

PILOT

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First published as a Novacon chapbook, 1993; collected in Vacuum Diagrams.

When the Squeem occupation laws were announced, Anna Gage was half way through a year long journey into Jove from Port Sol. She paged through the news channels, appalled.

Human space travel was suspended. Wherever the great GUTship interplanetary freighters landed they were being broken up. The Poole wormhole fast-transit routes were collapsed. Humans were put to work on Squeem projects.

Resistance had imploded quickly.

Anna Gage - shocked, alone, stranded between worlds - tried to figure out what to do.

She was seventy nine years old, thirty eight physical. She was a GUTship pilot; for ten years she'd carried bulk cargo from the inner worlds to the new colonies clustered around Port Sol in the Kuiper Belt.

Since she operated her ship on minimum overheads, her supplies were limited. She couldn't stay out here for long. But she couldn't return to an occupied Earth and let herself be grounded. She was psychologically incapable of that.

Still outside the orbit of Saturn, she dumped her freight and began a long deceleration.

She began probing the sky with message lasers. There had to be others out here, others like her, stranded above the occupied lands.

After a few days, with the Sun still little more than a spark ahead of her, she got a reply.

Chiron ...

She opened up her GUTdrive and skimmed around the orbit of Saturn.

Chiron was an obscure ice dwarf, a dirty snowball two hundred miles across. It looped between the orbits of Saturn and Uranus, following a highly elliptical orbit. One day the gravitational fields of the gas giants would hurl it out of the System altogether.

It had never been very interesting.

When Gage approached Chiron, she found a dozen GUTships drifting like spent matches around the limbs of the worldlet. The ships looked as if they were being dismantled, their components being hauled down into the interior of the worldlet.

A Virtual of a man's head rustled into existence in the middle of Gage's cabin. The disembodied head eyed Gage in her pilot's cocoon. The jostling pixels of his head enlarged, as if engorging with blood; Gage imagined data leaking down to the worldlet's surface.

'I'm Moro. You look clean.' He looked about forty physical, with a high forehead, jet black eyebrows, a weak chin.

'Thanks a lot.'

'You can approach. Message lasers only; no wideband transmission.'

'Of course '

'I'm a semisentient Virtual. There are copies of me all around your GUTship.'

'I'm no trouble,' she said tiredly.

'Make sure you aren't.'

With Moro's pixel eyes on her, she brought the GUTship through a looping curve to the surface of the ice moon, and shut down its drive for the last time.

She stepped out onto the ancient surface of Chiron.

The ice was a rich crimson laced with organic purple. The suit's insulation was good, but enough heat leaked to send nitrogen clouds hissing around her footsteps, and where she walked she burned craters in the ice. Gravity was only a few per cent of gee, and Gage, Mars-born, felt as if she might blow away.

Moro met her in person.

'You're taller than you look on TV,' she said.

He raised a gun at her. He kept it there while her ship was checked over.

Then he lowered the gun and took her gloved hand. He smiled through his faceplate. 'You're welcome here.' He escorted her into the interior of Chiron.

Corridors had been dug hastily into the ice and pressurised; the wall surface Chiron ice sealed and insulated by a clear plastic was smooth and hard under her hand.

Moro cracked open his helmet and smiled at her again. 'Find somewhere to sleep. Retrieve whatever you need from your ship. Tomorrow I'll find you a work unit; there's plenty to be done.'

Work unit?

'I'm not a colonist,' she growled. 'You think we'll be here that long?'

Moro looked sad. 'Don't you?'

She found a cabin, a crude cube dug into the ice. She moved her few personal belongings into the cabin. Virtuals of her parents on Mars, book chips, a few clothes. Her things looked dowdy and old, out of place.

There were about a hundred people hiding in the worldlet. Fifty had come from a Mars Saturn liner; the rest had followed in ones and twos aboard fugitive GUTship freighters, like Gage herself. There were no children. Except for the liner passengers mostly business types and tourists the colonists of Chiron were remarkably similar. They were wiry looking, AntiSenescence preserved, wearing patched in ship uniforms, and they bore expressions uneasy, hunted that Gage recognised. These were pilots. They feared, not discovery or death, but grounding.

The drives of some of the ships were dismantled and fixed to the surface, to provide power. The colonists improvised plants for air processing and circulation, for heating and for AS treatments. Crude distilleries were set up, with tubing and vessels cannibalised from GUTdrive motors.

Gage dug tunnels, tended vegetables, lugged equipment from GUTships of a dozen incompatible designs into the ice.

It was hard work, but surprisingly satisfying. The ache in her muscles enabled her to forget the worlds beyond Chiron, places she was coming to suspect she would never see again.

This was her home now, her Universe.

Two years limped by. The Chiron colony remained undiscovered. The grip of the Squeem occupation showed no sign of relaxing.

A mile below the surface the colonists dug out a large, oval chamber. The light, from huge strips buried in the translucent walls, was mixed to feel like sunlight, and soon there was a smell of greenery, of oxygen. People established gardens in synthesised soil plastered around the walls, and built homes from the ancient ice. The homes were boxes fixed to the ends of ice pillars; homes sprouted from the walls like flower stalks.

Each dawn arrived with a brief flicker, a buzz as the strip-lights warmed up, then a flood of illumination. Gage would emerge from her cabin, nude; she could look down the length of her home-pillar at a field of cabbages, growing in ice as old as the Solar System.

It was like being inside a huge, gleaming egg. She missed Mars, the warm confines of her pilot cocoon.

The colonists monitored the news from the occupied worlds. There seemed to be no organised resistance; the Squeem's action had been too unexpected, too sudden and complete. As far as the colonists knew they were the only free humans, anywhere.

But they couldn't stay here forever.

They held a meeting, in an amphitheatre gouged out of the ice. The amphitheatre was a saucer shaped depression with tiered seats; straps were provided to hold the occupants in place. As she sat there Gage felt a little of the cold of the worldlet, of two hundred miles of ice, seep through the insulation into the flesh of her legs.

Some proposed that the colony should become the base for a resistance movement. But if the massed weaponry of the inner planets hadn't been able to put up more than a token fight against the Squeem, what could one ad hoc colony achieve? Others advocated doing nothing staying here, and waiting until the Squeem occupation collapsed of its own accord.

If it ever did, Gage thought morosely.

A woman called Maris Mackenzie released her belt and drifted up to the amphitheatre's focal point. She was another pilot, Gage saw; her uniform was faded but still recognisable.

Mackenzie had a different idea.

'Let's get out of this System and go to the stars,' she said.

There was a ripple of laughter.

'How?'

'One day Saturn or Uranus is going to throw this ice dwarf out of the System anyway,' Maris Mackenzie said. 'Let's help it along its way. We use the GUTdrive modules to nudge it into a close encounter with one of the giants and slingshot out of the System. Then - when we already have escape velocity - we open up a bank of GUTdrives and push up to a quarter gee. We can use water ice as reaction mass. In three years we'll be close to lightspeed -'

'Yes, but where would we go?'

Mackenzie was tall, thin, bony; her scalp was bald, her skull large and delicate: quite beautiful, like an eggshell, Gage thought. 'That's easy,' Mackenzie said. 'Tau Ceti. We know there are iron core planets there, but - according to the Squeem data - no advanced societies.'

'But we don't know if the planets are habitable.'

Mackenzie spread her thin arms theatrically wide. 'We have more water, here in the bulk of Chiron, than in the Atlantic Ocean. We can make a world habitable.'

'The Squeem will detect us when we open up the drives. They can outrun us with hyperdrive.'

'Yes,' said Mackenzie patiently, 'but they won't spot us until after the slingshot. By then we'll already have escape velocity. To board us, the Squeem would have to match our velocity in normal space. We've no evidence they've anything more powerful than our GUTdrives, for normal space flight. So they couldn't outrun us; even if they bothered to pursue us they could never catch us.'

'How far is Tau Ceti? It will take years, despite time dilation -'

'We have years,' Mackenzie said softly.

A bank of cannibalised GUTdrive engines nudged Chiron out of orbit. It took three years for the ice dwarf to crawl to its encounter with Saturn.

The time went quickly for Gage. There was plenty of work to do. Sensors were ripped from the GUTships and erected in huge, irregular arrays over the ice ship's surface, so they could watch for pursuit. Inside the ice cave, the colonists had to take apart their fancy zero gee homes on stalks. One side of the chamber was designated the floor, and was flattened out; squat igloos were erected across the newly levelled surface. The vegetable farms were reestablished on the floor and on the lower slopes of the walls of the ice cave.

The colonists gathered on the surface to watch the Saturn flyby.

Gage primed her helmet nipple with whisky from one of the better stills. She found a place away from the rest, dug a shallow trench in the ice, and lay in it comfortably; vapour hissed softly around her, evoked by her leaked body heat.

Huge storms raged in the flat infinite cloudscape of Saturn. The feathery surfaces of the clouds looked close enough to touch. Rings arched over Chiron like gaudy artifacts, unreasonably sharp, cutting perceptibly across the sky as Gage watched. It was like a slow ballet, beautiful, peaceful.

Saturn's gravitational field grabbed at Chiron, held it, then hurled it on.

Chiron's path was deflected towards the Cetus constellation, out of the plane of the Solar System and roughly in the direction of the Andromeda Galaxy. The slingshot accelerated the worldlet to Solar escape velocity. The encounter left the vast, brooding bulk of Saturn sailing a little more slowly around the remote Sun.

A week past the flyby the bank of GUTdrive engines was opened up.

Under a quarter gee, Gage sank to the new floor of the ice cave. She looked up at the domed ceiling and sighed; it was going to be a lot of years before she felt the exhilarating freedom of freefall again.

A week after that, riding a matchspark of GUTdrive light, the Squeem missile came flaring out of the plane of the System. It was riding a full gee.

The countdown was gentle, in a reassuring woman's voice.

Gage lay with Moro in the darkness of her igloo. She cradled him in the crook of her shoulder; his head felt light, delicate in the quarter strength gravity.

'So we got two weeks' head start,' she said.

'Well, we'd hoped for longer '

'A lot longer.'

' but they were bound to detect the GUTdrive,' Moro said. 'It could have been worse. The Squeem must have cannibalised a human ship, to launch so quickly. So the missile's drive has to be human rated, limited to a one gee thrust.'

The Squeem had evidently been forced to concur with Mackenzie's argument, that pursuit with a hyperdrive ship was impossible; only another GUTdrive ship could chase Chiron, crawling after the rogue dwarf through normal space.

The woman's voice issued its final warnings, and the countdown reached zero.

The ice world shuddered. Gage felt as if a huge hand were pressing down on her chest and legs; suddenly Moro's head was heavy, his hair prickly, and the ice floor was hard and lumpy under her bare

back. The crown of her igloo groaned, and for a moment she wondered if it would collapse in on them. The bank of GUTdrive pods had opened up, raising Chiron's acceleration to a full gee, to match the missile.

If Mackenzie's analysis was correct Chiron couldn't outrun the missile, and the missile couldn't overtake Chiron. It was a stalemate.

Gage stroked the muscles of Moro's chest. 'It's actually a neat solution by the Squeem,' she murmured. 'The pursuit will take years to play out, but the missile must catch us in the end.'

Moro pushed himself away from her, rolled onto his front, and cupped her chin in his hands. 'You're too pessimistic. We're going to the stars.'

'No. Just realistic. What happens when we get to Tau Ceti? We won't be able to decelerate, or the missile will catch us. Although we may survive for years, the Squeem have destroyed us.'

Moro wriggled on the floor, rubbing elbows which already looked sore from supporting his weight in the new thrust regime. He pulled at his lip, troubled.

Gage let herself get pregnant by Moro. The zygote was frozen, placed with a small store of others.

It was only after the storage of her zygote that Gage questioned her own motives in conceiving. How long was she expecting to be here? What kind of future did she think any of them could hope for?

Six months later the missile increased its acceleration to two gee.

The Squeem had been smart, Gage decided; they'd given the missile the ability to redesign itself in flight.

The colonists held another meeting to decide what to do. This time they sat around on the bare floor of their darkened ice cave; their elegant zero gee amphitheatre was suspended, uselessly, high on one wall of the cave.

Some wanted to stand and fight. But they had nothing to fight with. And Chiron, with its cargo of humanity, must be much more fragile than the hardened missile.

A few wanted to give up. They were still only fifty light days from the Sun. Maybe they could surrender, and return to the occupied worlds.

But most couldn't stand the idea; it would be better to die. Anyway, a semisentient Squeem missile was unlikely to take prisoners.

They voted to run, at two gee.

They had to rebuild their colony again. Drone robots crawled over the battered surface of the ice world, hauling water ice to the GUTdrive engines. Shields billowed wings of electromagnetic flux around the ice dwarf; they would soon be running at close to lightspeed, and the thin stuff between the stars would hit Chiron like a wall.

The beautiful ice cave was abandoned. It wouldn't be able to withstand the stress of two gravities. More tunnels were dug through the ice; new homes, made hemispherical for maximum strength, were hollowed out. The colonists strung lights everywhere, but even so Gage found their new warren-world gloomy, claustrophobic. She felt her spirits sinking.

The drives were ramped up to two gee in a day.

Only the strongest could walk unaided. The rest needed sticks, or wheelchairs. Broken bones, failing knees and ankles, were commonplace. Those like Gage who'd grown up on low gravity worlds, or in freefall, suffered the most. The improvised AS units were forced to cope with a plague of failing hearts and sluggish circulations.

It was like growing old, in twenty four hours.

Gage and Moro attempted sex, but it was impossible. Neither could support the weight of the other's body. Even lying side by side, facing each other, was unbearable after a few minutes. They touched each other tenderly, then lay on their backs in Moro's cavern, holding hands.

After three more months Maris Mackenzie came to see Gage. Mackenzie used a wheelchair; her large, fragile, beautiful bald head lolled against the back of the chair, as if the muscles in her neck had been cut.

'The missile is changing again,' Mackenzie said. 'It's still maintaining its two gee profile, but its drive is flaring spasmodically. We think it's redesigning its drive; it's going to move soon to higher accelerations still. Much higher.'

Gage lay on her pallet; she felt as if she could feel every wrinkle in the ice world under her aching back. 'You can't be surprised. It was just a question of time.'

'No.' Mackenzie smiled weakly. 'I guess I've screwed us up. We could have just stayed in our quiet orbit between Saturn and Uranus, not bothering anybody, flying around in that beautiful freefall ice cavern.'

'The Squeem would have found us eventually.'

'We're using up so much of our water. It breaks my heart. My beautiful ocean, thrown away into space, wasted. But we can go faster. We can still outrun the damn thing.'

Gage knew that was true.

Once GUT energy had fuelled the expansion of the Universe itself. In the heart of each GUTdrive Chiron ice was compressed to conditions resembling the initial singularity the Big Bang. The fundamental forces governing the structure of matter merged into a single, Grand Unified Theory superforce. When the matter was allowed to expand again, the phase energy of the decomposing superforce, released like heat from condensing steam, was used to expel Chiron matter in a rocket action.

But none of that made a difference.

Gage sighed. 'We've already abandoned half our tunnels because of tiny gradients we didn't even notice under one gee. We're slowly dying, under two gee, despite the AS units. We can't take any more. I guess this latest manoeuvre of the missile will be the end for us.'

'Not necessarily,' Mackenzie said. 'I have another idea.' Gage turned her head slowly; she had to treat

her skull as delicately as a china vase. 'Your last one was a doozie. What now?'

'Downloading.'

It wasn't a universally popular option. On the other hand, the alternative was death.

Eighty chose to survive, as best they could.

When her turn came Gage made her way, alone, to the modified AS machine at the heart of their warren of tunnels. The robot surgeon delicately implanted a sensor pad into her corpus callosum, the bridge of nervous tissue between the two hemispheres of her brain. It also, discreetly, pressed injection pads against her upper arms.

All around her, in the improvised infirmary, people were dying, by choice.

So was Gage, if truth be told. All that would survive of her would be a copy, distinct from her.

The callosum sensor would download a copy of her consciousness in about eight hours. Gage returned to her cavern, lay on her back with a sigh, and fell asleep.

She opened her eyes.

She wasn't hurting any more. She was in zero gee. It felt delicious, like swimming in candy floss. She was in the

ice cave no, a Virtual reconstruction of the cave; the walls and house stalks were just a little too smooth and regular. No doubt the realism of detail would return as their minds worked at this shared world.

Moro approached her; he'd resumed the crude disembodied head Virtual form Gage had first encountered. 'Hi,' he grinned.

'I just died.'

Moro shrugged. 'Tell me about it. We're all stored inside the shelter now.' This was a hardened radiation shelter they'd built hurriedly into the heart of the ice world; it contained a solid state datastore to support their new Virtual existence, what was left of their vegetation, their precious clutch of human zygotes embedded in ice. 'Our bodies have been pulped, the raw material stored in a tank inside the shelter.' 'You've a way with words.'

'... We're up to a thousand gee,' Moro said.

Gage's Virtual reflexes hadn't quite cut in, so she made her mouth drop open. 'A thousand?'

'That's what the missile is demanding of us. All our tunnels have collapsed.'

'I never liked them anyway.'

'And the drones are having to strengthen the structure of Chiron itself; the thing wasn't built for this, and could collapse under the stress.'

At a thousand gee, the time dilation factor they would pile up would be monstrous. Gage found herself contemplating that, her growing isolation from home in space and time, with no more than a mild detachment.

Gage rubbed Virtual hands over her arms. Her flesh felt rubbery, indistinct; it was like being mildly anaesthetized. Perhaps she was, in some Virtual way.

'Come on,' she said. 'Let's see what the food is like here.'

The chase settled down to stalemate again.

Gage sat under (a Virtual image of) the sky, watching starlight bend itself into a bow around the ship. It was a beautiful sight; it reminded her of Saturn's rings.

Their speed was already so close to that of light that time was passing a thousand times as quickly inside Chiron as beyond it. Everyone Gage knew in the Solar System must be long dead, despite AS treatment.

She wondered if the Squeem occupation still endured. Maybe not. Maybe humans had hyperdrive ships of their own by now.

This solitary drama might be the last, meaningless act of a historical tragedy, yet to play to its conclusion.

Most of the eighty had retreated to Virtual playgrounds, sinking into their own oceanic memories, oblivious of the Universe outside, isolated even from each other.

But Gage was still out here.

New problems were looming, she thought.

She sought out Maris Mackenzie.

'We're going bloody fast,' she said.

'I know.' Maris Mackenzie looked lively, interested. 'This is the way to travel between the stars, isn't it? Carrying live, fragile humans through normal space across interstellar distances was always a pipedream. Humans are bags of water, unreasonably fragile. A starship is nothing but plumbing. Humans crap inordinate amounts, endless mountains of '

'Yes,' said Gage patiently, 'but we still can't stop. Where are we going? Tau Ceti is long behind us. And we're heading out of the plane of the ecliptic, remember; we're soon going to pass out of the Galaxy altogether.'

'Um.' Mackenzie looked thoughtful. 'What do you suggest?'

Gage set up a simulation of her old freighter's pilot cocoon; for subjective days she revelled in the Virtual chamber, home again.

But she got impatient. Her control and speed of reaction were limited.

She dismissed the cocoon and found ways to interface directly with the sensors of Chiron, internal and external.

The GUTdrive felt like a fire in her belly; the sensor banks, fore and aft, were her eyes.

It was odd and at first she ached, over all her imaginary body; but gradually she grew accustomed to her new form. Sometimes it felt strange to return to a standard human configuration. She found herself staring at Moro or Mackenzie, still seeing arrays of stars, the single, implacable spark of pursuing GUT light superimposed on their faces.

Gage had been a good pilot. She was prepared to bet she was a better pilot than the Squeem missile. If she learned to pilot Chiron, maybe she could find a way to shake off the missile.

She searched ahead, through the thinning star fields at the edge of the Galaxy. She had to find something, some opportunity to trick the Squeem missile, before they left the main disc.

The black hole and its companion star lay almost directly in the path of Chiron.

The hole was four miles across, with about the mass of the Sun. Its companion was a red giant, vast and cool, its outer layers so rarefied Gage could see stars beyond its bulk.

Gage had found her opportunity.

She summoned Maris Mackenzie. A pale Virtual of Mackenzie's disembodied head floated over an image of the hole and its companion.

The hole raised tides of light in the giant. Material snaked out of the giant in a huge, unlikely vortex which marched around the giant's equator. The vortex fuelled an accretion disc around the hole, a glowing plane of rubble that spanned more than Earth's orbit around its Sun.

Some of the giant's matter fell directly into the hole. The infall was providing the hole with angular momentum making it spin faster. Because of the infall the hole was rotating unusually fast, thirty times a second.

'Hear me out,' Gage said.

'Go on,' said Maris Mackenzie.

'If a black hole isn't spinning and it's uncharged then it has a spherical event horizon.'

'Right. That's the Schwarzschild solution to Einstein's equations. Spherically symmetric '

'But if you spin the hole, things get more complicated.' It was called the Kerr Newman solution. 'The event horizon retreats in, a little way. And outside the event horizon there is another region, called the ergosphere.'

The ergosphere cloaked the event horizon. It touched the spherical horizon at its poles, but bulged out at the equator, forming a flattened spheroid.

'The greater the spin, the wider the ergosphere,' Gage said. 'The hole ahead is four miles across. It's spinning so fast that the depth of the ergosphere at the equator is a hundred and forty yards.'

Mackenzie looked thoughtful. 'So?'

'We can't enter the event horizon. But we could enter the ergosphere, or clip it, and get away safely.'

'Um. Inside the ergosphere we would be constrained to rotate with the hole.'

'That's the plan. I want to flyby, clipping the ergosphere, and slingshot off the black hole.'

Mackenzie whistled. Pixels fluttered across her face, as she devoted processing power to checking out Gage's proposal. 'It could be done,' she said eventually. 'But we would have a margin of error measured in yards. It would require damn fine piloting.'

'I'm a damn fine pilot. And we can take a lot of stress, remember.' It's not as if we have to protect anyone living.

'Why do you want to do this?'

'Because,' Gage said, 'the missile will follow me through the ergosphere. But after we've passed through, the hole will have been changed. The missile won't be able to work out how ...'

'We'll have to get consent to this from the others. The eighty -'

'Come on,' Gage said. 'Most of them have retreated into their own Virtual heads. There's hardly anybody out here, still thinking, save you and me.'

Slowly, Mackenzie smiled.

For Gage's scheme to work, the speed of Chiron would have to be raised much higher. When Chiron flew by the hole it would need an angular momentum comparable to that of the hole itself. So the drones ravaged Mackenzie's frozen ocean, hurling the stuff of Chiron into the GUTdrives.

Chiron approached the light-speed limit asymptotically.

By the time the hole approached, Chiron's effective mass had reached about a tenth of the Sun's. For every second passing in its interior, a hundred years wore away outside.

Ahead of her, the radiation from the black hole's accretion disc was Doppler shifted to a lethal sleet. Massive particles tore through the neural nets which comprised her awareness. She felt the nets reconfigure, healing themselves; it was painful and complex, like bone knitting.

Behind her the redshifted emptiness was broken only by the patient, glowering spark of the Squeem missile.

The black hole was only seconds away. She could make those seconds last a Virtual thousand years, if she wished.

In these last moments, she was assailed by doubt. Nobody had tried this manoeuvre before. Had she destroyed them all?

Gage let her enhanced awareness pan through the bulk of Chiron. Years of reaction mass plundering had reduced the ice dwarf to a splinter, but it would survive to reach the lip of the black hole and so would its precious cargo, the awareness of eighty downloaded humans, the canister containing their clutch of frozen

zygotes. That canister felt like a child, inside her womb of ice.

Enough.

She reduced her clock speed to human perception. The black hole flew at her face

The misty giant companion star ballooned over Gage's head, its thin gases battering at her face.

Chiron's lower belly dipped fifty yards into the ergosphere. The gravitational pull of the hole gripped her. It felt like pliers in her gut. She was hurled around; she was a helpless child in the grip of some too strong adult. The fabric of Chiron cracked; Solar System ice flaked into this black hole, here on the edge of the Galaxy, flaring x radiation as it was crushed.

Then the gravity grip released. The hole system was

behind her, receding. The pit dug in spacetime by the hole's mass felt like a distant, fading ache.

She watched the patient GUTspark of the Squeem missile as it approached the hole. It matched her path almost exactly, she saw with grudging admiration.

The missile grazed the lip of the hole. There was a flare of x radiation.

The GUTspark was gone.

It's worked. By Lethe, after all these years, it's worked.

Suddenly Gage felt utterly human. She wanted to cry, to sleep, to be held.

Cydonia, her home arcology, was an angular pyramid, huge before her, silhouetted against the light of the shrunken Sun. The ambient Martian light was like a late sunset, with the arcology drenched in a weak, deep pink colour; against its surface its windows were rectangles of fluorescent light glowing a harsh pearl grey, startlingly alien.

Her boots had left crisp marks in the duricrust.

Gage wasn't nostalgic, usually, but since the hole flyby she had felt the need to retreat into the scenes and motifs of her childhood.

Moro and Mackenzie met her on this simulated Martian surface.

'It was simple,' she said.

Mackenzie smiled.

Moro growled. 'You've told us.'

'We took so much spin from the black hole that we almost stopped it rotating altogether. It became a Schwarzschild hole. Without spin, its event horizon expanded, filling up the equatorial belt where the ergosphere had been.'

Chiron had clipped the ergosphere safely. The missile,

following Chiron's trajectory exactly, had fallen straight into the expanded event horizon.

The long chase was over.

'I guess the missile wasn't an expert on relativistic dynamics after all,' Mackenzie said.

'But we're not so smart either,' Moro said sourly. 'After all we're still falling out of the Galaxy even faster than before the hole encounter, in fact. A million years pass for every month we spend in here; we might be the only humans left alive, anywhere.' He looked down at his arms, made the pixels swell absurdly. 'If you can call this life. And we don't have enough reaction mass left to slow down. Well, space pilot Gage, where are we heading now?'

Gage thought about it. They could probably never return to their home Galaxy. But there were places beyond the Galaxy, massive stars and black holes that a pilot could use to decelerate, if she was smart enough.

And if they could find a place to stop, they could rest. Maybe Gage's awareness could be loaded back into some flesh and blood simulacrum of a human form. Or maybe not; maybe the role of Gage and the rest would simply be to oversee the construction of a new world fit for her child, and the other frozen zygotes.

She smiled. 'At this speed, we'll be there in a couple of subjective months.'

'Where?'

'Andromeda ...'

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