's the lightest and the smallest and it *happens* to be the most important. Win-win."

Rahul winced. "I don't think we should be using the word 'win' any time soon."

"Are we really arguing the details of semantics?" the voice of Director Hardison boomed over the speakers.

"The general public won't care," said Davis to the room. "But there are various checks and balances to NASA-ISRO, therefore we do need a clear chain

of decision-making. Choosing what will not be saved in reverse order is the best way to do so in the amount of time we have."

"Are we selecting by weight, size, and density, or not," Cruz said, raising her voice.

Someone sitting by Thorne, part of his PR team, said, "As far as the entire Eisenhower operation and the greater NASA-ISRO agency is concerned, the cosmic urn containing the ashes of Jayden Myerson is the most important item on the lander. The other parameters are irrelevant."

"You just called his ashes an *item*," said Cruz. "Don't suddenly accuse me of objectification just because I'm being practical."

"Whether or not it's practical, it's the right thing to do."

"Are we trying to save the ashes because it's the smallest and lighted item," she asked, and gestured sharply with the hand that wasn't gripped over her stress ball, hidden and sweaty in her pocket. "Or are we saving them because of sentimental thinking instead of pragmatic reasoning?"

A cacophony of voices answered, the sound waves pressing her back into the glass wall. "It makes no difference," said one, and, "Jesus," and something about arguing semantics against a racing clock.

"She may have a point," said Jim Everett, astrobiologist.

Everyone turned to him.

"Well, just because the space urn is relatively tiny doesn't guarantee it's going to survive landing. If we have to pick one thing to save and all of them have

an amount of risk, then importance should rank over size, weight, and density."

That wasn't how risk worked, but Cruz was too worked up to point it out just then.

Multiple voices started to rise in volume and speak over each other.

"Has everyone gone nuts?" asked Cruz.

"Peanuts," said Rahul, taking all of the attention from Cruz. "Get it?"

"Rahul."

"We're not in your office!"

"We get that you want to dump the body," said the coder from before. "Very serial killer-like, by the way."

That set off an even wild round of everyone talking at once.

"The kid is dead!" Cruz said to the room at large, her voice raised but not quite a shout yet. "He doesn't even exist anymore to care whether he lands on Mars or not!"

"Taking his ashes to Mars elevated an otherwise cold and routine space probe project," said someone who agreed with the original coder. "Honoring Myerson over pieces of hardware is the humane path forward."

"I'm going to be brutally honest here," said someone standing near the back. "I think picking whatever makes us look good is right. As long as we have public support we can keep going, try again."

"We're supposed to be a public government agency at the forefront of scientific knowledge and experimentation, literally the ones pushing the line

forward," Cruz complained. "Not like, I don't know, some 16th century painter whose livelihood depends on a fickle wealthy patron."

Davis hadn't been sure how this meeting would turn out, but a large majority of his employees vocally confirming, all at once and in slightly different ways, that modern space exploration was exactly like a middle-class painter in the 16th century making pictures of a patron's mistresses to keep a roof over his own head, probably wasn't on his internal list of possibilities. What order he sorted *those* in, was his own business.

"Well, it shouldn't," said Cruz. "Aren't we the ones in charge? Are we in charge of Fernweh or not?"

"Fernweh was literally sun-blasted off course, so no, we're not in charge," someone argued.

You cannot fully control what other people do, Amber's voice sounded off in her head, even if you know some Jedi mind tricks. You can only truly control yourself.

"I'm not asking if we're in charge of all of reality. I'm asking, are we still in charge of the Martian probe we sent into space? And the answer should be, however low the percentage is, yes."

"Not everything on Fernweh was as lucky as your parachute," said someone else.

"But if we're going to be ruthless," said Jim, "we should pick the pack mule. It's the second smallest item and the most durable one. It was made to

keep functioning even after all fall."

"A short fall," someone countered, "at much lower velocity."

"Except the pack mule rover is only useful if the drill and the workstation are set up," an engineer brought up. "If we're not drilling into Martian rock to look for water, and we have no equipment running to test the retrieved samples, there's no point in having something to help carry things across the Martian terrain."

The representative for the company that built the pack mule rover chimed in his resigned support.

"Enough," Director Hardison's voice boomed through the speakers. "Davis, this was a mistake. We're going to try and land the ashes safely. The decision has been made."

Davis made a kind of hands-up gesture, and accidentally let go of the smartboard stylus as he did so. He thus flung the pen all the way down the conference table, where it rolled off into the space between two occupied chairs of yet more people who Cruz didn't immediately recognize. They watched it fall to the floor and did not attempt to pick it up.

"Why did you have us meet in the first place?" Cruz challenged. "If the decision's already made and ironclad, why bother with an act like we're voting down and coming to a consensus?"

Somebody from PR spoke up. "Despite the time constraint, I'm sure the contractors appreciate knowing that we didn't simply dismiss their property

carelessly."

Thorne leaned forward and clasped his hands together over the top of the table. "I'm sure they would also agree that attempting to safely deliver the remains of an innocent, bright American child whose dreams of becoming an astronaut were cruelly cut short, in accordance with his wishes and parents' permission, is more important than any of their machines, no matter how advanced or expensive."

He then frowned slightly. "A better question, Dr. Cruz, is why you keep bringing this up, to unconstructive effect. You're not the one losing out on potentially hundreds of millions of dollars, and in fact your parachute is one of the few things on the lander still responding and in working condition. One would think you'd be just as invested in this phase of the Eisenhower mission as the coming manned shuttle."

"I've given years of my life to this place because even the smallest or most tedious of projects here are part of a greater whole," she said. "And I'm not the only one, either. The colonization of Mars will be as intrinsic to humanity as – as the Neolithic revolution, as writing systems, as the microscope and the telescope. We should continue to honor the first purpose of the mission." If she'd known all her efforts would come down to just being a fancy space hearse driver, Cruz would have applied for a job at Jameson instead She'd heard that the private sector company had worse benefits than NASA-ISRO offered, but much better pay.

“You’re overreacting,” replied Thorne.

“Or everyone here is underreacting,” she countered. “Seriously, did I enter a parallel universe this morning? Yesterday, the discovery and furthering of scientific data for the progression of both knowledge itself, and for the benefit all of humankind, was the central goal. Human remains occasionally hitching a ride on rockets is a nice gesture but ultimately just that, a ride-along. Today, we’re in the business of sending bodies to Mars. Was there life on Mars? Can we make the water there potable? Is gene therapy the solution to long-term colonization of a planet with lower gravity than Earth standard? Who cares, apparently. Maybe we’ll get lucky and one of the astronauts will pull a 21st century Sir Alexander Fleming, because obviously their main duties after years of study and training are to be nothing more than Martian pallbearers!”

“I just want to point out,” Davis interrupted, “That when I conceived of this CYA meeting I wanted to keep it short and I had no idea it would trigger some kind of perceived existential crisis on behalf of space exploration.”

“You’re acting like you’re the only one affected, knowing that Fernweh is going to crash and burn,” said someone from EDL. “This is a good way to try and get something positive out of the whole wretched experience.”

“The kid is DEAD,” Cruz protested for the last time. “His payload contributes nothing but sentimentality to the mission. Are the astronauts going to use sentimentality to protect against cosmic background radiation? Can they eat sentimentality? Is sentimentality going to tell us if life exists anywhere other than

Earth in the universe?"

The room grew quiet again, until Davis simply called the meeting adjourned.

Cruz elbowed her way out of the room nearly as the first. She wanted to run more simulations.

Rahul thought he'd be incredibly unhelpful and email her a reminder of previous probes and things successfully landed on Mars that were renamed to memorialize people: Memorial Stations for Gerald Soffen, Tim Mutch, Carl Sagan. Because of course, that was the same thing as what they currently faced.

This, of all things, she just couldn't let go of.

~*~

The evening before Fernweh was scheduled to touch down on Mars, Maria de la Cruz was welcomed home to the delicious smell of something savory and just-cooked, and the steady sounds of ambiance music at a relaxing 285 hertz. Shoes off and keys up, she called out to her girlfriend and wandered into the apartment's kitchen area. There was a medium-sized pizza box on one end of the counter and a bottle of Malbec at the other, distance keeping it from being overheated by the pizza. It was already opened with two glasses out and ready.

She felt Amber's presence behind her, *hygge* like the hearth and not the fire, just warming flickers that could never burn her.

"Guess who," said Amber through a grin, and she didn't bother trying the tactic of putting hands over Maria's eyes. That was just was an excuse to have

your arms already around the person when they turned to embrace you back. It could have been a metaphor for how their relationship soured the last time.

Better to meet in the middle.

“Why are you already in pajamas,” Maria finally asked, eons or minutes later.

“A client did exactly what I told him not to, so I have to fly out early tomorrow morning and fix things. The kind of early that’s also extremely late at night. I’ll be gone before even you need to be up.”

Maria wilted in place, still in her arms. “You won’t be here tomorrow.”

“I won’t be here tomorrow.”

“At least you get to roast someone to an emotional crisp. I know how much you actually love it when they screw up, because then you’re being paid to emasculate them. Even when they’re not a man. The joy of being paid to do what you’re good at.”

That earned her another long, welcome home kiss.

“The joy of loving what you do for a living. Aren’t we both lucky.” Amber moved to open the pizza box. “So, I thought we’d celebrate your landing tonight. Check this out.”

“*Ay, Dios mío*,” Maria intoned in a fond caricature of her grandmother.

“I asked them to make a Mars pizza. There *is* a layer of cheese underneath all that red sauce.”

“It looks like a bloodbath.”

"I think it looks like Eitan's finger painting, which is a masterpiece."

Maria took a closer whiff. All the pepperoni craters and beef chunk rocks were real meat. She could always tell the difference.

The inside of the upper cabinets were full again. Stacked underneath the last few paper plates were familiar ceramic dishes and cups. Maria could trace the looping floral pattern in her sleep. The bathroom cabinets and the closet would be the same.

"You finished moving all your things back in," she said. "It's like you never left."

"Isn't that what we wanted?" Amber said evenly.

"Mmm."

The dark bottle had another surprise on the label, from a familiar vineyard, the name of which filled her with nostalgia before she'd even poured herself a glass.

They both thought the vineyard had the most ridiculous, hilarious advertising: "Drink something with a little FIRE in it for once!" "Get FIRED up with our new line of Merlot!" "Put a little wine in your belly to go with that FIRE!" As though humankind's most ancient soporific was suddenly an energy drink.

Every generation had its keywords of encouragement for women. Slay, girl, slay, you're killing it, knock 'em dead, was how Maria and Amber's mothers heard it decades ago. Burn it down, girl, burn like a phoenix from the ashes, you're a witch, girl, was for them. And already getting old.

It shouldn't work at all, but there were less than a thousand wineries left in the state. Scientists thought it would be at least a century – long after they were both dead – before the land healed properly, and that was only if there wasn't another round of wildfires. Leasing the grounds for weddings, concerts, and a university's introductory nighttime class for Astronomy 101, was how some of them survived. It didn't change the way the flames worked their way into the dirt, the roots, the water, the grapes themselves, and even the very air.

But they liked the taste anyway.

They sat together on the little balcony, with its spectacular east-facing view of the parking lot.

Plates piled high, Amber filled their glasses and raised her own. "To Fernweh, and all the – oh," she interrupted herself as Maria downed most of her glass without waiting for the end of the toast. "Okay then."

It was a comfortable evening. The southern California heat usually cooled down at night but it was still warm enough for *al fresco* dining. The balcony furniture was a scuffed and hardy wicker set from one of Maria's mother's friends who wanted to be rid of it. They were currently using the roomy two-seater. Amber lounged at one end, her legs taking up the middle space, perpendicular to Maria sitting and hunched at the other side. Neither of them really loved the style but it was clean and came free. The overstuffed and oversized cushions, blankets, and reed mat came from one of Amber's clients. They had built some kind of meditation room and then trashed most of it in a Vitamin X-fueled rage

after coming home from two and a half after parties to an awards show, with four swag bags of merchandise equal to the down payment of a house, but no little metallic trophy. The original had already been photographed for her outlets; they claimed burglary damage and were able to do it all over again in a different theme. And the pizza was a carnivorous delight.

A stringy glop of mozzarella swung free like a broken pendulum after Maria took a huge bite. She watched it as she chewed, waiting for it to fall on the inside of her wrist, but it never did. At least not by the time she finished swallowing. She pinched the oily glob with two fingers, plucking it from its cheesy filament and holding it up as if inspecting a pearl, taken from its bloody shell of a home.

“Did you know,” she began, “that the astronauts going to Mars will likely have terrible side effects from the gene therapy to strengthen their bones?”

It was a semi-rhetorical question. It wasn’t Amber’s area of expertise but she wouldn’t be surprised if her girlfriend was well versed all the same. Almost in confirmation, “I’ve heard things,” is what Amber replied. “Tell me.”

“I’m sure their health will be fine long enough to complete their mission. Nothing will be amiss until the most important event of their lives is over and they’re back on Earth. Then the downfall will begin.

“They’re all going to develop a strong, square, superhero jawline. Which the men might appreciate but the women probably won’t. Their skeletal structure will be approximately ten times as dense and strong as the average human’s;

they could take a direct hit from a car and survive unscathed, unfractured. Which fits with that whole superhero image. But they'll never swim again. Not in a pool, or a lake. It could be dangerous just to go the beach. If they take a bath they might have to be watched over like toddlers. They simply physically won't be light enough in water anymore to do anything but drown, if they find themselves in enough of it."

She blinked, as a new thought interrupted her indulgence of malaise. "And we still do ocean touchdowns."

When the moment passed, she popped the *perline* in her mouth.

"The new bone density will likely compress their nervous system over time. They could go blind and deaf in less than ten years, or at least hard of hearing and legally blind. Reading, gone. Colors, gone. Listening to music, podcasts, audiobooks, mothers in the middle of cooking, the wind over snow, just being able to have a conversation, gone."

Maria wasn't a natural at carrying on a conversation with strangers, but she could still do it. She would force communication. She made herself be heard.

"Their very sense of *balance* will be damaged. Just taking a shower could be difficult. You couldn't Beethoven your way through the rest of your life; even if you could listen to music through memory you wouldn't be able to dance like no one is watching anymore."

Amber took a finger that had been curling around a strand of her long, light hair, and made a pointing gesture. "No slow dancing with your partner in the

living room to your song, or at weddings. Or your own wedding."

"No."

"I'm glad you're not a super famous astronaut then, leaving me for years to go play in the triple-million-dollar Martian playground just to get your name in the history books."

Around the edge of her glass Maria smiled. "But then you'd have the perfect excuse to never get married." She finished her wine and handed it to Amber for a refill.

"Oh, well, in that case hurry up and get on a space shuttle to the nearest planet. Maybe if I try claiming enduring romantic tragedy my mother will stop dropping anvils for hints."

"Don't think I won't ignore that dig on our international team of astronauts. I don't know if I like how dismissive you are of them. You'd never say such things about Neil Armstrong."

"Raw footage of the Apollo 11 landing shows him tripping over his own feet, and the first thing he did after landing back on Earth was to get sick with a cold. I'm not impressed, you can quote me on that."

"Even you wouldn't be graceful in the low gravity of the lunar surface," Maria murmured.

She'd put her plate back down and so her lap was empty when Amber put her feet into it, stretching *en pointe* into *sous-sus*, in a way that would make every single one of her childhood ballet teachers cringe in French vexation. "We'll

never know."

Maria put her glass down and started massaging her girlfriend's feet. She could recite the tirade of comparison to stiletto heels by heart. Amber was always in heels or barefoot; she didn't compromise.

"Motor function will likely be compromised," Maria continued. "It'll stretch past the fingers and toes of regular neuropathy, going up arms and legs. Forget going back into space for honorary, short space walks on the orbital stations. The first people on Mars won't be able to drive a car when they come home. They won't play an easy-going autumn game of football with their extended family over Indigenous Remembrance Day weekend. Some of the people born with the trait naturally have headaches and joint pain, so there's that to look forward to before growing properly old."

"I don't know that I agree with the idea of a proper way of growing old," said Amber. "What is the right way to grow old?

"With as few health problems as possible, for as long as possible."

"You are factual as usual. But I'm thinking of societal expectations. Par the course for me, I know. What is the perfect little old lady?"

"Little; that's one feature right in the epithet."

"All the easier for someone else to move a patient around. How would you like to lift a retired sumo wrestler in and out of a wheelchair multiple times every day? Maybe that's why people shrink as they get older; it's an evolutionary biological process."

“No, it’s because the intervertebral discs of our spinal cords thin over time. And increasing bone density might not affect that process at all. We’ll find out in a few decades, post Mars touchdown.”

The breeze made the next-door neighbor’s wind chime jangle. It was handmade out of recycled glass pieces, not carefully cut metal tubes, and therefore looked beautiful in any amount of sunlight but sounded like scratches and knocks on a chalkboard when the pieces moved against each other. If they’d stayed inside to eat at the kitchen nook she wouldn’t have to hear it, only the hum of ambiance music. But the fresh air was good. They were just above Los Angeles, and far south of wine country. Smoke didn’t get in their eyes.

“Larger bodies are also much more difficult to properly cremate,” Maria said, moments later.

Amber gracefully retracted her feet and made sure to put her own utensils on the little patio table before sitting next to Maria. She took one hand in both of hers. “Babe, that’s morbid, even for you.”

One of Maria’s hands clenched for a stress ball that wasn’t there. The thought of getting up to retrieve it from her purse was as uncomfortable as sitting there without it.

“Everyone wanted to give up,” she tried. “It was like, all of a sudden everyone’s energy was going into Fernweh’s crash landing. Not preventing it, which we couldn’t do anyway, not trying to see what information we could extract anyway. If it was going to burn up and be mostly to completely destroyed,

everyone who worked on it was going to do the same. The death of the lander whipped everyone into a frenzy. Like how when a car crash happens it doesn't create the traffic jam, it's the people slowing down to stare at it, broken and burning."

Amber tried to hand Maria her glass, with her full second helping still there, but if she didn't keep going she'd lose her train of thought. "The past few days have been the antithesis of what we're supposed to be about: looking to the future, achieving new things and building on previous knowledge. It's about looking ahead. The mission is supposed to be about hope, personified in science. Space exploration and discovery."

"Isn't there still hope? Trinity reports say you're going to try landing something anyway, and the crewed mission will try and scavenge when they land in a few years."

Maria groaned. "The only thing we're going to try and deliver are the ashes. It's no longer a Martian lander, it's just a Martian memorial. Nothing that will be useful to the crew later on. Maybe we should have smashed a bottle of champagne on the hull before sending it out, to get the destruction out of the way and ensure actual success."

"Since when do you believe in superstition? Or breaking sanitization protocol?"

She shook her head. That's what memorials were about, superstition and ritual and having a party to celebrate a full stop. All deaths were like crash

landings – no more future.

"It is a memorial," she avowed. "I went to work on an amazing project that looks to the future, and now it's only about celebrating death. Don't tell me it's about celebrating the kid's life, that's all pretense. We're making the lander into a tomb and Mars into a necropolis."

And they both knew how she felt about funerals.

She let Amber wrap her in an embrace, kiss her temple once before her lips. An old coworker had seen her do the same thing, years ago at some holiday party, and asked in a ridiculous sneer if she was her partner or her mother. Maria had thrown her soda down his shirt, and they got to go home early.

It meant she was loved for her mind, the core of herself. The #1 most important part, and certainly not the most convenient.

They finished all the pizza and most of the wine together over the next half hour, Amber taking her last glass inside with her. The crusts were left out as lazy offerings for the birds.

Maria dug around her bureau drawers for her own sleep clothes, the arrangement of two wardrobes not exactly in the same configuration as they had been months ago. She heard the shower start – Amber letting it run to flush out the cold water first. When she was squeaky clean and getting under the heavy covers, she saw Amber take something from the end table on her side, hidden in her hand and then palmed into her mouth with the last of her drink.

Maria said nothing and physically made no reaction, even though it

happened before they waved the lights off. It was what she agreed. Wasn't it better that she wasn't trying to hide it anymore, no sneaking anything behind Maria's back? Better that Amber wasn't making a show out of it when Maria was aware and watching, like that one horrible and furious time?

She wanted to think of something else, but the only door in her mind that would open went to that photo of Vladimir Komarov again.

"I suppose if we find signs that life once existed on Mars millions or billions of years ago, that means it was a necropolis all along," Maria whispered.

"Oh, babe," Amber sighed. "Still too morbid. We can change the meaning of things, you know. Once humanity gets to Mars we'll plant root vegetables and peace lilies. We'll turn it into a garden. Not the cult-y fundamentalist Christianized kind, a real garden, full of worms and shit and unauthorized cannabis."

"We talked more about me tonight than you," said Maria, still hushed.

"I promise to make it all about me when I get back overmorrow."

They liked cuddling just fine when binge-watching TV or after sex, but not for an actual night's sleep. Maria brushed the back of her hand down Amber's upper arm, to feel her lotion-soft skin and say something she couldn't with words, then started counting primes backwards from 9973.

~*~

The next morning she woke up alone and there was a box at the end of their bed. The sturdy cardstock had a glossy sheen to it, and there was a single garish red bow stuck on top. Opening it revealed layers of fine tissue paper, and

it took a moment to unfold enough of them to reach the object of attention.

They'd talked about this before. It had been hundreds of years since the *robe de corpse* went out of style and there were still too many ridiculous layers to women's clothing. Everything was too sheer or too short or too thin. Planned obsolescence was unlawful for electronics but the unrelenting waves of cheap fashion would encircle the globe forever. Amber's theory was a root cause of patriarchy – women became something decorative to unwrap like a present. Maria favored a system of plain old-fashioned greed. None of it affected the climate of her office, always at least ten degrees colder than the California temperature outside it and powered by a healthy and robust AC.

It was a tag-less knit cardigan that looked as though it could have belonged to a Sloppy Sue student of the 20th century interwar period, eager to check out the latest Dorothy L. Sayer book after a study group session. Except the one Maria held in her hands was brand new. It was long enough that it would just brush past her hips, and it was cut straight – what the fashion-forward from back in the 1920s to now might complain of as baggy and shapeless. The deep V-neck ended over a single column of antique mother-of-pearl buttons, all five of them worn to a warm yellowed coloring. On each side of the button line was a pocket roomy enough to cradle a hand, wrist, and even part of the forearm. The edges of the piece – the wide collar, the sleeve ends, the trim of the torso – were knit in a simple flat pattern to go with the stockinette-stitching of the entire cardigan. The color was a plain fawn brown, tangentially reminiscent of the dull

brown associated with the Great Depression, but in reality due to the delicate vicuña wool fibers that wouldn't take any kind of dyes, neither synthetic nor organic. It was extraordinarily soft and downy under her fingers and she brought it to her cheeks to nearly rub her face in it like a cat. It didn't smell of anything animalistic and fatty, just natural warmth.

Burn, baby, burn was all the handwritten note said.

~*~

Someone brought peanut brittle.

Someone else brought in peanut butter cookies.

And so forth.

Going by the loot in the kitchen and on some people's empty desks, there'd been a lot of stress baking the previous night. Unofficially, there was one human characteristic that was discriminated against in JPL, and that was a peanut allergy. Kosher and halal rules were perfectly fine; vegans were welcomed wholeheartedly; the gluten intolerant shared recipes with the dairy intolerant; if you didn't drink, nobody pestered you for personal details of contraindicated medications or the state of your uterus; and those who lived so close to the ocean but refrained from shellfish kindly left more shrimp cocktails for everyone else. But since 1964's successful lunar Ranger 7, you ate peanuts at JPL for a landing for good luck, and you did not break tradition.

Thankfully, there were no ants-on-a-log snacks, and Cruz helped herself to a do-si-do. Whoever thought teeth-catching celeriac strings and expired raisins

should be eaten together with peanut butter deserved to crash land on Mars.

Inside the building and on her floor things were as busy as the days before, except now there were even more people around. She walked past a project scientist being interviewed, behind the man holding up the camera and broadcasting. Cruz wondered how anyone could move in ye olden days, when presenters needed an entire team behind the camera. Now only one person was needed to hold up a lightweight camera and its heavy-duty stabilizing system. Although past the inner glass window-walls she could see white drapes being carried and set up. Not every room was as well-lit as the press room.

Her office called to her, all cozy and private, and if she liked big parties she'd compare it to being at a high-rise party in NYC for New Year's Eve. As close to Time Square as the tourists and partiers, except not freezing her ass off with no place to sit and limited port-a-potties for relief, but watching the live thing from behind a window and also on a large, high-definition TV screen showing a close-up of it all. That was how Cruz wanted to watch the lander go down. Pour out a shot for Fernweh from a comfortable distance.

Instead she only stopped there briefly to grab her laptop, air-high-five at Eitan's painting in what could be the start of a new superstition for her, then hauled herself to the lab to work at a communal workstation. She was joined by everyone else who had mainly worked on the parachute. There would be a representative for it in Mission Control; someone officially part of EDL, and not anyone from launch and journey monitoring, like Cruz. The teams that built up

the lander and launched it were separate from the final, most exciting phase.

No one would meet her eyes. The ones already in the lab looked up at her when she walked in, for a few moments more than normal, and then looked away. If someone came in after her, she could tell when their head turned to her. But if Cruz looked back, challenging them, they became busy with their own laptops. It was something she would have wanted before yesterday.

There was nothing to do but watch incoming information about the parachute and the lander in general, and continually feed projections. All the projections ended in red alert crashes, and one by one they all muted the speakers.

Divya was one of the last of her coworkers to come in the lab before the two-hour cutoff, and she brought homemade peanut butter truffles. She gave Cruz a small smile and offered the treats to every individual in the room in turn.

When she got to Cruz, Divya offered a truffle and a question. “How did you get here before me?”

“What do you mean?” The truffles were thoughtfully wrapped in tinfoil. Just the regular kind brought in a grocery store, cut into small squares to better preserve the chocolate coating. Cruz put one in her pocket for later, maybe to save for Amber, and at Divya’s urging (and therefore permission) took another one to eat right there and then.

“I just saw you in your office on my way over here.”

“No, I’ve been here a while.”

“It must be your light then; it hasn’t automatically shut off like normal.”

Cruz couldn’t remember if her office light was prone to shutting off too soon without the presence of her body in there to keep it on. It had never been a problem before when she needed to use the restroom or attend a meeting, but then again, she wasn’t fanatical about turning off or even unplugging lights whenever leaving a room. That was old-fashioned for a society heavily powered by nuclear, solar, and wind.

“These are good,” she complimented the truffles. “Thank you for making them and sharing them.”

Divya leaned in a little and lowered her voice. “I’m sorry you got raked over yesterday. I don’t think you were trying to be ruthless about Myerson, just that you consider the astronauts a bigger priority and you’re dedicated to the success of the manned mission.”

It was a nice way of looking at the situation and considering mutual exclusivity, except that Cruz really thought the damn ashes should get booted in the Martian atmosphere so they could attempt to save anything else, save for the Time Capsule. The ashes were just a product of a system she was beginning to truly hate; the capsule was already crap and she might actually mime the action of kicking it out of the lander when it was finally jettisoned.

Cruz didn’t say anything and just thanked Divya.

Some people weren’t even trying to hide their lack of work, watching the NASA-ISRO live feed on their laptops or playing Galaga. It was a very informal

atmosphere. Cruz thought about old decommissioned military ships, deliberately sunk to become artificial reefs. Fernweh couldn't even have that.

She found a livestream channel with Davis speaking. Based on the sudden lack of undereye circles he must have been wearing makeup.

"Here on Earth, we're used to near-instantaneous communication," explained a spokesperson with the most melodic voice Cruz ever had the pleasure of hearing. "Many viewers will remember a few years ago when aquanauts working at the Challenger Deep teamed up with the astronauts of the United Space Station for a live, virtual concert to help raise funds for the World Wildlife Federation. But it takes a lot more time to send a signal from Earth to Mars, and vice versa. How does that affect the information you're seeing?"

Davis shifted in his seat but spoke with calm authority.

"The distance between Earth and Mars changes all the time as both planets revolve around the sun. Right now, Mars is about 130 million miles away from us, and it takes about 11 minutes for light to travel from Mars to Earth. So, all the information that we receive from Fernweh, or from other Mars orbitals, actually happened 11 min ago. If we send a command it becomes a round trip total of 22 minutes. 11 minutes to send the command to Mars, and another 11 minutes for the reply to get back to us. We call this two-way light time."

Inside the building, amongst themselves, they voiced the name of the lander with its original German pronunciation. But when speaking to the general public they used a controlled rollout of loanword adaptation, on advice of the PR

team: *Fern-way*. The connotations of *fern*, a plant going to Mars (itself a plant with positive connotations, unlike, say, ragweed, or Gympie-Gympie the suicide plant), and *way*, a clear path forward, even if the destination itself was still unclear.

Like all Mars space probes since the first rover to successfully explore the red planet, Fernweh had been named by a child.

“Now, this landing is going to go a little different than the previous three. For one, we already know it’s going to crash. What is NASA-ISRO’s plan for such a disastrous landing? Can anything land safely, or will it all burn up in the Martian atmosphere?”

Cruz switched to a public, open-source simulator and practiced the landing the way she would play a video game, adjusting the controls they no longer had in real life. She watched the little CGI lander glow from just the right angle and amount of friction in the atmosphere of Mars, the parachute deploying and slowing it down, the heat shield separating while it continued to slow even more, until finally the Skycrane was engaged and the hull cracked away, leaving the crane to lower the entire payload onto the ochre surface of Mars as gently as an egg into broth for poaching. Or a bird, knowing down to the DNA in their hollow bones how to land on the ground as natural as anything.

She asked the pun in her head: What came first? The bird or the word? Personally, she believed in *Argentavis magnificens*.

Light conversation around the lab and mixed with the sound of multiple

livestreams taking place elsewhere in the building, or from outside experts weighing in. The normal flight milestones – communications poll.

She signed up to play a free online gardening game, one of the many ones that had added a Mars landscape option. Cruz played simple matching and Tetris games to earn coin and buy materials, and then she started building an airtight greenhouse. When she made progress the life-bar at the top of the screen was green, and when she made mistakes it dropped into red. It wasn't exactly the life of being paid to play video games that her uncle lamented he should have made a career of, but it had a much better graphical user interface than anything currently being used in real life probes and rovers.

No one spoke to her after Divya.

She had just fixed a crack in the greenhouse glass with duct tape and started planting new potatoes when Davis walked in the room. Cruz minimized the game tab to pick it up later and was incredibly glad she did so, because he had come to talk to her.

"Cruz, remember how you were going to be our parachute point person for today's interviews?"

She hadn't forgotten; she'd just thought no one would want to hear from her anymore. Cruz wasn't even the only person who'd been kicked off the schedule of interviews. Nobody wanted to talk to the team for the Skycrane, and she didn't even need to see Rahul in person to know how despondent he'd be over that. Plus, she was wearing her new sweater over her JPL shirt with the red

fern symbol on it; protocol would have her leave the cardigan... somewhere, so as to clearly display the NASA-ISRO branding. She was distinctly against the idea of peeling off a layer, and readied an argument for keeping it on but unbuttoned to still show the Fernweh logo.

Cruz checked the time; she wasn't late for the scheduled interview. "Right – I'm ready if we're still doing that."

"Actually, I thought we'd let Hendricks of EDL do it instead. Do you mind?"

"No." No, she did not mind that she would not be getting fussed and picked over and told to smile more, a performative version of her preserved for eternity. Or as long as the digital format lasted. She had complained about the 'honor' from the very beginning.

She felt the crunch of the foil wrapping in her pocket. "No, and if he doesn't want to, Divya would be great on camera."

Davis just nodded and left. Divya waved and mouthed 'Thank you!' to her.

An hour later it all finally went down. Quite literally.

Of all the mechanical parts of the lander, each one magnificent and innovative, Cruz was admittedly biased in favor of the parachute and its deployment. She supposed it was how some people must feel about flying kites, the childlike wonder and nostalgia. A parachute was like a flower at the exact moment of bursting open to the sun, but then carried by the wind. The human at the handle end was only ever partially in control. It was beauty in movement and mathematics.

Like the pirate flag of a sinking ship.

Cruz hadn't had any input on the message coded in binary, other than to nix what would have been too complicated to be of use in orientation. The PR team had taken care of it.

2:12:03 The navigation has confirmed that the parachute has deployed and we are seeing significant deceleration in the velocity. His current velocity is 730 meters per second at an altitude of about 12 kilometers from the surface of Mars.

2:12:18 Heat shield sep.

2:12:21 Fernweh has now slowed to subsonic speeds and the heat shield has been separated. We do not have radar or camera view of the surface. Current velocity is 145 meters per second at an altitude of about nine and a half kilometers above the surface.

2:12:53 Orbitals are tracking.

2:12:59 Current velocity is about 100 meters per second. 6.6 kilometers above the surface of Mars.

2:13:11 Fernweh is continuing to descend on the parachute. His current velocity is about 90 meters per second at an altitude of 4.2 kilometers.

2:13:34 We have confirmation that the land division system has produced a valid solution and part of terrain relative

navigation.

2:13:43 We do not have priming of the landing engines.

2:13:51 Back shell sep.

2:13:53 High velocity is 83 meters per second at about 2.6 kilometers from the surface of Mars. We have confirmation that the back shell has separated. Jettison of the Skycrane is a go.

2:13:59 Skycrane has been jettisoned.

There was a shout; someone had poured out a shot in Mission Control, right over the government sanctioned carpet. A few people in the lab laughed, and she missed the Rover Mule drop.

2:14:13 Current speed is still about 83 meters per second. Altitude of about 300 meters off the surface of Mars. Jettison of the Drill is a go.

2:14:22 Drill has been jettisoned.

2:14:27 Jettison of the Tertiary Water System is a go.

2:14:31 T-W-S has been jettisoned.

2:14:36 Jettison of the Marswater Analysis Workstation is a go.

2:14:42 M-A-W has been jettisoned.

2:14:48 Auxiliary food station is a go.

2:14:55 A-F-S has been jettisoned.

At that, and only that, Cruz bowed her head.

2:15:02 Time Capsule is a go.

2:15:07 Capsule has been jettisoned.

2:15:55 Fernweh is 100 meters off the surface.

2:15:00 60 meters off the surface.

2:14:53 Charlie foxtrot.

2:14:54 Touchdown confirmed. Due to dust kick-up we have lost post-touchdown visual and do not have confirmation on safe landing of the payload.

Then, there was only the hum of electronics.

On screen, a few people at Mission Control started politely clapping but the effort died out after a few seconds. A round of decently played golf would have gotten more vigorous applause from the audience. The camera switched to a live press conference with the Eisenhower director.

“Many people thought today would be a tragedy; what was supposed to be one more pioneering step in the journey of mankind to our next-door planet, thwarted. But space exploration of the final frontier is made up of more than whatever the next biggest and most exciting thing is; our future in space is life in space. Life is full of surprise, but also repetition; excitement, but also boredom; the sacred and the profane. Today we have fulfilled what I believe to be a core tenet and duty of life: that of laying a soul to rest. Today, the first human in history reached out and touched a planet that was not Earth, and there he will

remain in the records for—

A tap on her shoulder made Cruz jump. She'd zoned out the rest of the world at the director's words. Normally that only happened with things like working on orbital mechanics formulas.

It was Davis, and at his request she shut the lid of her laptop to carry with her, following him. She remembered thinking, during that walk with him, how they had gotten what they wanted. *They*, being a hazy mix of NASA-ISRO, the Eisenhower PR team, the anti-scientific peanut gallery, fate herself. Her thoughts were already with the final phase, the crewed shuttle, the manned lander to Mars. Not ashes in the wind but boots on the ground.

He led her to a side room not far from the Fernweh cubicles, and inside was a woman Cruz didn't recognize and a large cardboard box on the table.

"Dr. Cruz," she said. She stood up but didn't extend her hand. "Please, have a seat."

She never liked that phrase; it sounded like someone was offering her a chair as a complimentary gift for entering a room. She remembered thinking that just as she recognized Eitan's painting.

"What's this?" she said. "These are my things! You went digging around my office? What the hell for?"

"Maria," said Davis, "Please."

"Who are you?" she demanded of the stranger.

"This is Leslie," Davis explained. "She's with HR."

Cruz grabbed the cardboard box and started digging through it to see what exactly was there. “If you wanted me to move back to a cube you should have just told me. Everything was in order. Where are my books?”

“We thought it would be easier this way,” Leslie informed her. “We were able to make sure nothing belonging to NASA-ISRO would be missed, and we’ve already packed up the personal reference books we found to be mailed out tomorrow. I don’t know if you drive a personal car or take public transport, but I’m sure they would have been a heavy burden to carry either way. Are you still living at the address you originally provided us?”

“Why would you mail any of my stuff?” Cruz asked in irritation. “Am I going somewhere even tinier than a cubicle? Do I have to work in a lander-sized workspace as punishment for working on the team that crashed?”

Davis cleared his throat. “You’re a fantastic practical scientist, Maria. We wouldn’t have had any kind of positive outcome without the parachute, and a lot of that is due to you. But your objection to prioritizing the remains of an innocent child were made very clear and the people above me weren’t happy about someone – well. Not ‘toeing the party line’ is how I would phrase it.”

“What the *hell*—”

“Let’s not make a scene,” said Leslie.

“We’re not making a scene, I’m asking questions and nobody is answering me!”

“If you could just sit down, we can go over your benefits.”

“Why did you go through all my things! Just to throw them in a box? What do you expect me to do with them now?”

Davis touched her arm, probably trying to be comforting, and she knocked his grubby fingers away from Amber’s gift. He raised his hands and backed up. Leslie waved at the wall behind both of them.

There was a knock on the doorframe, and a burly man in uniform stuck his head in. “I heard raised voices in here, everything okay?”

The pitch of Davis’s voice went flat. “Jesus, Leslie, you called security?”

There was a humming noise but it didn’t seem to be coming from any electronics that Cruz could tell.

“I’m just following protocol. Please, let’s all sit down. We want this to be as peaceful a transition as possible, for all of us.”

She put her stickered laptop on the table and promptly hunched over with hands to her knees to try and control her breathing. “Davis…” That was all she could get out, and she wouldn’t pull her head up to look at his face.

“You said everything in a meeting, Maria. It was recorded; it’s public record now. It’s available to anyone with an internet connection. It’s available to *press*. I’m sorry."

She pushed off her legs and stood up straight. She went for her laptop first, to somehow fit it on top of everything in the box without breaking glass or making the already-heavy container too awkward.

“That’s NASA-ISRO property,” Leslie snapped out, quick but with an even

tone. “You’ll have to leave it here.”

Cruz had a sudden and vivid kind of daydream, of raising the best performing computer she’d ever worked on high over her head, full of the notes and information lovingly and painstakingly gathered for the objective of fulfilling her childhood dream job duties, and, while keeping perfect eye contact with Leslie From HR, smashing it as hard as she could onto the ground.

“Why didn’t you just tell me not to come in,” she said, instead. She could have come in late on a weekend evening to empty out her own office. She could have done it herself.

“I thought you deserved to at least be present for the... end of Fernweh.”

Cruz grabbed the box and used it as a battering ram to shove her way out of the room. The security guard, listening at the door, jumped out of the way. Davis said something, and she didn’t care to listen or remember what it was. She had to get out.

“Dr. Cruz,” Leslie called out after her. “You need to leave your badge as well!”

That, she took great satisfaction in tearing off her neck, the plastic clip lock ripping right off, and throwing it on the ground. It wasn’t a computer priced in four digits, but it had a little microchip and high-level security clearance. It was something, at least.

It was necessary to stop and put the box on a cubicle desk to do so; the box wasn’t small or light enough to balance on her hip even for a few seconds. If

it were any other day, whoever normally occupied the cube would have been there to complain at the invasion of their space.

Every footstep she took was a hard, hurried thump on the ground and the things she carried rattled and rolled out of sync. They'd forgotten her blanket. Or someone had stolen it. Take-your-shit boxes ought to come with stabilizers. Cruz should just design one herself – she could sell it to every company in America. It's not like she had any other job at the moment.

There were so many people in the building for this historic day.

The faster she moved the more people she bumped into trying to leave. They all saw – she wasn't under any illusion that they couldn't tell what she was doing, what had happened. Cruz didn't have to try and read their faces or body language to know how they judged her. Any of the talk around her that she could hear but couldn't make out the words could be, or probably was, about her.

It was a lot easier to brush off when she still had a prestigious job.

Still holding the box she kicked at the elevator keypad, missed once, and then hit it on the second try.

"Hey – hey wait up!"

Cruz groaned at the sound of Rahul's voice, and turned away when he managed to get inside the elevator before the doors closed. She used her shoulder to mash all the number buttons, including the one for ground level where the parking lot was. She had a car of course, there was still no 'public transportation' in Pasadena – it was an old Audi, young enough that it had

seatbelts and airbags but old enough that there was no self-driving function and she had to physically drive it herself. But it worked, and that was all she ever needed. Something to get her from Point A to Point B safely.

"Are you leaving?"

She didn't answer. Maybe she couldn't.

"That's a tough break for you. I mean, this has already been a rough week. Sorry. You're not missing any after parties at least. We'll, uh, I'll miss working with you on the... crewed shuttle…?"

She had walked out of the elevator while he was still speaking. Like she'd really be missed. Someone else would take her job, build off her work, and be part of the team that put humans on Mars, right in the building in the middle of the action while a civilian such as herself made do watching on a big high definition TV. Cruz would be lucky to be just a footnote in the story.

The sunlight, same as the light that came through the window glass of the building, felt brighter than usual, and the normal hit of dry heat away from the building's AC was hotter too. Suddenly her beautiful cardigan made her feel overheated, and fuck them for changing her gift like that.

Cruz was still on JPL pavement, not quite to the open lot where her car was, when she felt the slight rumble of the cardboard. Cursing, she fumbled with the thing and tried to grasp it tighter, better, but the bottom flaps bottomed out and everything housed in it fell. The heaviest, of course, was the candle in its thick glass container, which shot out like gravity was its gunpower and it struck

the ground – and bounced once, rolling away from her.

Of course.

She spent the next few minutes trying to fold and flip the cardboard back into a working container. Sweat started to foul the armpits of her cardigan.

How many people were looking out from a window at her, right now? Everybody loved to watch a disaster, they'd proven that.

Finally she got everything back inside, and absent a whole roll of duct tape kept it together by pressing the bottom edge of it into her stomach, two hands carrying. She started in the direction of her vehicle, and quickly came to where 'Oasis Waves' lay, the glass already absorbing the energy of the sun.

She put the box back down and picked the candle up. It was never meant to be lit – but, that would be a little too cliché. And probably a felony.

Maria de la Cruz hoisted the glass container all the way above her head, judged the appropriate angle of entry, and with all her fury heaved it to the concrete where it shattered into dozens of disparate pieces. A peaceful transition deserved a relaxing aroma, after all.

She drove home and cried in bed, holding off on texting Amber or calling her mother before she was ready. But that would never be. She was no one, going nowhere, empty and taking up space.

~*~

BIOGRAPHY

Alison M. Ross received her Bachelor of Arts in English from the University of Mary Washington in 2011 and hopes to graduate this year with a Master of Fine Arts in Creative Fiction from George Mason University. She's absolutely a dog person and has lived in Northern Virginia her entire life so far. Her desert island book is *Watership Down*.