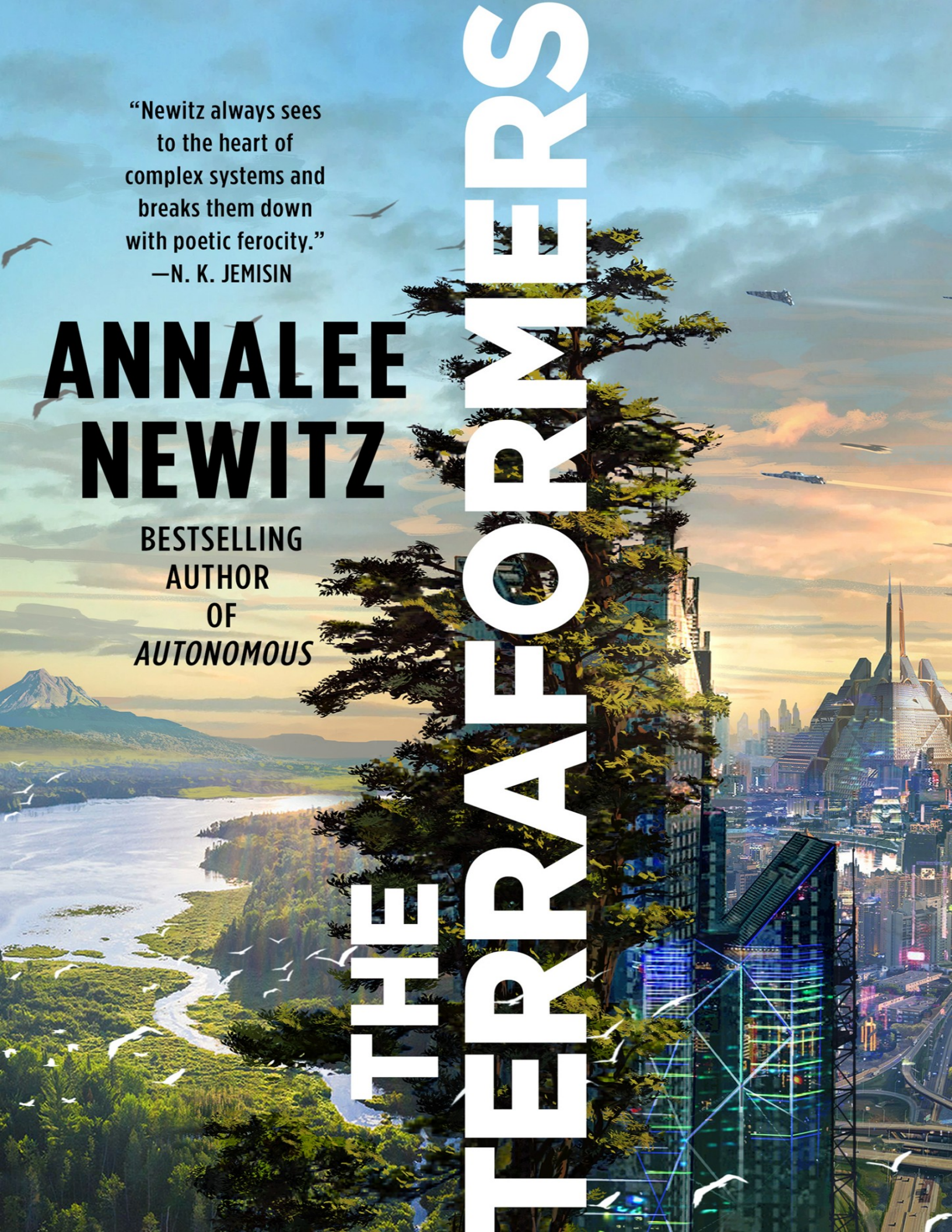


“Newitz always sees
to the heart of
complex systems and
breaks them down
with poetic ferocity.”
—N. K. JEMISIN

ANNALEE NEWITZ

BESTSELLING
AUTHOR
OF
AUTONOMOUS

THE TRAFALGARS



THE
TERRAFORMERS

ANNA LEE NEWITZ



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*For Jesse Burns,
with all my love in this world and the ones we'll build next*

What will survive us
has already begun
—Stephanie Burt

COLONIALISM. Definition: turning bodies into cages that no
one has the keys for.

—Billy-Ray Belcourt

PART I SETTLERS

Year: 59,006

Planet: Sask-E

Mission: Ecosystem Maintenance

SASK-E



1

PLEISTOCENE FETISHIST

When in doubt, don't kill anyone.
—*Environmental Rescue Team Handbook*

Destry could smell the smoke long before she saw its improbable source. There was some kind of person—possibly *Homo sapiens*—tending a fire at the edge of the boreal forest. She squinted, trying to make out details from half a klick away. The person's skin was so pale she guessed it had hardly met real sunlight, which meant they were definitely not a stray worker from one of the construction camps. When the intruder crouched next to the flames, she caught a glimpse of red beard merging into a tangle of hair. In their hands, a hare was speared and cooking on an expensive alloy spit. The sight was horrifying, and Destry flinched back reflexively.

“Let's stop,” she whispered to her mount, a thick-barreled moose with red-brown fur and a crown of antlers spreading from his forehead like a pair of massive, cupped hands. He flicked an ear in acknowledgement as she slid off his back and into his long shadow. Sinking down on one knee, Destry pressed her bare fingers into the soil, spreading them wide, establishing a high-bandwidth connection with the local ecosystem.

Thousands of sensors welcomed her into the planet's network, their collective perceptions knitting together from shards of cached memory, fragments of recorded sensation and perception. In this state, she too was a sensor, processing data through her eyes, nose, tongue, skin, and ears. What she perceived she shared with the ecosystem. She could feel the sensors collaboratively reviewing the scene from her perspective, learning that she wanted to know more about the mammal at the edge of the forest. It was like her body had become the land. Her awareness stretched forward, racing through root systems and over insects, tasting acid levels in the soil. The person's feet on the ground registered as pressure on her back, and she smelled

redox reactions in the fire. Each sensor's evaluation joined the swelling chorus in her ears as the tiny machines voted on what their data points might mean: *polymer, hair, carnivore, unprocessed excrement, dead trees, carbon cycle perturbation, predator, metal, fur, synthetic microbiome*. As Destry's data surged across the field and into the forest, the sensors could see what she did, and their analysis coalesced into a strong probability: *Homo sapiens in the region for eight days, causally linked to tree loss, small mammal loss, excrement buildup, complex toxins*.

But there was no data emanating from the person, save for a persistent encrypted stream aimed at an orbital satellite. Out here in the bush, she didn't have the tools to analyze it. All she had were implants that made sensors recognize her as one of their own. She was the only ranger built this way; all her colleagues back home had to use bulky access devices if they wanted to ask a flower about its nitrogen uptake.

Disconnecting from the ecosystem, Destry unfolded her muscular frame and ambled into talking range with the intruder. Her cropped gray-black hair was matted with sweat, and a trickle found its way through the road dust on her cheek, revealing a streak of deeply tanned skin. Wind pricked a few tears from her blue eyes. She kept her hands visible. Basic protocol in the Environmental Rescue Team was to approach in peace, no weapons drawn, aiming to help.

"Hey stranger!" she called after a few minutes. "I'm ERT Ranger Destry Thomas! D'you know you're on unoccupied land?"

The person looked up, their flat, blank face twitching into an awkward grin. Definitely *Homo sapiens*. They stood, technical jumper gleaming dull gray in the late afternoon sun. Now that she was closer, Destry could see a small cabin tucked into the trees, next to a collapsible trellis where a few pelts were stretched. Mink, hare, beaver. A flicker of outrage licked the inside of her ribs, but she kept it in check. No point in getting flustered.

"Who are you? What are you doing on this land?"

The person's mouth worked as if they hadn't spoken for a while. "G-good evening, ERT Ranger Destry Thomas. Don't think I've ever seen Environmental Rescue on a private planet."

Destry ignored his comment and ran her hands through the waist-high grass, connecting to the sensors that dusted each blade. Whatever was

happening inside the person's encrypted stream, it was getting thicker. Data poured down furiously and shot back up again.

She stopped a couple of meters away from the fire. "What's your name, stranger?" One hand was free, and the other settled lightly on her holstered gun, slung low over her right hip.

"Name's Charter. I'm not looking for trouble, Ranger. I'm here to experience the Pleistocene. It's the purest environment for mankind."

She groaned to herself. Charter was the default male name for *Homo sapiens* remotes. No wonder he was regurgitating that fat data stream. Somebody was controlling him from offworld, probably thousands of light-years away, using this proxy body to get their jollies in the ecosystem she'd sworn to protect. Out there, in the volume of galactic space claimed by the League, some people believed you weren't really human unless you'd experienced a Pleistocene environment on an Earthlike world. Hence the lure of her planet, Sask-E, whose fragrant forests some distant asswipe was currently smudging with uncontrolled carbon waste.

"All right, Charter. I'm not sure who you are or how you got here, but this is unoccupied land. It's not your habitat."

"Verdance is going to start selling it pretty soon. No harm done." Charter was starting to sound whiny, hinting at the personality of whoever controlled him.

"You need to biodegrade everything in this camp and get off this land right now."

"This ecosystem is my birthright." Charter planted his feet firmly next to the fire. He still held the spit with the hare's skinned, burned body in one hand. "It's the origin of all mankind, and everything we do now is shaped by it."

A cool arctic wind threaded through the forest, and fir tree branches gestured wildly overhead. But Destry felt sweaty, inside and out; she ran an arm across her forehead, smearing the dust on her face into a thin, gritty mud. Walking closer, she gave up the pretense of talking to Charter as if he were alive. Now she looked into the wide purple eyes of the expensive biotech toy and addressed the distant person controlling him. "Listen. You haven't identified yourself, and I don't know where you are coming from. But you put this remote here, and you damaged the forest. You're trespassing. You killed

animals, which is a crime. You need to pack up your remote right now and get off Sask-E before I report you to Verdance.”

She hoped the threat was enough. Charter’s controller could be sued for what he’d done. The only thing preventing her from reporting him right now was the fact that she liked talking to Verdance security about as much as they liked dealing with unripe real estate. Sask-E was supposed to terraform itself for another thousand years before anyone had to worry about its existence.

Charter yanked some flesh off the hare and put it between his teeth, chewing awkwardly. “You know that man evolved to eat meat, don’t you?”

It would have been hilarious to hear a completely fabricated *Homo sapiens* remote taunting her like that if it hadn’t been so nauseating to watch. “I’ll ask you again to move along. This planet is still under construction, and hunting could destabilize the local food web.”

Charter shrugged. “Don’t be dramatic. Why don’t you and that mount leave me to enjoy my dinner?” He made the question sound like a command, as if he was used to ordering a lot of mute servants around. Destry frowned. How had he found this star system, anyway? Planets under development weren’t listed on public maps, and there was no way he stumbled on it by chance. His controller must have access to Verdance’s real estate databases, which would make him some kind of insider. Or a rich guy with a taste for Earthlike worlds who paid a tick to burrow quietly into Verdance’s data systems. She fiddled with her holster, then walked her fingers back. There was a chance she could get in trouble for shooting this thing, even if he wasn’t supposed to be here. If her boss was displeased, she might be grounded and forced to handle regulatory compliance garbage for years.

The remote kept staring at her, chewing with his mouth open, while she weighed her options. She could take him out, and potentially get caught. She could report him, but he might do a lot of damage while she waited for Verdance security to act—if they acted at all. Either way, she’d be forced to spend decades rebalancing the local environment. No matter what she did, there would be trouble, so she might as well mitigate it.

She tried again, using her calmest voice. “Listen. This isn’t a debate. You need to get off this land.”

“No can do, Ranger Destry Thomas. Best be on your way. My compliments to you on the well-stocked forest, though. This meal is just like the ones our

ancestors ate during Earth's Pleistocene." The remote stretched his lips in a badly executed attempt at a smile. "Here on the savannahs where our species was born, I can experience evolution firsthand. The only thing that would make it more authentic would be some nice moose jerky."

The anger rising through her chest finally found her tongue. "This is not a savanna, you pus-licker. It's boreal forest."

With one fluid motion, she slipped her gun from its holster, spun it up, and shot the remote between the eyes. Charter's data stream stuttered and stopped as he crumpled. Killing was always a last resort for an ERT ranger, but this controller was using his remote to threaten Whistle, and that could not stand. Destry signaled her friend and he trotted through prairie grass to the still-smoking fire. "We're going to be here for a while," she said.

Whistle couldn't reply aloud to her—his mouth was built to a perfect Pleistocene moose template—but he could text. The sender in his brain reached out to network with hers, skipping across the radio spectrum, looking for a way to be heard; when he found it, he typed: *Looks bad, Destry.*

The moose had a limited vocabulary, but it got the job done. He was right: she'd turned a shit situation into a slurry of blood-flecked diarrhea. Stretching up a hand, she rubbed the warm, furry hide of his neck. "You can graze if you want. You'll want to have lots of energy for the trip back."

Whistle turned to press his fat muzzle into her gray-black hair, exhaling a blast of warm air. During their months on patrol in this vast, continent-spanning forest, Destry's usual stubble had grown long enough to tickle her ears. Whistle felt genuine affection for his partner, but this sudden urge to nuzzle was definitely enhanced by the sight of an abundant carpet of pinecones a few meters beyond the campsite. They were his favorite food.

Meanwhile, Destry had to start the long, grisly process of sinking all this carbon. She retrieved a few tools from Whistle's saddlebags: an axe, a tin of metabolizers, a sheet of carbon-capture membrane folded into a tight square. Tramping around the campsite, she saw no obvious ejector pods or shuttles nearby. Charter might have hiked in from a distant landing site, though his pale skin suggested recent decanting. What if somebody at Verdance spotted the vessel by satellite feed and started asking questions? Or another ranger picked up what had happened from the sensor network? She needed to find his ship and erase what she'd done. Whistle munched contentedly as she deleted

the last few minutes from the forest around her. Then she issued a ticket to the ERT bug tracker: *I found a trespasser's campsite in the boreal forest. Composting it now. Can somebody please check satellite footage at these coordinates to see whether there's a vessel in the area?*

They would get her message in the next hour or two. Probably. As long as it found a relatively uninterrupted path through the tall grass, routing through sensors that were mostly intended for monitoring air and soil conditions. The important thing was that she'd left some receipts. Now, if the ship was found, she could plead ignorance about its payload. Which—what exactly was that payload? Obviously Charter's controller was some kind of rich dilettante, hopped up on environmental determinism. He didn't even recognize that the planet was closer to a Devonian Period Earth, 350 million years before his beloved Pleistocene. Sure, the food web was post-Cretaceous, full of mammals and angiosperms alongside the more ancient birds, insects, and conifers. But there were still a lot of synapsids running around, looking like giant, furry lizard-otters with sails on their backs. As the ERT's top network analyst for ecosystems, she had to call it like she saw it. This was hardly a perfect reproduction of Earth when it was a million years younger.

The reason none of these inconsistencies mattered to Verdance was that oxygen levels were holding steady at the required 21 percent, thanks mostly to the thick layer of trees Destry and her cohort planted—millions of them, all across Sask-E. Over the centuries their roots burrowed deep into the planet's two megacontinents, Maskwa and Tooth, breaking up the sterile rock and accelerating the weathering process that drew down carbon. As long as the carbon cycle was unperturbed, they could proceed on schedule and stabilize all the interlocking environmental systems. Any extra load on a freshly built ecosystem like the boreal forest might set them back centuries.

And now some joyrider from who knows where thought he could chew through their labor like he was entitled to it. Because of some pixelated idea about how Paleolithic humans lived. Glancing at the hare's mutilated body and the skins stretched nearby, Destry winced. He'd taken so much life from an ecosystem he supposedly loved.

Carefully burying the firepit in loose soil and leaves, she dragged the remote inside the cabin, arranging the animal remains next to him. She clambered up the high, peaked roof to survey the damage. He'd built the

whole structure from trees that the planet desperately needed to maintain its atmosphere. Destry whacked at the wood with an axe, kicking chunks of it down to the floor inside. Soon most of the roof lay in shredded lumps next to Charter's bedroll and rucksack, and it was relatively easy to yank the wall posts out of their shallow holes in the ground. The racket brought gravelly commentary from ravens overhead, and a few curious squirrels and foxes poked their heads out of the brush.

As the sun sank, Whistle left off his crunching and headed back to the wreckage that Destry was arranging in a careful pile over the now-dismantled cabin floor. The moose sent: *Should we sleep here?*

Destry glanced at the dimming sky, where the gas giant Sask-D emerged as a bright pinprick next to the rising pear-shaped moon that orbited Sask-E. "I'm almost done," she said. "I think we can make it back to camp tonight." She cracked the tin of metabolizers open with a screwdriver and sprinkled wheat-colored husks packed with microbes over the splintered wood, skins, and Charter's body. It began to decompose almost before she could unfurl the filter membrane with a snap of her wrists, settling it over the whole mess like a transparent funeral shroud. Some carbon would escape, of course, but the filter would capture about 80 percent. By the time the full moon returned, this invader's campsite would be nothing but a rich humus beneath a layer of pine needles.

Earth's boreal forests didn't work like this; they had sandy soils that would take months to decompose this waste. But Earth was thousands of light-years away. Here on Sask-E, in the far north of the megacontinent Maskwa, the ERT cultivated a tropical microbiome in the forest floor because it was a better carbon sink. On the surface, Sask-E could pass for Pleistocene Earth. But if you actually bothered to squash its soils through a sequencer, you'd know in a second that it was actually a crazy quilt of ecosystems borrowed from half a billion years of Earth evolution—and life on hundreds of other worlds, too.

Not that Destry would ever travel through a wormhole to see Earth or those other worlds firsthand. Verdance didn't allow their workers outside the atmospheric envelope of Sask-E, and blocked their access to offworld comms too. The company liked to keep its workforce focused on terraforming, which was their right. Ronnie Drake, the company's VP of special projects, loved to point out during one of her sudden, inconvenient project oversight meetings

that Verdance had paid to build this planet, including its biological labor force. Everything here—other than rocks, water, and the magnetic field—was part of Verdance’s proprietary ecosystem development kit. And that meant every life form was legally the company’s property, including Destry and Whistle.

The filter looked steamy now. Water droplets ran across its underside, leaving long, sooty tracks behind. Whistle nudged her and she looked into his long, quizzical face, its contours as familiar to her as the positions of the constellations overhead. Verdance wouldn’t classify him as a person, but Destry was pretty sure he understood this ecosystem as well as she did.

“Ready to go?” she asked him.

He sent: *Hop on.*

She climbed into the saddle, wrapping herself in wool blankets and strapping down with canvas belts as Whistle trotted out of the trees. Night had fallen, but the moon illuminated fields of shivering grasses that edged the forest. Her goggles picked out the glowing heat signatures of small mammals on the prowl for seeds. As the shadows played havoc with their morphology, Destry and Whistle appeared to merge into one animal, muscular and dappled in silver. The illusion became more profound when Destry leaned into Whistle’s neck, wrapping arms around his warmth, and whispered: “Let’s fly.”

The moose launched into a bumpy canter, accelerated to a gallop, then jumped into the air as if he were leaping over a fallen log. His back muscles bunched and relaxed as the ground veered away from them. Soon they were hundreds of meters over the prairie, watching a pack of coyotes far below, yapping their way through the dusk. Destry’s legs prickled slightly from the gravity mesh adjusting under Whistle’s hide, but then they leveled out. Overhead, the Milky Way tumbled down the center of the sky in an uncontrolled deluge of stars.