Seeds

Prologue: Apes in Space

Humans spread like grass.

Like grass, you[1] found your way to every corner of that home planet of yours. On feet and canoes and horses, and then planes and icebreakers and automobiles, you managed to work your way onto every peninsula, desert and mountain range on Earth.

The second diaspora was quicker, and much more ambitious. Two hundred years after the first Martian colony there was scarcely a rock around the Sun that didn't have a human or two crammed onto it.

The third diaspora kicked off when wormholes became your new wheel. If you were grass, the wormholes were your roots, tunnelling through space to new sites of emergence. You took root around red dwarfs and supergiants and everything in between.

Before too long you ran into others with the same idea.

Through uneasy first contacts and the occasional border war, your species actually comported itself surprisingly well. All the civilizations in their corner of the Milky Way happened to be at about the same level of technology, give or take[2], so

[1] If you are an unusually literate parrot, dolphin, chimpanzee, or nonhuman visitor to Earth, I apologise for my assumption.

[2] I cannot impress upon you just how astoundingly ridiculous - dare I say, astronomical - this coincidence is. Over the fourteen billion years of existence, there was barely any intelligence in the Orion Arm, and then, all within a thousand years and ten thousand light-years of each other,

things meshed together pretty nicely. There weren't any major genocides, and in general humans managed a decent balance with their alien counterparts. Your people kept spreading, of course, filtering into the gaps. While terraforming an outer planet named Barnumbirr, a small group of humans decided that instead of spreading more of their own kind across the universe, they would spread the seeds of life instead. They were driven by one underlying notion: spread life as far and as densely as humanly possible. They had a variety of personal reasons for this, ranging from the scientific to the religious, but all with some degree, I daresay, of spiritual belief in life's importance.

They travelled across the galaxy in their generation ships, placing hardy microbes on planet after planet, hoping that they would shape and their empty worlds as Earth had been shaped. It became a way of life. And so the Seeders were born.

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a dozen or so sentient species erupted into the universe. Just like humans, to fall ass-backward in more good fortune than you can handle.

Interphase

Chapter 1: Dayfall

Space, as usual, was mostly empty. Yes, there was the thin plasma of the interstellar medium, but that hardly counts. And yes, there was the occasional star. There was also the spacecraft. In limbo between one star and the next, it was a dull artificial point in a radiant emptiness. A snub-nosed fore and blunt-engined aft joined together around a broad, cylindrical midsection. Engines burned as it plunged backward to its destination. Two circumscribing sets of panels, broad, thick, and curved, folded out from the middle like petals from some mechanical flower. The hull was decorated with a weird many-coloured swirl. Over the colours, in great white block letters, was the name *PLAGUE RAT*[3].

Space is pretty big. I'm not going to be able to drum it into your human[4] skull just how big, so I'm not going to try. All I need you to do is this: picture a bacterium crossing the Atlantic Ocean. A single cell of *Escheria coli* making its long, lonely way over the waves between New York and Morocco. That's the scale of the *Plague Rat*, between one star and the next, the tiniest island of air and heat in an infinite vacuum.[5]

[3] Not in English, though. We'll get to that.

[4] Pre-cybernetic biological species are notoriously bad at cognising scales beyond their own order of magnitude. A number like 10^{16} metres can't even fit in your brain. The best I could do for you is show you a fun animation where we move gradually up the scale, comparing familiar objects until we get to something properly big, like Betelgeuse or a supercluster. You'll ooh and you'll ah, impressed and maybe a little afraid with the scale of the cosmos. And then you'll go right back to imagining that Alpha Centauri is around the corner and that you could reach the Moon yourself with a big enough jump.

[5] I actually did the maths on that one, but I'll refrain from showing my working. The *Rat* was, granted, significantly faster than your average microbe.

Plague Rat wasn't hugely impressive. It wasn't one of those moon-sized mega-colonies out in Eridani, and it wasn't a nimble pocket cruiser that could blast its way to the next star with a skip and a hop. But it was cool, in its own way. For a human, at four kilometres long and currently almost as wide, it was the size of a small city. And, for eight thousand humans, it was home.

One such human was Danae Kai Disumus. She was presently on the Flight Deck, engines pressing her comfortably into her seat. If you asked someone to guess how old she was, they might have said anything from thirty to sixty.[6] Overhead was a transparent dome through which the cosmos glistened. The flight crew bustled around her, making the most of the last few minutes of gravity.

Danae tapped a speaker icon on the slate nestled in her lap. A throat-mic picked up her voice, commanding but comforting, and broadcast it to speakers throughout the spacecraft.

[7] "People of *Plague Rat*, this is your five-minute warning. We're about to switch off the motors and turn this thing around. Kindly make your way to the nearest safety chairs, strap down all loose objects, and remember not to get too far from the ground during microgravity."

She flicked through a couple of camera feeds. Although most residents had planned ahead, there were, as always, a few scrambling back to their quarters. This was hardly their first warning, the event having been scheduled weeks ahead, but

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[6] Someone from your time, that is. She was, of course, much older than that.

[7] The Seeders did not speak in language you would recognise, any more than yours would be comprehensible to the Vikings who carried Germanic to England. For your convenience I have translated speech and text from the Seeder tongue (of which *Plague Rat* has its own peculiar dialect) into 21st-century English -- at least, as close an approximation as I can manage. I'm not down with all the latest meme lingo, admittedly.

procrastination is a time-honoured and practically universal human trait. Not to worry: the motors wouldn't stop until everyone was reported safe.

As the minutes elapsed, the people around Danae dropped into chairs in elevating concentric circles around the captain's console. In the inner circle, Shizuka lowered themself[8] without taking their eyes from a slate, chattering frantically to the rest of Engineering. They grinned sheepishly when Danae caught their eye, brow raised.

"A bit last-minute for engineering checks, wouldn't you say?"

Shizuka winked.

"Last-minute is the perfect time for triple-checks, captain."

Knowing Shizuka, they were probably more like dodecatuple-checks. Jiemba, also in the inner circle, raised her hand.

"Do you mind if we dim the lights in here, captain? I want to see the stars."

Danae cast around.

"Any objections?"

None were forthcoming. Everyone was seated, so she lowered the cabin lights to glowing red lines across corners and floors. The crew's faces were lit from below by their slates and consoles. Above them, the stars took on a new, milky brilliance.

Danae span to the pilot.

"Ready?"

Kwasi cracked his knuckles.

"All green here, cap."

[8] Shizuka preferred that gendered pronouns not be used to refer to them, but the English language -- despite having several distinct terms for 'soft drink' -- is limited in that respect. 'They' is grammatically troubling, but preferable to the objectifying 'it'. The Seeder languages have a number of more suitable alternatives, lost in translation. Hey, don't blame me. It's your species that had millennia of artificial gender roles.

"Alright. *Plague Rat,* it's me again. We're about to begin. Transferring you to your pilot for the play-by-play."

Kwasi nodded, and Danae shifted the intercom to him. "Ceasing burn in… 5… 4… 3… 2… 1… Mark."

Obeying his voice, the *Plague Rat*'s engines blinked off for the first time in two years. Danae's stomach lurched and she lifted against the chair's straps.

"Okay. Prepare for turn." Their chairs swivelled so that their backs were pointed against starboard.

"Firing torque jets in five…"

"*Does he have to count down every time?*" Shizuka whispered.

"Mark."

Two sets of smaller rockets, on the rear and nose of the *Rat,* fired in opposite directions. Pushed into the back of her chair now, Danae looked up. Imperceptibly at first, then more quickly, the stars began to slide sideways.

"Ceasing torque."

The force relented. The universe seemed to spin around them, a night sky in fast-forward. Half the crew craned their necks and watched the bright band of the Milky Way sweep majestically across the viewing dome.

Their chairs whirled 180 degrees.

"Firing against spin."

The opposing torque rockets fired, again forcing bodies backwards. As their spin slowed and *Plague Rat* turned towards her destination, the Star itself drifted into view. The brightest light in the sky, it came to rest at the dome's centre.

"Beginning transition to cylindrical configuration…" Kwasi looked at Shizuka as he skipped the countdown, "...now."

The spacecraft's great Petals folded in, like flowers preparing for nightfall, with thousands of people along for the ride. But this was nightfall in reverse -- they were approaching the light, not receding from it.

It was a slow process to haul the kilometre-and-a-half girth of the Petals into line. While they waited, Danae looked up at the impending star. It had, over their years of approach, graduated steadily from a point to a diamond, lit from within. As they swept through the system's layers it would swell to a ball of intense, teeming white light, leaving any Earthly comparison far behind.

"It's a bit big, isn't it?" Danae said doubtfully. "It must have a short lifespan."

"4.3 billion years," Jiemba volunteered. "It's burned through about half."

Danae winced.

"Not ideal."

[9] "Don't worry, captain, you're going to love this one. We've got two planets in the liquid water zone: a gas giant and a terrestrial. I've been getting whiffs of O_2 and H_2O from a moon around the giant.[10] Plus there are around a hundred satellites in the outer system, and two more terrestrials further in."

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[9] I realise that not all readers are comprehensively educated in astrophysics, engineering or biology -- and that some of you don't even hold higher degrees in mathematics. As much joy as it brings me to bamboozle the unscientific among you with a constant chain of unpronounceable jargon, I've been informed that this has a tendency to alienate. So for those of you who are -- shall we say -- under- qualified, I will from time to time provide interjections such as the below to laymanize the more technical information.

Or: I'll dumb down the mumbo jumbo for you folks whose book learning weren't too thorough.

[10] Molecular oxygen and water, respectively.

The mention of an atmosphere tweaked Ahanu's attention, who until that moment had been testing how many times he could spin his chair off of one push.[11]

"Any organic molecules?" he asked, straightening.

"We haven't resolved any yet, but there has to be, right? That much oxygen, it has to be biogenic."

Ahanu grinned, rubbing his hands.

"Percentage?"

"Can't be sure yet, but it looks like less than half, and the rest is mostly nitrogen."

"Molecular?"

"What else."

Danae interjected.

"So this one might be inhabited already?"

Jiemba and Ahanu both nodded enthusiastically.

"Almost definitely," said Jiemba.

"With carbon-based life," added Ahanu.

"Lots of it."

Danae felt a tingle down her spine.

"I guess star lifespan isn't such a problem then."

Finally, the Petals clunked back together and sealed into two seamless cylinders, end-to-end at *Plague Rat's* core.

"All good?" Danae checked with Shizuka.

[11] The man's a scientist, after all.

"AI is checking… all good. The Hoops are sealed, everything is in place. Light is green."

Danae gave Kwasi the thumbs up.

"Spin her up."

"Commence rotation," he commanded, and *Plague Rat* obeyed. The immense Hoop motors groaned into gear, and the two cylinders started to rotate against each other. Inside them, the centrifuge began to pull down gently, and then more insistently as the Hoops quickened.[12]

On the Flight Deck, they continued to float free. Danae raised the lights again. She unclipped, set her chair spinning, then pushed off so that she continued to revolve as she hovered upwards.

"Anything else to take care of while I'm here?"

There were no takers, so she launched herself towards the exit with a push from her console.

"Where are you off to?" asked Shizuka.

"I'm going for a jog!" she twisted and called back as she floated through the exit.

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Danae soared through the *Plague Rat*. Up and down and sideways mingled freely, zero-g having no room for petty things like consistent orientation. Apart from the Hoops, the *Rat* was like a skyscraper, hurtling upwards. The decks were all perpendicular to the craft's motion, so that, when the engines were on, their acceleration imitated gravity.

[12] Centrifugal force. If you've ever swung a shopping bag over your head, daring the contents to fall, you're familiar with the effect.

The convoluted duality of the Hoops and Petals existed for the same reason, providing living quarters and other facilities with 'gravity' for the whole trip. Otherwise, people couldn't live in the Hoops without constantly falling sideways.[13] Now that the engines were off, the fictitious force was gone, and areas outside the Hoops were in microgravity. And microgravity, Danae was reminded, is fun.

Danae reached the axial elevators, a cluster of lifts running nearly the length of the craft. She directed one to the fore-Hoop's midpoint. The lift's motion pushed her to the roof, then to the floor. The doors slid open again and she emerged into the hub of the Hoop's great wheel. Hatches revolved around her in an even icositetragon[14], the interface between the rotating parts of the ship and the more stationary. Summoned, one of the outer doors opened with a beep. With expert timing, Danae launched herself outwards, caught the handlebars around the opening, and lowered herself feet-first into the next lift. The new frame of reference necessitated a moment of mental adjustment -- then the lift was on its way along a spoke of the Hub's wheel. Danae felt the centrifuge begin to tug at her until it was at two-thirds Earth-g. Then the doors opened into the Hoop.

On either side, the road was flanked by uneven rows of trees and shrubs. The gardens enclosed the apartment complexes, which were something like skyscrapers, climbing to the bulging ceiling two hundred metres above. The ceiling was composed of panels, radiating blue light[15]. Plantlife tumbled over the buildings in a semi-wild tangle.

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[13] Falling constantly sideways has been found to be, in numerous studies, generally detrimental to quality of life.

[14] You don't know what an icositetragon is? It's a twenty-four-sided polygon. It really should have been obvious from a basic knowledge of Ancient Greek loanword prefixes.

[15] Carefully imitating the mix of wavelengths produced by Earth's sun (minus the nastier bits of UV), as filtered and scattered by its atmosphere. A tad uncreative, if you ask me: picture a

Danae stepped onto the pavement beside the main road. If you looked along it, the ground seemed flat, all the way to the bulkhead at the end of the Petal. But to the left or right, the ground curved upwards, like a distorted dreamscape -- as though some immense cosmic being had taken a city block and wrapped it inwards into a cylinder[16]. Along the path in the distance was someone walking normally, their "down" at a seventy-degree angle to Danae's. That was the Hoop.

The scent of a eucalypt caught Danae's nostrils, and she breathed in deeply. Some of the soil had spilled onto the pavement during microgravity. She brushed a lump back in place with her foot. A cleaning robot was busily doing the same across the road. Someone waved at her from a balcony a few floors up, and she waved back. It wasn't anyone she recognised, but everyone recognised her.

Standing still, it was just possible to feel the motion of the cylinder. Danae turned away from the direction of spin; running against it felt more like jogging uphill. She called up some music on her earpieces, streamed from the *Plague Rat*'s vast database, and with a hop she set off jogging along the Hoop's circumference.

She had been longing to stretch her legs properly for most of their latest interstellar odyssey. When in flower configuration, each of *Plague Rat*'s Petals was a mere 523 metres wide. If you ran length-wise you could go a kilometre and a half, but then you had to do laps for any real distance (a practice Danae despised). But joined back together in their proper cylindrical form, they formed a continuous loop around which one could run forever.

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different sky every morning, selected at random from an assortment of planets. But you humans do like your routine, and there's no place like home.

[16] Although I have encountered beings capable of such, none have ever cared to visit suburban Earth.

Danae relished the burn in her legs. Today's temperature[17] was mild with a light breeze, which reacted pleasantly with the sweat infusing her top. People nodded or smiled at her as she jogged past. A few trotted by with dogs, large cats, or more exotic pets[18] on leashes.

Halfway around the cylinder, she noticed that one of the doors between Petals hadn't opened; where there should have been an open square bordered by struts, there was a grey bulkhead. As she jogged closer she saw that it wasn't completely closed -- there was a gap between it and the floor, about half a metre. Someone almost smacked into it, engrossed in his slate; he looked up at the last second, startled, and stared at it before shrugging and turning to walk to the next door, mumbling what sounded like 'bloody engineers'.

Danae happened to agree. Halting at the door, she paused her music and called the bloodiest of the engineers.

"Shizuka?"

Shizuka's voice, slightly vexed, joined her via earpiece. "Captain?"

"You know about the Fore-D bulkhead?"

"Yeah, yeah, I'm looking at it now."

"Alright then. It wouldn't be great if it got stuck halfway closed during an opening."

"If it did, the Petals couldn't open. It's hardwired, and we would know about it straight away."

"If you say so."

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[17] The *Plague Rat* varied its air-conditioning day-to-day to give some semblance of weather; light rain-clouds also occasionally formed near the ceiling.

[18] The Seeders' expertise with genetic engineering provided a wide variety of options.

“I do say so. Anyway, only the inner door malfunctioned. The outer one opened fine. See, redundancy at work! We’ll have it fixed in no time.”

Danae lay flat on the ground and commando-crawled under the metre of bulkhead, rolling to look up. As Shizuka had said, the other three barriers were open. She looked sideways at the seam between the outer doors. Strange to think that only an hour ago the two modules had been entirely separate, the outer bulkheads exposed to interstellar vacuum. She pulled herself the rest of the way through and brushed off the dust, then jumped as the dodgy door hissed shut behind her. Several hundred tonnes slammed with discomfiting force where her torso had been.

“Shizuka!”

“We knew you weren’t under there. Give us some credit! The sensors are working fine.”

Danae frowned at the nearest camera. The door re-opened, and this time it showed no sign of stopping.

“See? All fixed.”

“Any other malfunctions I should know about? Maybe the air filters have failed, or a plague has escaped Bio?”

“Well, the Parikh Reactors did just explode and kill us all, but I didn’t think it was worth mentioning,” Shizuka replied brightly.

Danae hung up.

A light mist was drifting down from one of the sprinklers, settling on Danae’s flushed skin. A dozen metres up, a hovering garden drone, with four caged rotors and a multi-purpose arm, was trimming vines. It was steadfastly ignoring a screeching dive-bomb assault from the local community of noisy miner birds. The birds needn’t have

worried: the little robot knew to avoid their eggs, and could even safely relocate them if it had to[19]. You try reasoning with a miner bird, though. Danae set back on her jog.

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When she stepped into her apartment, a squawk greeted Danae. A cockatoo, who had until that moment been studiously stripping the bark from an unfortunate vine, flapped straight at her from the window. For an instant, he made a glorious figure. The yellow feathers on the underside of his wings were bright and startling, and then he landed clumsily on her outstretched arm.

"Hello!" He bobbed his head, crest outstretched.

"Hello Patrick." Danae nodded back, and he stretched his neck for her to scratch. His feathers fluffed up in pleasure as she did. They were pure white, like fresh snow, and gave off a musky scent that she found quite pleasant.

"How was your day?"

The parrot mumbled something incoherent, eyes closed.

Danae's apartment was sparsely decorated. Lining a set of shelves haphazardly were several small items, among them a toy opteran, a screw, a chunk of volcanic rock, and a handwritten note on a scrap of yellowing paper[20]. The walls were set to a deep violet at the moment. Patrick in tow, Danae moved into the kitchen for tea. The bird

[19] Not that there were any eggs around at that moment. All of the birds had altered reproductive cycles, unable to roost in the months before the zero-g transition. This was to avoid smashed eggs. As for the birds themselves, the longer-lived of them had learnt to enjoy the brief periods of weightlessness, often found ricocheting around the Petals like children in a jumping castle.

[20] An extreme rarity in a society that has no need for paper.

was, as usual, not much help. He intercepted a teabag, launched across the bench, midway to her mug.

"Oi! Not for you!"

Patrick ignored her. He flapped out of reach and tore the bag open, tealeaves spraying over the carpet and the bench. Picking at a fragment with his wormlike tongue, he found it not to his liking. He abandoned the shredded bag to roost on the back of a chair. Danae sat across from him with a sigh, and stirred the steaming mug with her finger. The bird hopped onto the table and waddled across to her. With beady eyes waving about in grey sockets, he reminded her vaguely of some kind of giant bug.

"I don't know why I keep you around, bird."

The cockatoo cocked his head to the side. His attention had been seized by the ring on Danae's forefinger. He gave it a tug, but she shooed him away with a tap on the beak.

"I'm going to have a shower, bird. Go bother someone else."

Another cockatoo flashed by the window, screeching in the joy of flight. Patrick's crest sprung up and he gave a raspy cry. Danae's spare hand twitched toward an ear.

"Ow! Damn it, bird."

"Damn it bird," he repeated with glee, then sprang toward the window to join the flock.

Danae pulled the ring off and turned it in her hand. In the morning, she always slipped it on without thinking. It was fashioned from a length of black electrical wire, artfully knotted, with the strands at either end twisted together into a copper lump, like a tiny frayed gemstone.

For just a minute she fingered the makeshift jewellery and let memory drift through her, flashing by in chains of esoteric association. Each image throbbed in a painful lump in her chest. She didn't consider them directly lest the lump calcify into a stone.

She finished her tea, then placed the ring carefully on her nightstand and went to shower, and caught a glimpse of her olive face in the mirror as it disappeared behind a steamy shroud. She traced a faint line delicately across her cheek. An old scar. Why hadn't she ever had it fixed?

I guess it doesn't bother me enough.

The shower rinsed away the exercise grime, leaving content tenderness in her legs. Outside, the sun-ceiling was reddening, and the fog of sleep was gathering behind her eyes.

Early night, I think. Danae climbed under her soft, cool sheets and wrapped them around herself. She reached for her slate, flicked it to non-luminous mode, and commanded the ceiling lights off. Her day ended, reading a book to the sun-ceiling's last light.

Chapter 2: Moons and Men

'Gravity' declined steadily on Danae's way up the spoke-lift, until she was untethered from the floor again. Instead of returning to the Flight Deck, she pushed up toward the public galleries, along corridors panelled with black and gold and mahogany-brown to a long unlit room. One wall was a window to the cosmos.

It was filled today with topsy-turvy human silhouettes. The gallery pointed straight forward, and now that the *Rat* had turned towards its destination, people were coming to see it for themselves. There were wavering queues for the telescopes at either end, and a low hum of conversation pervaded the room. Quiet, in reverence for the view. At the window, a young child clung to her guardian's shoulder, who in turn held himself by the handlebars. Danae smiled. Unversed in microgravity, the child's legs waved back and forth as she stared at the star.

And there that star was. It stood unblinking against the curtains of the universe. No twinkling here; no atmosphere, no turbulence, no refraction to pester the photons on their way through. The stars shone still and steady.[21] Danae moved to the window.

"Isn't it marvellous?"

A man had drawn up beside her. He was taller than her, but weightlessness is a great leveller. Half of his face was lit vaguely by the stars, the other half in shadow, with a short beard stretching across both. A v-necked top, which displayed a clump of chest hair, was black like the rest of his clothes.

[21] They were far from still. Everything in the universe is moving very quickly with respect to everything else. Planets are hurtling around stars, stars are careening around galaxies, galaxies are spinning away from each other embedded in the spacetime swell. But space, as previously mentioned, is big, and everything in it is very small. So to human eyes it looks quite static.

“That this wonderful object has existed alone in the universe for billions of years, never witnessed up close.”

Danae nodded in appreciation.

“Yes, it is.”

“A galaxy full of them, and the Lifeforce has guided us to this one.”

Uh oh.

He offered his hand. A silver chain glinted from his wrist. There was a pendant on the back, but she couldn’t quite make it out.

“I’m Phosphoros. People call me Phosphor.”

She shook.

“Danae.”

He feigned puzzlement, a light smirk twisting his lips. “Now where have I heard that name before…?”

She smiled. “I get that a lot. Someone famous has it, I guess.”

“Don’t worry, Captain, I’m sure it’ll come to me.”

“Hah. When I’m off-duty Danae is fine.”

“Captain it is.”

She smiled, a little stiffly.

“What do you do?”

“I’m in Medical.”

“You’re a doctor?”

“A psychiatric one.”

“Interesting! Do you enjoy that?”

"Oh yes. But I also run weekly discussion sessions about the Lifeforce, and that's my real passion. Come to think of it, you should come sometime!"

Oh boy. She was thankful of the view. It provided a convenient excuse to avoid eye contact while searching for a polite refusal. As much as she wanted to stay approachable, she had zero interest in embroiling herself in a religious debate.

"That's the Captain!" came a voice, almost a squeal. Having apparently recognised the sound of the lady from the speakers, the child had torn herself from the wonders of the macrocosm to point at Danae. The Captain grinned and waved at her.

"Sorry," said the father with a sheepish smile. Danae smiled back and shook her head, then spun herself around to bring her eyes level with the girl's.

"And what's your name?"

"Yvain."

"Isn't that nice! You can call me Danae. And this is your…?"

"Father," answered her father, "Malcolm."

They shook hands, and then Danae shook Yvain's hand as well.

"Are you excited to see the system, Yvain?"

Yvain nodded, flinging her hair into a wave[22]. Her father tutted.

"I thought I told you to tie that back."

"I did! But it pulls."

"The Captain ties hers, see?"

He indicated Danae's tidy ponytail, hanging above her head. Yvain eyed it thoughtfully.

[22] Hair length isn't really a gendered trait in Seeder society; it just happens that the only two females described so far have long hair. In science this is called a sampling error. It is silly to assume anything about a society based on two data points. Shame on you.

“How long until we get there?”

“Actually,” Danae said, “we’re already there! We passed the heliopause[23] a few days ago.”

Her eyes lit up.

“I know! That’s where the solar wind stops. We learnt about it when we went through.”

Danae smiled.

“Yes! You must have paid attention.”

“But when do we get to the planets?” Yvain asked as she played with her hair, trying to gather it into a single tress. Danae looked the child over.

“Do you like planets?”

“Yes!” Her tone suggested that this was the only sensible answer.

“Did you know that you’re named after one?”

“I know! The last one we seeded, before I was born.”

Danae glanced a question at Malcolm.

"She was conceived on the surface," he said, rubbing her back fondly.

“So you’ve never seen a planet?”

She shook her head.

“Don’t worry! You don’t have long to wait. We’re coming through a kuiper belt, and the outermost planet is just inside that. You’re lucky, it lined up pretty well with our path! We’re going right past it in a couple of days. You can look at it through the telescopes now.”

[23] A child is about to explain what this word means. Don’t let that make you feel stupid.

Yvain had let go of her father, and was turning involuntarily. Trying to twist back around to face Danae, she said “Are we gonna put life on it?”

Danae nodded.

“On its moons, yeah! We’re going to try. But it’s not the best one. There’s a much bigger one further in, with even more moons, and -” she leaned in, conspiracy in her voice, “- guess what?”

Yvain’s eyes grew, against all common sense, even larger.

“What?”

Danae whispered in her ear.

“There’s probably life already there.”

Yvain let out a proper gasp.

“I get to see aliens?”

“We’ll see. If you’re good, maybe.” Danae winked at Yvain’s escort. He smiled with gratitude and, no doubt, his own excited surprise.

“But I need you to keep it our secret, ok? Just for this morning. The rest of the *Rat* doesn’t know yet.”

Yvain nodded, a finger on her lips. It was probably best if Danae bid farewell before she overloaded Yvain’s excitement neurons. But before she could, Phosphor interjected, in a kindly but firm tone.

“Are you looking forward to doing the will of the Lifeforce, Yvain?”

Her father stiffened, but, oblivious, Yvain looked up at Phosphor’s face.

“What’s that?”

Phosphor shot something like an accusing look at Malcolm.

“You don’t know what the Lifeforce is?”

Malcolm met Phosphor's eyes with sudden anger.

"Come on, Yvain. We've bothered the captain enough." He turned and pushed away from the window, daughter hanging from his arm. Danae waved goodbye, and she waved back.

Danae pushed herself back up to Phosphor's level.

"That was inappropriate."

He raised his eyebrows, again smiling an easy smile. His voice was light, unconcerned.

"I meant no offense. How they practice is up to them."

"Or if they practice at all."

"Ah! The autonomous approach. I must say that I'm surprised. Wouldn't you say religious cohesion is what makes the Seeders effective?"

"I don't think I would, no."

"Well," he shrugged, "there are many ways of seeing these things. Our group would love to hear what you have to say on the topic! Fore-B rec centre, 8 am every Monday[24]." He ran a hand through his hair, and Danae spotted the wrist-pendant again. The symbol was a DNA helix wrapped around a stylized comet.

He seemed sincere, but Danae was wary. Despite his easy words, there was something strained about him.

"I'll think about it," she curtly lied.

He smiled and shook her hand again. "I knew you would. It's been a pleasure meeting you, Captain."

[24] Although Seeders keep a twenty-four hour clock with a seven-day week, the hours are significantly shorter than those on Earth, a relic of the outer colony from which they first sprung. Attempts to introduce a decimal time-keeping system had all fallen flat in the face of social inertia. Creatures of habit, the lot of you.

"Likewise," she said, parting with a nod.

She watched him go. He wasn't the first to press his spiritual stance on her. Nor was he the least subtle. Even so, her grandmother had told her stories about the bands of roving evangelists back on Barnumbirr, and their unwavering determination when it came to "discussion".[25] By comparison, the occasional self-appointed missionaries aboard *Plague Rat* were downright amiable.

She decided to queue for one of the 'scopes. One of the perks of being captain[26] was that she could drop by the Astronomy Deck any time she pleased, but she preferred to mix. In general.

Fifteen minutes in the queue and she was at the eyepiece. There wasn't much to see. It was a small gas giant[27], orange and featureless, the grand event's disappointing little brother.[28] Only a sliver of it was visible from this angle, shaped rather like a toenail clipping. The rest was in shadow.

Danae hoped Yvain got a chance to see it anyway. Your first planet always leaves an impression, even if it's kind of unremarkable. Danae was born on one, during a seeding, but she didn't remember it. The first she could recall was Melkor, a Venusian world inaccessible beneath a blazing atmosphere. She had lined up for this telescope exactly, come to think of it, heart beating, excitement churning in her belly. In the eyepiece had been a globe of tan cloud. Boring, as alien planets go, but that hadn't

[25] A particular offender, amongst numerous descendants of Christian, Hindu and Wiccan sects, was the Second Reformed Church of the Declining Armadillo.

[26] Along with unlimited access to Ahanu's personal brewery, fermented with a strain of yeast he had engineered himself.

[27] This is not a contradiction. Small is a relative term.

[28] Don't be fooled by the Seeders' casual attitude to such things - a whole Earth could fall into that atmosphere with barely a splash.

mattered one bit. It was a new world, exotic, solid, and right there. One of their probes had returned a rock sample, and, after much begging, Geology had let her keep a piece.

So long ago.

Around the gas giant were a few gleams in the dark. Moons. The clouds of a gas giant aren't much good for living things.[29] But the big planets always carry a host of satellites, solid surfaces to be sowed. Life can do just fine on a moon, so long as it's warm enough. It doesn't need a whole planet.

I hope we can adapt something from the moon Jiemba mentioned.

The thought that they were coming to a pre-inhabited system put the same butterflies in her as that first planet. The previous stop was devoid of life when they arrived, a red dwarf[30] they christened Arthur. The only planet in its Goldilocks zone was tidally locked, presenting the same scorched face to its sun for eternity. So, they had dusted the twilight band with a selection of anaerobes[31] in the hope that they would find a niche.

But further out there was another planet. It was a large, geologically active terrestrial world they named Yvain. The planet's mantle heated an ocean beneath a crust of ice. Ahanu had clapped his hands at the readings, and then immediately ordered a cocktail of thermophiles[32] prepared. They had loaded the organisms onto a few dozen probes, drilling through the frozen surface and dropping their living payload to the hot vents below.

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[29] As far as they knew.

[30] A small, dim star. The closest star to Earth, bar the Sun, is actually a red dwarf. It's called Proxima Centauri, and it's so dim you can't even see it with the naked eye. Most of the stars in the universe are red dwarfs, completely invisible without a telescope. Makes you think, huh?

[31] Organisms that don't need oxygen, like the bacteria in your gut.

[32] Organisms adapted to high temperatures, like the ones living in your oven.

Danae wondered how those organisms, dumped unceremoniously on their new worlds, were going. Maybe neither of the primitive ecosystems would survive. Or maybe they would remain primal forever, never emerging from microscopy. Hopefully though, the deep-sea communities would be the progenitors of a rich biosphere. Billions of years after the *Plague Rat* had rusted, a civilization might just cut its way through the ice, to behold a red sun for the first time, and turn to the stars in wonder.

But the Seeders would never know. They would move from star to star as they always had, never to look back. Arthur might have been empty when they got there, but it sure wasn't when they left. And neither would this unremarkable gas giant and its procession of satellites.

Danae pulled away from the eyepiece, smiling to the next in line.

"Good view."

It was time to get to work.

***

Yvain put the final orange stroke on what was nothing short of a masterpiece. The gas giant was rendered in glorious detail against black space. A single twirled storm was up near the north pole. A ring circled the equator, a faint oval outline that, she was quite proud to say, looped realistically in front of the planet and then disappeared behind. She had even managed to deftly capture the play of light and dark around the terminator line. The moons were missing, although she had wanted to draw them, but decided not to since she didn't know what they all looked like. She'd get to it once the Encyclopedia was up to date.

Teacher Donovan took the slate from the desk.

“That’s lovely, Yvain! Is that the planet we passed?”

“Yes! Is it good?”

Teacher Donovan handed the slate back.

“Very good. You like planets a lot, don’t you, Yvain?”

“Yep!”

“What about stars?”

She considered this for a moment.

“They’re pretty good too,”

“Do you want to be an astronomer?”

She considered that for a moment.

“I don’t know.”

“That’s ok! Do you have an idea for the planet’s name?”

“Yvain,” she answered promptly.

The teacher covered a smile.

“There’s already a planet named that.”

Yvain nodded, thinking.

“Ummmm… Ganesha? I like him. He’s cool. He should have a planet named after him. The Sun’s planets are named after Roman gods! And Apollo has Greek gods and there are Norse gods and Egyptian gods but I don’t think any Hindu gods yet. So all these planets should be Hindu gods! Does Hindu have a life god?”

“I’m not sure, Yvain! Why don’t you look it up? If you come up with a good set of names they might even get voted in!”

Yvain beamed and closed her picture, splitting her slate's screen with Encyclopedia on the left and notepad on the right.

"Okay!"

Yvain spent the rest of the afternoon researching Hindu deities, but soon found that it would not be as simple as she had imagined. Hindu myth was a tangled affair without a single accepted canon, which made it difficult to pick out the most important figures. She could name each planet in the system after a major deity, so Shiva, Vishnu, Ganesh, Surya, Devi... and the moons could be minor deities or avatars or alternate names… but then what to name the star?

If she used "Brahman" for the star it would be weird to use "Brahma" for one of the planets, but that was excluding one of the Trimurti! And that wouldn't do. So… maybe each of the Trimurti should have their own star! Brahma, Vishnu, Shiva. There were certainly enough minor gods to fill out three planetary systems. And then this star would have to be Brahma, the Creator, because life had started here by itself. They could save Vishnu, the Protector, for somewhere they would plant the Brahma-spawn. As for Shiva, the Destroyer… hmmm. Well, they could work that out later.

What for the living moon, though? That was important. She searched for "Hindu god of life" in the Encyclopedia, but the closest she could get were the Prajapati, deities presiding over life's protection. Could she name the moon Prajapati? Actually, better to name it after a specific one, and the rest of the moons after others… And the gas giant they were going around could be Vishvakarma, the leader of the Prajapati. A creator god -- like Brahma! Perfect. But that meant Ganesha wouldn't quite fit as the orange giant… he was Shiva's son so he should be around Shiva. Well… maybe it was ok to fudge it a bit. They were just names.

Partially satisfied with her naming system, when the school bell went off she folded up her slate and slipped it into her pocket. She skipped along the path with her friend Mathilde, who was less energetic.

"Can't we just walk?" he asked, dragging his feet.

"Nope," she responded, skipping a full circle around him.

"I wish we could use the elevators," he moaned. "I hate walking."

A quick jaunt up a lift to the Hoop hub and then back down closer to their apartments, and they would be home in minutes. But they weren't allowed to go up without adult company, not until they got their weightless license.

"I like walking."

"But you don't walk, you skip."

"Even better!"

They trudged and skipped their way back to Mathilde's complex, hugged goodbye, and then Yvain was free rest of the way home. She liked to walk -- or skip -- because it was the closest thing to being on real ground. Zero-g was fun and all but it wasn't a planet.

Oh, to live on a planet! How fabulous, for the ground to drop slowly away, not sweep upwards in an abrupt arc. For distant people to disappear behind a horizon instead of waving from odd angles. To have actual sky above you, instead of this great glowing cylinder.

Her parents were out working -- dad in Communications, mum in Biology -- so she had the apartment to herself for a while. She poured herself a bowl of cereal for afternoon tea and went to her room.

Her bedroom walls were black, like space, but decorated with other drawings of planets, of various levels of childish artistry. Some were from *Plague Rat*'s history, others from random reading. It wasn't as good as the great mural in the Gathering Hall, she thought, but it would be some day. The eight planets of Earth's Sun were lined up across the ceiling, while Arthur's were clustered over the head of her bed. Yvain -- the planet, that is -- took pride of place, right in the middle. It was stark and brown, but one day the microbes they put there would grow up. She just knew it.

Planets were by far her favourite thing at the moment, although aliens were beginning to catch up[33]. She devoured Encyclopedia entries every chance she got, absorbing atmosphere compositions, masses, orbital distances, numbers of moons, etymologies. She knew two systems by heart: Sol and Arthur of course.

Planet Yvain was named after one of the Round Table, but his stories didn't impress her much. She cared much more about the planet. Gas giants were impressive, sure. Jupiter's storms; Saturn's rings; armies of moons; the really quite stupendous size. Ganesha[34] was cool too. But the rocky ones are the ones you can actually step on. The ones that you can look at the sky from. And she would one day. She would step out onto an unnamed planet around an unnamed sun, find Arthur in the heavens, and know that she had travelled the whole way between.

She found an empty spot and placed her unfolded slate against it.

"Put my drawing on the wall, please!"

[33] Maybe she would use one wall for alien drawings soon!

[34] She was already quite taken with the name.

"*Certainly, Yvain, and thank you for asking nicely,"* replied the slate's AI. When Yvain withdrew it, there was a perfect recreation of her drawing, joining the rest of her planets on the wall[35]. Definitely her best work.

Yvain jumped onto her bed and lay looking up at the ceiling. She wasn't much satisfied with her drawings of the Solar planets. They were the first she had made, and the most primitive. She got out her slate again and looked up some old photos of the Solar system, flicking them one by one onto the ceiling. Mercury, that little ball of iron; Venus, Earth's troublesome sister; Mars, the disappointing little brother; Jupiter, Earth's noble protector; Saturn, the flashy one; Uranus, the blank one; and Neptune, the dark mysterious one. As an afterthought, she threw Pluto up there, and the Galilean Moons and Titan. The moons were just as good as planets really. And Pluto was pretty cool.[36]

There. That would do until she could make new drawings. Time for telly.

[35] The images were embedded in the wall's pigmentation metamaterial, which is actually based on the chromatophores of a cuttlefish.

[36] No pun intended.

Chapter 3: A gas giant's shadow

The *Plague Rat* plunged past the outer planets and settled into a long ellipse around the star. On the way, it shed a swarm of smaller craft. Geologists, biologists and engineers deposited themselves eagerly on every solid surface in reach[37]. Survey season had begun. As they set to work, more than a few pairs of eyes turned upward, seeking the distant gas giant in their various skies.

Danae was on her way to that very giant. The planet was a vast, swirling thing, like Jupiter in scale but even angrier. Bands of cloud in white and cyan tumbled over each other. A diffuse fleet of moons danced around the planet in orbital ballet, casting shadows on great cyclonic storms that could have swallowed any one of them whole.

The thirty positions on this orbiter, the *Erebus*, were deeply coveted. A fierce multi-day debate had raged across meals and work hours, in text and video and in person, each Head arguing the merits of their field on an unknown moon. This had on occasion descended to the kind of interdepartmental name-calling you might expect from university professors[38]. Everyone wanted to walk on the alien world, no less so in Command. Everyone would get the chance eventually. Impatience, alas, is another one of those eternal human virtues.

The notion that Biology should take priority[39] had been grudgingly accepted, and it would be silly to send more than two of the Command Council at one time. So

[37] Taking a matter of weeks. This is an astounding feat by the standards of your technology, which takes the better part of a decade just to get a little probe to Pluto. Granted, a steady supply of antimatter fuel does simplify these things.

[38] All in good fun, of course.

[39] Smugly proposed by Ahanu.

that left one open slot. Danae had seriously considered pulling rank and declaring herself the winner. Although she wasn't a specialist anymore, she had just as much scientific training as anyone else aboard. In the end, she didn't have to. When they had argued to an exhausted stalemate, the *Plague Rat*'s computer had finally been called upon to pick one of them at random[40]. Danae happened to be that one.

To tell the truth, it was perhaps a little irresponsible of the captain to be on the front line. She felt a tiny jab of guilt about that. That jab was dominated in her emotional signal by delighted anticipation. Someone else would be voted captain if anything happened, and she couldn't stand the idea of watching the first steps from the Flight Deck. She was resolved to earn her place on the moon.

"Sod me, is it my birthday? It's pretty much a mini-Earth!"

Danae turned her head from the giant. Ahanu was at the instrument station. He tore himself reluctantly from the eyepiece and waved Danae over.

"I have it in the scope now, come look!"

Danae peered down the eyepiece. The satellite was a jewel, some alchemical admixture of amethyst and sapphire swirled with cloudy quartz. She blinked.

"It's… purple?"

Ahanu grinned.

"So very purple."

"When you said miniature Earth…"

He waved that aside.

"In all the ways that count. It's alive, cap. I'm calling it now. The air is mostly nitrogen plus a big chunk of oxygen. There's water vapour and methane in traces. A

[40] True random, none of that pseudo-random garbage your computers can manage. Quantum computing had become well and truly widespread by the 35th century.

little more CO_2 than strictly necessary, but whatever works for them. If I was betting I'd say the violet is some photosensitive pigment or another, like chlorophyll-green on human worlds. Something retinal-based, probably. There must be autotrophs up the wazoo."

Danae retreated from the telescope and drifted back to a viewport. Six others had their heads bowed, muttering prayers of thanks to the Lifeforce. Although a relief compared to the pleading prayers offered on barren worlds, Danae avoided looking at them. The pilot said a concluding "for Life" before opening her eyes[41].

Erebus wove between the giant's satellites, hijacking their gravity to slow itself down. As they skirted around the great planet's gravity well, Danae could distinguish the moon's clouds and continents and seas with the naked eye. She breathed a deep sigh, and a slow smile spread over her face.

They would have to come up with a name for it soon. "The moon" and "the gas giant" were already getting a bit tiresome[42]. She decided "Purple Moon" would do for now, and then perhaps something stormy for the giant. Horus, maybe. Of course, any civilization arising from Purple Moon would have its own names, as would any other explorers that chanced upon it. This made naming a playful exercise in futility. Nonetheless the Seeders named, affectionately or otherwise[43].

After a brief aerobrake, the spacecraft took up orbit about the moon. The great globe turned below them, occupying the entire left window. *Erebus* launched a spray of

[41] Not to worry. Live pilots were more of a comfort than a necessity, AI being what it was. You humans do like to pretend that you're important.

[42] For you as well, I imagine. It certainly is for me.

[43] Over a hundred distinct translations of "Heaven" or "Hell", in languages both human and alien, had been deployed over their history.

small satellites, which would manoeuvre themselves into a variety of orbits, to map the moon and provide GPS. The vibe in the *Erebus* felt like it was congealing with eagerness, everyone just about bursting to get down there.

Astronomy had knocked together a quick ephemeris[44] for them, which Danae now consulted. They would take the time to integrate a proper one later. Since the same side of Purple Moon was always facing the gas giant, the diurnal cycle was entirely dependent on orbital position. At the moment, daylight was creeping across the planet-facing side. In an hour, it would be in the giant's shadow, a sunless eclipse that would last six hours. They could wait for the end of the eclipse… or they could land right now and do a brief survey. Everyone was itching to go, she could feel it. The energy on the orbiter felt like it was about to reach boiling point; and every Seeder was waiting for news from their trip.

However, there were some solid reasons to wait. It would be a bad idea to work on an unfamiliar world in the dark, and it really was quite inefficient to just land for an hour. Plus, they should probably wait for more data from the satellites

Danae turned from the window to find everyone in the spacecraft watching her. Ahanu looked like he was about to start tearing his hair out. She cracked a smile.

"Let's go and see some aliens."

Ahanu punched the air with a whoop. Everyone cheered[45].

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[44] A model of the planetary system used to predict positions and such.

[45] The three people designated to stay on the orbiter cheered with decidedly less enthusiasm.

The landing party boarded the shuttle *Charon.* Before leaving the *Rat,* both spacecraft had been bathed in gamma rays to kill any errant microbes -- it wouldn't do to accidentally give the alien biosphere a case of strep-throat. Danae strapped herself in and the shuttle fell into the atmosphere. It felt like her stomach was dancing violently. The air outside glowed hot and the shuttle shook, but then they were through, screaming past the clouds. The shuttle's design made liberal use of transparent material, so they were treated with a full, glorious view of an ocean stretching away before them. At its edge was a range of craggy black mountains ascending through the clouds. Danae blinked. The peaks must have just about poked through the stratosphere. The foothills were clad in violet, and they gradually took on the soft, mossy texture of a distant forest.

Ahanu breathed in a quiet gasp.

"Trees, Danae!" he said, zooming his screen in for a closer look.

"*Trees!* This isn't a bacterial swamp. There's complex life down there for sure!"

Charon sank towards sea level. They could see waves, much heightened over their Earthly counterparts, crashing in slow-motion on black-grained beaches. The pilot began to cast around for a landing site.

"Put down, will you? There's no need to waste delta-v hooning around," called Ahanu to the pilot.

"We're on jet engines now, not rockets. Delta-v isn't even a thing."

"Well… energy, then."

"I don't see a lot of clear patches around. There's too much plantlife," (Ahanu practically buzzed as impatience and glee threatened to tear him in half) "We might even have to put her in hover."

"What about the beach?" Danae asked.

"We could do that, yeah. Sand might be an issue."

"Any chance of a water landing?"

"I wouldn't recommend it, not with these waves. Maybe if we find something more sheltered."

"Follow the coast a little longer. If nothing shows up we'll take the beach."

Finally, they found a rocky mini-plateau, fairly flat, atop a cliff-face that plunged sheerly into the sea. *Charon* settled into place like a big fat fly. The landing party sidled into the airlock and suited up. The spacesuits were actually not too bulky. Ahanu looked like he might tear his with the zeal he was throwing it on. Visors down, they endured a round of sterilising radiation[46] while the airlock decompressed and cycled in the outside air.

"Watch your step out there. The gravity is low, less than half what we're used to, so it'll be easy to over-step. I'm not going to be jumping in the ocean after you."

The outer door slid open. Ahanu bounded over, then hesitated.

"Do you want the honour, captain?"

Danae smiled.

"And have you mope about it the next ten years? Not a chance. The honour's all yours."

The biologist beamed.

"One small…" Danae started, but Ahanu had already leapt from the spacecraft, bounding away. With a deep breath, Danae took her first steps down the ramp and onto the moon.

[46] The radiation shielding in their spacesuits was enough to deal with it. The microbes on the spacesuits, on the other hand, were not.

The ground was coated in a layer of spongy, imperial-purple material, something like thick moss. It compressed under her step and bounced slowly back. It didn't seem damaged. She bounced up and down on it a couple of times to make sure.

A wind whistled over them from the mountains. Clusters of what seemed like dark-trunked, skeletal trees towered over them. The leaves were a brilliant array of purples and pinks, from violet to rose and back again. They were at the edge of a forest, it seemed, one that climbed well into the mountains before giving way to stark black rock. The rock, in turn, gave way to snow, and then sky. Looming above the mountain peaks was the faded gas giant, several times larger in the whitened sky than Earth's Moon. The sun shone beside it. Other moons were visible even in the daylight, as smaller circles or star-like points.

"Wow," echoed through the com-channels. There wasn't much else to say.

The rest of the survey team was pouring out, spreading over the platform. You could pick the geologists and the biologists, already prodding and lifting rocks and plants. The others were taking a moment to gawp. Ahanu was tweezing some moss into a sample jar. He had reached the treeline, and as he stood he looked closely at one of the shrubs.

Just a little longer, then. Danae turned toward the ocean. She could see the curvature of the moon in the horizon's arc. She squinted. There was something moving far out there above the water. It twisted and dived, slipping between the grey waves.

"Ahanu! I think I saw an animal out on the ocean. Like a bird!"

"I'll bet you did!" he said. She turned back to him. He was waving a broad leaf over his head. Danae bounded over to him. The leaf had been torn raggedly, and in the shape of the tear were patterns very much reminiscent of toothmarks.

“This’s been chewed on! I could just about dance.”

“I’d prefer that you didn’t,” Danae grinned. He danced anyway.

An engineer was watching the exchange. Danae glanced at his face, and was quite startled by what she saw there. His eyes, now turned to the forest, seemed angry. He saw her looking and smiled, all traces of anything unusual vanished. She smiled back.

Just a case of resting angry face.

Now that she stopped to listen and watch, there was plenty of movement around them. Tiny insect-like things buzzed through the air, and she kept catching flashes of movement in the shrubs.

One of the geologists gasped. Danae spun, and it felt like her heart stopped. She was seeing a fleet of tall-ships, sailing around the opposite headland, the wind full in their sails. She exclaimed too. Could it be? Was there a seafaring civilization hidden here on Purple Moon?

But the ships weren’t made of wood -- she couldn’t tell what material, actually. She magnified the view in her visor, still not believing her eyes. Hulls that looked like they were made of broad, overlapping scales smashed through the waves. But there weren’t decks, per se - the hulls sloped organically into masts. The sails could have been made of skin, merging smoothly with the yards. And were those… eyes? In the front of the hull, like those painted on Egyptian triremes. But these ones were blinking.

Ahanu was standing next to her, jaw slack.

“Are you seeing this?”

“I think so,” he said. “Those appear to be animals.”

As he spoke, a great hoot thundered from the direction of the ship-things. It was loud enough to turn every head in the crew, who gave a series of cries as though in reply. There were three of the ship-things, in varying shades of grey and green. The little fleet - pod? - was crossing the bay towards them in a v-formation, with the biggest one in the lead. It was hard to tell how large they were from this distance, but the leader must have been twenty metres long at the least.

Danae couldn't stop grinning.

This was the first time she had seen complex alien life. Usually these planets had yet to evolve anything beyond an algal mat, but she had dreamed for so long of a full-fledged biosphere: a world teeming with green or crimson or violet, aglow with food chains and natural selection and habitats. And here one was. Even without the bizarre boat-creatures, it was wonderful.

This was what they were bringing to the universe. Life in all its brilliant anarchy and chaotic order, in all its infinite variations, its bizarrities, brutalities, ingenuities. Introducing it to an otherwise cold and uncaring cosmos. Light to the dark, in ancient symbolism.

To see this thriving moon, a living after-picture to their work, was breathtaking. It just about made up for missing the sprouts they themselves planted. Almost.

Danae didn't believe in the Lifeforce, not as something conscious. Her spirituality was a tad more secular. She did, however, believe deeply in the underlying notions. That life should be spread as far and as densely as possible she accepted as axiomatic. The Seeders had left Barnumbirr over a thousand years ago, dispersing across the Orion Arm in their huge spacecraft. They didn't hear from others often, only when they re-entered human space and the wormhole networks that came with it. But

the Seeders were all out there, playing their statistics game. Only a fraction of their sowings would survive, and a fraction of that fraction would reach complexity. An ever-shrinking percentage could ever become intelligent. But that was enough. They were personally increasing the future variety of complex life in the universe, and by default the number of intelligent species, the number of minds that would one day witness the universe, study it, shape its matter into machines and materials that couldn't otherwise exist, bring it closer and closer to its full potential. And some of these minds might one day take up the very same task as the Seeders.

Danae could think of no higher purpose.