

## ELEGY FOR A GREENWIPER

Alex Irvine

ORBITAL SENSORS DETECTED the nanobloom just after sunrise. Within seconds, automated plasma burns had cauterized the site, less than one hundred kilo meters from Hancock Dome. Overflying puffballs poured forth a stream of scrubbers designed to lock in on hydrocarbons and free oxygen. Maps of Kindred IV were redrawn to include the bloom as a warning to prospectors and surveyors.

Ten seconds later, greenwipers were called in.

The suborbital burn squeezed a headache from Krzysztof Nowak's sinuses. He closed his eyes, let his suit's autodoc equalize pressure and goose the humidity up a few percent. By the time the transport had crested its parabolic course and begun its accelerated fall back to the rocks of Kindred IV, the rebellion in his sinuses had been successfully quelled.

A smooth pattern of retros guided the transport in a sharp curve through a sandstorm. Clear of the storm, the pilot set out the circular quarantine course. Krz checked his filaments: clear to the left, clear to the right, clear to the apex that would drop from the transport's belly once all of the greenwipers had made their jumps.

His suit's subliminals, keyed to reinforce and focus, purred in his ear: Humanity has proved that it cannot live in the green. Domes save both us and what we would destroy. A taste of green is the first taste of mortality.

GO, flashed the light above his bay, and Krzysztof jumped.

Thirty seconds to ground. Krzysztof's heads-up displayed the unfolding filaments of the containment hemi, anchored every hundred meters by a greenwiper in full dress. Bezel to his left, Morgan to his right, and in front and below the seared rock and sand that marked the area of the bloom.

Nobody had told Krzysztof what to expect. Any one of a dozen organized groups could pull off a terraforming bloom; the suit's processors had categorized more than a million separate nanos and attributed them to different cells. He had time to wonder which signature would light up in the heads-up retinal display, time to wonder why the greenies kept trying, time to think about the end of his shift, time to savor the whiskey he would drink and visualize the face of the woman who would keep him company that night.

His boots punched through Kindred's crust of frozen sand, settling shin-deep in the ashy lithosphere. The filaments began to grow, thickening and twining into an invisible spiderweb designed to catch molecular flies. Krzysztof released the flight locks and engaged his suit's joint servos. He deployed his plasma nozzle. Samplers darted into the thin carbon-dioxide atmosphere and returned with captured nanos, invisible enemy soldiers that under scanning would yield their secrets. Processors profiled the interlopers, came back with the verdict:

Viriditas.

"Big leagues," Krzysztof breathed. Confirmation came from Bezel and Morgan even as puffballs settled into the gaps between filaments, clouding the atmosphere with scrubbers known to be effective against Viriditas nanos.

Forty seconds after touchdown, the containment hemi was complete. Krzysztof stepped back from the gleaming surface. The storm cell loomed to the north, rolling down on them from the Kellerman Massif.

Krzysztof blew his distributed network, surrounding himself with a ten-thousand-cubic-meter fog of sensors. A few stray Viriditas nanos showed up on the screens and were quickly annihilated by scrubbers.

All according to plan, Krzysztof thought. He tongued his mike. "Hemi complete. Fog deployed. Nowak on station. Report counter-clock."

The litany of names settled his nerves: Morgan, Greenwell, Bemelman, Okafor, on around the circle until Zeke Bezel completed the two-kilometer perimeter of greenwipers. All fogged, all on station. Command back in the Dome would have a hard time finding something to bitch about.

Off to Krz's right, plasma flared. "Who?" he barked.

His heads-up turned orange. Lemelin's position flared green, and at the same time Tig Okafor's voice burst across the link.

"Green outside the hemi!"

A dozen voices at once: "Burn!"

"Can't!" Tig's voice too high, wavering. "It's inside Reggie's suit!"

Krz slaved Tig's camera. He could not credit what he saw.

Leaves were curling from the faceplate of Rejean Lemelin's suit.

"Burn, Tig," he said steadily. "Burn now."

Plasma flared, and the sandstorm was on them.

THIRTY-SIX HOURS later, Krzysztof read the reports from his pallet in the Dome hospital. The foam treatments were doing wonders for his lungs; in another week he'd be able to resume his duties. Lemelin, Okafor, Bemelman, and Ross wouldn't be so lucky.

Four lost, Krz thought. Bloomed.

This was a new tactic for Viriditas. They had never before attacked greenwipers, never encoded anything that would be a threat to human life of any political persuasion. Had it been a mistake? Had one of their nanos errored, locked on the wrong target? There were other groups of greenies that wouldn't shed any tears over four greenwipers, but Viriditas professed a love of all life and demanded that life be given a chance to flourish wherever ingenuity or technology could give it root. If they had undertaken an attack like this, they weren't Viriditas any more.

He tapped the terminal, flitting past a relief map of Kindred IV, pocked with containment hemis that varied in size from a hundred meters to nearly seven kilometers. Thirty-seven times Krzysztof Nowak had been part of the team that stabilized those hemis, which would hold their seal for ten years in good weather. By that time, isolation from light and heat would have killed off the greenie nanos inside, and mopup teams could go through with plasmas again to make sure.

Thirty-seven times. He'd seen tiny plants blooming in hundred-degree-below-zero temperatures; huge flowers vainly turning toward the dim disk of Kindred, four hundred million kilometers away, before flaring into ash in the glare of plasma discharge; a dozen varieties of lichen and algae creeping their inevitable ways over gray rocks that had never known the touch of Life. Every time Krzysztof had stood firm, had burned and fogged and sealed, had made sure that the only green on Kindred IV grew in

hydroponic vats and artistic mantelpiece vases.

He believed in the Paradox: Green gave life, but the first taste of green was the first taste of mortality. Man had been cast out of the Garden, and to build another Garden was to foreordain another Fall.

Doctor Grello entered Krzysztof's room. "Officer Nowak," he said. "Breathing the local gases again, I see."

"Well enough," Krz said. "I can get out of here."

Grello perused the display connected to Krz's monitors. "So it seems," he said eventually. "We'll keep a colony working in your lungs, cleaning scar tissue out of your alveoli, and before you leave the hospital you'll need to be green-screened."

"How's the rest of the detail?" Krz asked. When Grello hesitated, he added, "I already know four of my people were bloomed. Give me some good news about the ones who survived."

"I wish I had good news." Grello made a notation on Krz's monitor. "The truth is, you're the only one who has survived this long."

Nineteen? Nineteen greenwipers, bloomed by Viriditas nanos?

Why wasn't this on the nets?

"Every other member of your detail suffered fatal blooms within twenty-four hours of your deployment. Apparently this new nano can break the sampler containment. Either it attacks the sampler's wiring or," the doctor cleared his throat, "or it propagates itself as information along a suit's processor circuits and, er, reinstantiates in the human epidermis."

Krz couldn't speak. A nano that could write itself into information and transform back into matter?

"That last bit is speculation," Grello said, as if saying that would make Krz forget he'd said it.

"Was it Viriditas? This new bug?"

"All of the signatures recovered were of Viriditas bugs," Grello said. "To this point, however, we haven't been able to type the fatal. It rewrites itself faster than our processors can track, and we can't crack its propagation algorithm."

Krz took a few moments to absorb all this. He sat up, looked at himself. Wondered when he would see the first patches of green on his skin.

"How long do I have?" he asked Grello.

Grello could only shrug. "I don't even know how long I have," he said evenly. "We can't tell if the nano is propagating in the hospital, or in any of the staff who treated members of your detail. It appears to be completely gone, but normal quarantine procedures clearly wouldn't work with a bug that can propagate as pure information. For this reason, the loss of your detail and news of this new nano have been withheld."

"Nobody knows?"

"Nobody who isn't a greenwiper or military authority, except for a very few people in this hospital." Grello poked at Krz's monitor again, then turned it off. "You can go. Like I said, there's no point in quarantining you if this nano propagates the way we think it does. You've been placed on paid leave until

this is resolved. Be informed that your discretion is of paramount importance in maintaining order in Hancock Dome. You will be physically restrained if you speak of this to anyone."

It was an open secret in Hancock Dome that a small percentage of its population held heretical views. In an ostentatious display of respect for individual rights, this group's greenie sympathies were tolerated as long as they remained purely sentiment. To ensure that belief could not translate into action, suspected greenies were prevented from any occupations that brought them into controlling contact with nanotech. Periodically, too, their homes were searched and all technical gear more sophisticated than the average twentieth-century microchip confiscated. No great outrage accompanied this abrogation of civil liberties: greenie sympathies, the popular thinking went, had as a natural consequence technological deprivation. Possession of unlicensed nanoengineering equipment was grounds for transportation to Kindred VI-17, a tiny asteroid nearly two billion kilometers from its star.

In this way, the Hermetic divines who governed Hancock Dome provided an outlet for the inevitable greenie yearnings that arose in a domed population. Human beings' sinful urges, they reasoned, were not limited to sexual license and blasphemy, and just as a certain number of venereal and verbal transgressions had to be tolerated in the name of civil order, a degree of understanding was called for when considering greenies. Scarcely three generations removed from the colonizing voyage, Hancock's nineteen thousand citizens were prone to fits of nostalgia for such features of Earth as sky, ocean, and prairie. To unsympathetically crush such impulses would display a certain lack of mercy, especially since Earth itself was no longer fit for anything but domed habitation. The greenies' dreams were doomed to be just that.

Thus it was that Krzysztof Nowak, veteran greenwiper and citizen of Hermetic Society-founded Hancock Dome, could find himself in a tavern whose walls were adorned with sky- and seascapes, with animated frescoes of animal herds and mountain climbers, with detailed portraits of wildflowers and flying birds. What am I doing here? He had to close his eyes and weather a wave of doorframe-clutching agoraphobia before he could find a seat at the bar and order whiskey and beer.

The whiskey hit him like a slow-motion orgasm, the beer like the chill of sweat evaporating from his skin. He'd had nothing to drink in nearly three days. The bartender set him up again, and Krz took a discreet look around, avoiding the nauseating pictures and settling briefly on each of the tavern's other patrons. The left corner of his mouth curled into a wry half-grin: none of the greenie women were likely to give him the hero treatment every greenwiper became accustomed to from the female population at large. But he wasn't here to be treated like a hero. He was here because someone here had answers to questions he couldn't ask anywhere else. Krz downed the second whiskey and waited.

It took longer than he'd expected, but after twenty minutes or so a long-jawed woman with bruise-colored eyes and a vidstar cascade of curly hair sat down at his left. "Hey, greenwiper," she said.

Krz nodded. He lifted a hand and the bartender refilled his glass. "Whatever she wants too," Krz said, inclining his head toward his new companion.

"Funny thing," the woman said.

Krz looked at her, drank beer. "What's your name?" he asked.

"Alice. You're Krzysztof."

"The joy of reputation," Krz said.

Alice smiled slightly. "Funny thing," she said again.

Krz raised an eyebrow.

"Well, six blooms in the past twenty-four hours. That's a lot, isn't it?"

Krz's eyebrow stayed raised. Six was a lot, if it was true.

"And one of Hancock's finest greenwipers drinking in a greenie bar while blooms mar the surface of our dear dead Kindred IV. That seems odd," Alice mused.

You don't know the half of it, Krz wanted to say. You could be a bloom waiting to happen, and the nanos that would do it might be just electrical impulses in your brain. I suppose that is odd.

He killed the third whiskey, chased it with what was left of the second beer. The bartender appeared again, and as Krz sipped at the fresh beer he had a sudden urge to go to church. I shouldn't be here with greenies, he thought. I got the answer I was looking for.

"I have to go," he said.

He thought she'd protest, but she stood. "Thanks for the beer," she said. "I'll be around when you come back."

He needed a dose of reassurance, a dose of uncomplicated belief. There was a church offering hourly teaching near the puffball staging hangars. Krz arrived just as a gowned Hermetic divine was beginning her homily.

"Humankind," she began, her freckled face young and earnest, "was given dominion over the Earth. No; we were commanded to dominion. And on Earth we tried to assume it. What happened? We equated knowledge with dominion, and because of knowledge we fell.

"Now, you can believe that literally happened, or you can believe that it's a parable. Either way, we realize that at some point in human history we left off ensuring our own survival and set about endangering the survival of every other living thing. And what did we discover? Only that we depended on those things for our own survival, and that when we began bringing Earth's ecosystem down around our ambitious ears we began the process of our own destruction as well.

"But we were commanded to dominion! Whether the command was divine or just our genome finding its voice, we responded. We strove to dominate until we destroyed everything that was intended as our dominion. So what is the lesson? What are we to understand from the collapse of the Earth that gave us life? The lesson is that life will not be dominated. Life demands slippage, variation, rebellion, and if we examine ourselves we will understand that the urge to dominion is as much a part of us as the urge to feed and the urge to procreate. From this comes the Paradox: green gave us life, but it also commanded our deaths because our urge to dominion inevitably entailed our own destruction. Man has been cast out of the Garden, and to build another Garden is to foreordain another Fall. The first taste of green is the first taste of mortality.

"And so we came here. Kindred IV had never known life when we arrived, and outside the Dome it still does not. Here we can live as humans were meant to live; here we can spread and command our environment; here we can fill a vacuum, not destabilize a system that requires our absence for its survival.

"Here we can obey the command we have been given."

The divine stopped, and smiled beatifically. Krzysztof realized he was the sole member of her audience. A moment later he realized she was a holo.

"You look troubled," the holodivine said, her smile fading into an expression of tender concern.

All Krz could do was repeat her words: "Life will not be dominated," he said. "How do we know that we won't wake up one morning and find out that the grapevines in the vats can live outside the dome?"

"There's no atmosphere on Kindred IV," the divine said comfortingly. "No soil, no water. Nothing can survive here without us. This is dominion. Here we can achieve dominion without extinction."

Life will not be dominated, Krz thought. The Viriditas nanos that he was sure he carried, were they alive? "This is my problem," he said. "If the greenies can create life on this planet, isn't that the purest form of dominion? To create life where there was none? To demand life in a lifeless world?"

"But this is to demand self-destruction," she countered. "What if the greenies were to terraform Kindred IV? Wouldn't we then set about destroying it just as we did Earth? Have we changed so much from our great-great-great-great-grandparents? Are we not human, and does not to be human mean to seek dominion?"

Thirty-seven times I have sought dominion over greenie nanos, Krz thought. Thirty-seven times I eradicated them. Creation and destruction: this is dominion.

And if all creation is self-destruction, then all we can do is destroy.

KRZYSZTOF NOWAK walked with ferrocrete under the soles of his boots, artificial light in his eyes, steel and glass walling him off from vacuum. Hancock Dome was nine kilometers across and two hundred meters high at its apex. Half a dozen smaller hemispheres surrounded it, nearly as high but much smaller in diameter. He walked past the subterranean passages that led to these outer domes, with their manufacturing, energy, and maintenance facilities; he walked past the long blocks of greenhouses and hydroponic farms; he walked past chapels and offices and apartment blocks and training facilities and when Kindred's pallid disk was just breaking the horizon he walked through the door of the greenie bar he'd left the night before.

"Explain something to me," he said to Alice, who was still sitting at the bar. She was alone except for the bartender, who had a shot and a beer waiting when Krz sat down.

Alice shifted on her stool, facing him. "I'll explain what I can."

"Was it part of the plan to have me wander in here?"

"Well, there aren't that many places you could have gone," she said.

"Did you know I would go to chapel?"

The whiskey made Krz's eyes water. Alice reached out, touched him on the shoulder.

"We know nothing," she said. "But we are guessing fight more and more often."

Krz worked on his beer for a minute or so.

"When will I bloom?" he asked her. Like Doctor Grello, all she could do was shrug.

Greenwipers enjoyed the same forbearance that characterized the old Vatican's attitude toward Crusaders. They defended civilization, and their excesses were glossed over. So when Dome authorities discovered Krzysztof Nowak stupidly drunk near a puffball hangar, they put him in an autotaxi home rather than charging him with conduct unbecoming or disorderly. His supervisors, although surprised that

he'd been drinking in a greenie bar, wrote it off after the bartender reported that he hadn't said anything to anybody he shouldn't have. Alice they already knew about, and were waiting for her to disclose connections, allegiances, covert machinations.

The greenwiper authorities did not know how far the nanos circulating in Krz's system had propagated. They had debated eliminating him and the entire hospital staff, but had come to the conclusion that such action would likely endanger Hancock Dome's ability to sustain itself. Then they had debated eliminating only Krzysztof, but decided against partial quarantine measures since the more radical course of action was so uncertain. If Officer Nowak was alive, he might teach them something. Dead, he was only muck for the hydroponic vats.

What Doctor Grello had speculated, his superiors knew without having to learn it from Krzysztof. The Viriditas nanos were unlike any they had seen before. They could write themselves into pure information, employing neurons and inorganic circuitry with equal facility, and reconstitute on command.

They were organic.

And they would bloom.

"After what you told me last night," Krz said to Alice, "I tried to steal a puffball."

"You shouldn't drink so much," she said.

He looked up through the dome at the stars. Where was Earth? I need a sense of origins, Krz thought. "They probably know I'm talking to you," he said.

She nodded. "But they don't know what the nanos will do. They're expecting me to give away something, but I don't know either, so they're waiting for me to find out something I shouldn't."

"I haven't really changed my mind, you know," he said. "I still believe in the Paradox."

"You can believe what you want. That won't change what's true."

"What is true?"

"We can't close ourselves off. We're strangling in here, Krz. Humans need to be out in air and light and heat and moisture. We need green things that don't do what we tell them. You know what happens in a closed system, and it doesn't get any more closed than Hancock Dome."

Entropy, Krz thought. And these nanos, pure information, are at war with it. So easy to believe. I carry information. Information will kill me. Entropy will kill me. To build another Garden is to preordain another Fall. All creation is destruction.

That night he did not drink.

When Krzysztof Nowak succeeded in stealing a puffball, he streaked along Kindred IV's equator. The Viriditas nanos leaped from his brain to the puffball's processors, instructing them to manufacture and deploy a fogged array. Some of these immediately began breaking down the puffball's exhaust, freeing oxygen and bonding the complex molecules into heavy groups that fell to Kindred's surface. There other nanos were at work: freeing still more oxygen and nitrogen, creating hydrocarbon chains from minerals in Kindred's rocky crust, constructing anaerobic bacteria that would begin grinding rocks into soil. Crystals began to form on the surface, glittering weakly in Kindred's distant glow.

Krzysztof's theft had been anticipated. The Hermetic authorities in Hancock Dome, knowing the battle

lost, waited sixty seconds in the hope that Krzysztof would contact the greenie traitor who had doomed the Hermetic community on Kindred IV. If that traitor could be rooted out, the discovery would be worth the sacrifice of Hancock, indeed of Kindred IV itself. During that sixty seconds, Krzysztof traveled thirty-three kilometers, trailing nanos in a widening plume across Kindred IV's lithosphere. When that time had elapsed with no signal being sent, plasma strikes vaporized the stolen puffball and sterilized the surface half a kilometer on either side of the puffball's flight path. Every greenwiper in Hancock Dome was deployed without being told what they were up against, and every one of them bloomed within ninety seconds of sampling the distributed nanos. The puffballs accompanying them began distributing Viriditas nanos rather than scrubbers; another forty-seven square kilometers was contaminated before plasma strikes destroyed the nanojacked puffballs and dying greenwipers.

While authorities in Hancock Dome debated courses of action, nanos quietly attacked Krz's ashes, breaking the oxygen free and rearranging the carbon and hydrogen left behind.

Alice grieved. For Krzysztof, certainly, but more for an ideal. No, ideals: hers and those of the Hermetics who had founded Hancock Dome. Four hundred and twenty greenwipers dead. They bloomed with new life, but.

Viriditas had sworn itself to life. Alice had known about these new nanos, about the breakthrough that allowed the nano to remember its identity as it transcribed itself into information. She had agreed that such a development was the logical manifestation of the dual principle that information was fundamental to the universe, and that the ultimate goal of the universe was life. She had agreed that the deployment of the new nanos was necessary to counter the living death of Hermeticism.

But she had never agreed that the projected loss of life was justified. How could she, when Viriditas had been founded on the principle that life must be propagated, that life was the single invaluable thing in the universe and that it must never be sacrificed?

She had once received a message that offered a rationale for this action. It referred to an old Christian story, the parable of the sower. Some seeds fall on rocky ground, some among weeds, some where it is too hot. These were the nineteen greenwipers in Krz's detail. Each bloomed too early. But Krzysztof Nowak was fertile, and grew, and was fruitful and multiplied.

On the scale of history, what did it matter that one colony failed? What would it matter if a terraformed Kindred IV failed as well? What mattered was that someday it would succeed. Someday humankind would find a way to taste the green, and that taste would not curdle with mortality on the tongue.

But four hundred and twenty greenwipers dead today, she thought. History does not matter today. What matters today is that the Hermets were right. Viriditas tasted green and sowed death.

She was thinking this when the Hermetic authorities arrested her.

"Life will not be dominated," she told her accusers. "You're right about that."

Was this nano designed on Kindred IV? they asked her.

She did not know.

Was Viriditas behind the nano, or had someone else used their known signatures as a screen?

The question gave her pause. Having never actually met or spoken with the designers, she did not know.

If we survive the bloom, they told her, you will be transported.



She understood. "I have a statement," she said.

They indicated that she was to proceed.

"The greenwipers, dedicated to the eradication of life, have themselves been eradicated," she began, the words already feeling dead on her tongue. "This is a great tragedy because human lives were lost, but in this loss a balance has begun to be restored. I do not know who created this nano, and I do not know what their ultimate goals are, but I believe that this nano embodies the pure principle of life. Life respects no boundaries. It travels across oceans and across space; why should it not traverse the boundary between matter and energy? Why should life not be information instead of only transmit it?

"Life respects no ideals. Viriditas's ideals lie in the ashes of dead greenwipers, and Hermetic ideals failed when life escaped their containment domes."

Enough, they said.

Outside Hancock Dome, nanos worked their way into Kindred IV's crust. They extracted and isolated, purified and combined. They propagated, and Kindred IV came to life.

By Alex Irvine

In the past two years, Alex Irvine has regaled us with a science-fictional vision of ancient Egypt, a glimpse of immortality in the near future, and a contemporary ghost story. Now he takes us into the future for an interesting look at the old man-vs.-nature conflict.