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STARS AND GODS



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Building Harlequin's Moon

LARRY NIVEN

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TOR® A TOM DOHERTY ASSOCIATES BOOK ■ NEW YORK

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STARS AND GODS

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A Tor Book
Published by Tom Doherty Associates, LLC
175 Fifth Avenue
New York, NY 10010

www.tor-forge.com

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ISBN 978-0-7653-0864-1

First Edition: August 2010

Printed in the United States of America

0 9 8 7 6 5 4 3 2 1

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PREFACE

We have here a collection of everything that's been going on in my life for the past six years or so since I published *Scatterbrain*. The world has changed some. So have I. I'm seventy-one years old and feeling it.

Writing has not become easier, or so it seems. I see more implications in a given idea, so the stories get longer and more detailed. The really good ideas get used up first.

Hey! *Time* magazine published a list of required summer reading in their July 13, 2009, issue. *Ringworld* made the list, forty years after I wrote it! *The Count of Monte Cristo* made the list too. Just a dozen stories total.

Where was I? I was saying that writing hasn't gotten easier, but I seem to be putting books out faster. Part of the reason is collaborations. I've done a lot of them, as you can see via this book. Collaborations are less lonely than solo flights. Certainly there are ideas (and fictional universes) that should not be shared... but I've started sharing even the Known Space universe. I told Jim Baen I would never do that, but things change.

And part of the reason is I get offers from folk who know my name. I've joined some funny anthologies. And—

Lisa Snellings Clark is an artist whose work generates stories. She's put out some collaboration little story collections, with some of the finest writers around. I want to join that company, and the title is fixed: *Strange Light*. Three stories so far.

So: six years, and not much in the way of disasters. The house hasn't burned down. No surgeries save for a cataract. Deaths... well, I think I've reached that age, and so has the science fiction field.

Movies: none yet. When I started writing, I deliberately gave up the notion of restricting my special effects to things that could be put on a screen. Now, wow! They can do anything! And they're using it to make movies like *Meteor*, in which incoming rocks can be shot down by bazookas.

So here is the best I've been able to write in the past six years and more. Enjoy.

PART ONE
EXCERPTS FROM THE NOVELS

1

Louis Wu

Louis Wu woke aflame with new life, under a coffin lid.

“Dracula,” he murmured; but the analogy had a dubious flavor. Boosterspice was centuries old. Nobody need turn vampire just to live a long time.

Displays glowed above his eyes. Bone composition, blood, deep reflexes, urea and potassium and zinc balance: he could identify most of these. The damage listed wasn't great. Wounds; fatigue; torn ligaments and extensive bruises; two ribs cracked; all relics of the battle with Bram. All healed now, rebuilt cell by cell.

He'd felt dead and cooling when he climbed in, eighty-four days ago, the display said. Sixty-seven Ringworld days, about nine falans.

He'd been under repair for twice that long the first time he lay in this box. Then, his internal plumbing systems had been leaking into each other, and he'd been eleven years without the longevif drug called boosterspice. He'd been *old*.

Testosterone was high, adrenalin high and rising.

Louis pushed steadily up against the lid. The lid wouldn't move faster, but his body craved *action*. He slid out and dropped to a stone floor, cold beneath his bare feet.

He was naked. He stood in a vast cavern. *Where was Needle?*

The spacecraft *Hot Needle of Inquiry* had been embedded in stone, last he looked, and Carlos Wu's experimental nanotech repair system had been in the crew quarters. Now its components sat within a nest of instruments and cables on a floor of cooled lava. The 'doc had been partly pulled apart. Everything was still running.

Tunesmith must have been studying its workings while it healed Louis Wu.

Nearby, *Hot Needle of Inquiry* had been filleted like a finless fish. A slice of hull running almost nose to tail had been cut away, exposing housing, cargo, docking for a lander now destroyed, thrust plates, and the hyperdrive motor housing. More than half of the ship's volume was tanks. The rim of the cut had been lined with copper or bronze, and cables in the metal led to instruments and generator.

The cut section had been pulled aside by massive machinery. It too was rimmed in bronze laced with cables.

The hyperdrive motor had run the length of the ship. Now it was laid out on the lava, in a nest of instruments. Tunesmith again. The *Hindmost* wouldn't have needed to study that.

Louis wandered over to look.

It had been repaired.

Louis had stranded the *Hindmost* in Ringworld space by chopping the hyperdrive nearly in half, long years ago. Dismounted, it looked otherwise ready to take *Needle* between the stars... and the design looked altered.

I could go home, Louis thought, tasting the notion. He liked it.

Where was everybody? Louis looked around him, feeling the adrenaline surge. He was starting to shiver with cold.

He'd be two hundred and sixty-odd years old by now, wouldn't he? Easy to lose track here. But the nano machines in Carlos Wu's experimental 'doc had read his DNA and repaired everything down through the cell nuclei. Louis had done this dance before. His body thought it was just past puberty.

Keep it cool, boy. Nobody's challenged you yet.

The spacecraft, the hull section, the 'doc, machines to move and repair these masses and crud looking instruments arrayed to study them, all formed a tight cluster within vaster spaces. The cavern was tremendous and nearly empty. Louis saw float plates like stacks of poker chips, and beyond those a tilted tower of tremendous toroids that ran from a hole in the floor right up to the roof. Four *Needle* sized cylinders lay near its base, within more of Tunesmith's machinery. Those were new.

He'd passed through this place once before. Louis looked up, knowing what to expect.

Five or six miles up, he thought. The repair center was forty miles high, so this level was near the roof. Louis could make out its contours. Think of it as the back of a mask... the mask of an asteroid sized shield volcano.

Needle had smashed down through the crater in Mons Olympus, into the repair center that underlay the one-to-one scale Map of Mars. Teela Brown the protector had trapped them there, had moved the ship eight hundred miles through these corridors, then poured molten rock around them. For all the years the ship had been trapped. Now Tunesmith had brought it back to the workstation under Mons Olympus.

Why?

He knew Tunesmith the Night Person, but not well. He barely knew Tunesmith the protector. He'd watched the protector fight, and that was about it. But Louis had set the trap that made him protector, and now Tunesmith held Louis's life in his hands.

He'd be smarter than Louis. Trying to outguess a protector was... futz... was silly but inevitable.

So *Needle* was an interstellar spacecraft, and that huge, tilted tower was a linear accelerator, launching system. Tunesmith might need a spacecraft. Meanwhile he'd leave *Needle* gutted. Louis and the Hindmost might use it to run, and he couldn't have that.

Louis walked until *Needle* loomed: a hundred-and-ten-foot-diameter cylinder with a flattened bell. Not much of the ship was missing... the hyperdrive, the 'doc, what else? The crew section was wide open, the floor eighty feet up. Under the floor, all of the kitchen and recycling systems were exposed.

If he could climb that high he'd have his breakfast, and clothing, too. He didn't see any obvious route.

He couldn't guess where Tunesmith might place a stepping disk, or where it would lead.

The Hindmost's command deck was exposed. It was three stories tall, with lower ceilings than Kzin would need. Louis saw how he could climb to the lower floor. A protector would have no trouble at all.

Black holes and starseeds! What must the Hindmost be thinking?

Pierson's puppeteers were cowards. When the Hindmost built *Needle*, he had isolated his command deck from any intruders, including his alien crew. There were no doors at all, just stepping disks booby-trapped a thousand ways. Now... the puppeteer must feel stripped naked.

Louis crouched beneath the edge of some flat-topped mass, maybe the breathing-air system. Leap pulled up and kept climbing. The 'doc had left him thin, almost gaunt; he wasn't lifting much weight. Fifty feet up, he hung by his fingers for a moment.

This was the lowest floor of the Hindmost's cabin, his most private area. There would be defenses. Would someone have turned them off?

He pulled up and was in forbidden space.

The first thing he saw was the Hindmost. The next was his own droud sitting on a table.

He'd destroyed that. He'd given it to Chmee and watched the Kzin smash it.

So, a replacement. Bait for Louis Wu the wirehead. Louis's hand crept into the hair at the back of his head, under the queue. Plug it in, let the battery trickle current into the pleasure center of his brain. where was the socket?

Louis laughed wildly. It wasn't there! The autodoc's nano machines had rebuilt him without it!

Louis thought it over. Then he took the droud.

The Hindmost lay like a jeweled footstool, his three legs and both heads tucked protectively beneath his torso. Louis's lips curled. He stepped forward to sink his hand into the jeweled mane and shake the puppeteer out of his funk.

He caught himself. Why did he want the Hindmost awake?

"Do not touch anything."

Louis flinched violently. The voice was a blast of contralto music, the Hindmost's voice with the sound turned up, and it spoke Interworld. "Whatever you desire, instruct me."

Needle's autopilot knew him, knew his language at least, and it hadn't killed him. Louis found his voice. "Were you expecting me?"

"Yes. I may give you some limited freedom here. Find a current source next to—"

"No. Breakfast," Louis said as his belly suddenly screamed that it was empty, dying. "I need food."

"There is no kitchen for your kind here."

A shallow ramp wound round the walls to the upper floors. "I'll be back," Louis said.

He walked, then ran up the ramp. He eased around the wall above a drop of eighty feet—no, difficult, just scary—and was in crew quarters.

A pit showed where the 'doc had been removed. Crew quarters was not otherwise changed. Louis went to the kitchen wall and dialed cappuccino and a fruit plate. He ate. He dressed, pants and blouse and a vest that was all pockets, the droud bulging one of the pockets. Finished the fruit, then dialed up an omelet, potatoes, another cappuccino and a waffle.

He thought while he ate. What was his desire?

He needed the Hindmost to tell him what was going on... but puppeteers were manipulative and secretive.

Information?

A little leverage?

He dumped the breakfast dishes in the recycler toilet. He climbed around the wall, carefully. "Hindmost's Voice," he said.

"At your command. You need not risk a fall. Here is a stepping disk link," and a cursor showed him a spot on the floor of crew quarters.

"Show me the Meteor Defense Room."

"That term is unknown." A hologram window sprang up in the portside wall. "Is this the place you mean?"

Meteor Defense was a vast, dark space. At the edge of the Voice's window, under a glare of light, the bones of an ancient protector had been laid out for study.

Three long swinging booms ended in chairs equipped with lap keyboards. In the far shadows stood pillars with large plates on top, mechanical mushrooms—"What are those?"

“Service stacks,” the Hindmost’s Voice said, “each made from eight of the float plates you found on arrival, topped by a stepping disk.”

“Sounds useful.”

The display Louis was looking for was not at once obvious. It was as black as the room around it. He saw it when a boom swung across it. One of the booms ended in a knobby, angular shadow.

All protectors look something like medieval armor.

The protector was watching an oval display screen thirty feet high, fifty wide. The camera would be somewhere on the Ringworld itself, looking away from the sun. Louis knew better than to expect asteroids or worlds. The Ringworld engineers had cleared all that out. This drift of moving lights would be spacecraft held by several species. Now the view focussed on a gauzy, fragile Outsider ship now on a glass needle, tenant unknown; now an ARM warship.

Tunesmith’s concentration seemed total. He zoomed on a spray of stars occluded by a foggy lump, proto-comet. Tiny angular machines drifted around it, marked by blinking cursor circles. A lance of light glared much brighter: some warship’s fusion drive. Here came another, zipping across the screen. No weapon fired.

The Fringe War was still cold, Louis thought. He’d wondered how long that could last.

The protector’s arms jittered above the keyboard.

In the corner of Louis’s eye, sunlight glared down. Louis spun around. The crater in Mons Olympus was sliding open, flooding the cavern with unfiltered light. The linear accelerator roared; an arc of lightning ran bottom to top.

The crater closed.

Louis brought his eyes back to the display. Looking over Tunesmith’s shoulder, he saw fusion light flare from offscreen and dwindle to a bright point. Tunesmith had launched something at high velocity.

Wonderful. Tunesmith had joined the Fringe War.

Well, *that* should keep him busy. Now, how much freedom had Louis been allotted? “Hindmost Voice, show me the locations of all stepping disks.”

The Hindmost’s Voice popped up a Map Room. It blanked out the outside view completely. The Ringworld surrounded Louis, a ring six hundred million miles long and a million miles wide, banded blue for day and black for night and broad fuzzy edges for dusk and dawn. Orange cursor lights winked across its face.

“How many?”

“Ninety-five are now in use. Two failed. Three we dropped into deep space were shot down by the fleets.”

“Have you sent anything to the shadow square ring?”

“No.”

The Hindmost had brought stepping disks on his voyage to the Ringworld, but not a hundred! “Hindmost, where did the Hindmost build a factory for stepping disks somewhere?”

“No. Tunesmith built such a system. Work proceeds slowly.”

Blinking orange lights were thick along the Great Ocean arc of the Ringworld. The far side looked sparse. “Are any of these en route to somewhere else?”

Vector arrows popped up. Most of the lights weren’t moving. None had reached the Other Ocean, but two were moving in that direction. “ETAs for those,” Louis said. No response. “Give me estimate of time of arrival for—”

“Expect this service stack,” flicker, “in place at the spinward rim of the Counterbalance Ocean by

early 2900 your count.”

Thirteen years.

Most of the lights were clustered around the Great Ocean, and of those, most were in a tight cluster that must be the Map of Mars. Louis pointed. “Give me a slow zoom on that.”

The map expanded.

“A little faster.”

The Great Ocean expanded. Louis began picking out individual lights for close-ups.

Deep into a jagged inlet, a narrow wedge seen from above was *Hidden Patriarch*, the mile-long seagoing craft built by local Kzinti.

The Map of Mars was a maze of lights... twenty. “Are these all underground?”

“Four are on the surface.” They blinked violet.

One at the icy north pole, at the Map’s center. One at the rim—“That one. Under the waterfall?”

“Yes.”

The remaining two were on the map of Mons Olympus. “Is that one upside down? Can you tell?”

“I can. It is.”

The trap set by martians was still in place. “What’s the other?”

“The stepping disk aboard *Hot Needle of Inquiry*’s lander.”

Teela had blasted the lander during that last duel. “It’s *functional*?”

“Yes.”

“Is the lander functional, too?”

“Life support is marginal. Drive systems and weaponry have failed.”

“Can some of these service stacks be locked out of the system?”

“That has been done.” Lines spread across the map to join blinking lights. Some, like the trap on Mons Olympus, had crossed-circle *verboden* marks on them: *not open*. The maze was complicated, and Louis didn’t try to understand it. “My master has override codes,” the Voice said.

“May I have those?”

“No.”

“Number these for me.”

“How shall I order them?”

“Distance from this point. Then print out a map.”

The scale was huge; he’d never get any detail out of it. He folded it and stuffed it in a pocket anyway. “Now, here’s what I want, and you tell me if I can have it... .”

He broke for lunch and came back.

The more recent disks were on service stacks: mobile. He set two of those moving and changed the number of links. The Hindmost’s Voice printed another map with his changes added. He pocketed that, too.

The Voice refused to make weapons. The crew quarters kitchen hadn’t done that either.

Tunesmith was still at the end of a boom, still tracking whatever he’d launched. “Where are the rest of us?” Louis asked, and felt a sudden flood of embarrassment. He should have asked that first!

“Who do you seek?”

“Acolyte.”

“I do not have that name—”

“The Kzin we shared this ship with. Chmee’s child.”

“I list that LE as—” blood-curdling howl. Louis found he was trying to pry his fingers loose from

table edge. "Rename him Acolyte?"

"Please."

The map was back, and a blinking point near Fist-of-God... a hundred thousand miles port-antispin from Fist-of-God, and two hundred thousand miles spinward of the Map of Mars. The Ringworld scale had to be learned over and over. "Here we set Acolyte four falans ago. He has since moved by eleven hundred miles." The point jumped minutely. "Tunesmith has altered the setting for the stepping disk. It sends to an observation point on the Map of Earth."

Home to his father? "Has he used it?"

"No."

"Where are the City Builders?"

"Do you mean the librarians? Kawaresksenjajok and Fortaralisplyar and three children were returned to their origin—"

"Yah!" He'd meant to do that himself.

"To the library in the floating city. I note your approval. Who else shall I track?"

Who else had been his companions? Two protectors. Bram was dead. Tunesmith was... still busy. He'd zoomed on that receding point, the vehicle he'd launched. Its drive was off... flared hugely and blinked off again.

A warship. Reaction motors were needed for war; modern thrusters couldn't switch on and off so fast.

"Have you kept track of Valavirgillin?"

The map jumped. "Here, near the floating city and a local center of Machine People culture."

Good, and she was well away from vampires. "Why did you track her?" He hadn't expected that.

"Orders."

Carefully, "Who do you take orders from?"

"From you and Tunesmith and—" a blast of orchestral chaos, piercingly sweet. Louis recognized the Hindmost's true name. "But all such may be countermanded by—" the Hindmost's name again.

"Is Tunesmith restricted from any interesting levels of this ship?"

"Not currently."

The Hindmost was still in wrapped-around-himself catatonia. "How long since he's eaten?" Louis asked.

"Two local days. He wakes to eat."

"Good. Wake him up."

"How shall I wake him without trauma?"

"I saw him in a dance once. Turn that on. Prepare food for him."

2

THE HINDMOST

Louis was in a vast hall. The floor was all broad, shallow steps. A thousand aliens moved around him and two thousand throats uttered orchestral music that was also conversation, unbearably complex. Wolfgang Amadeus Mozart would have gone crazy. The Beatles... started out crazy, but futz, so did Mozart.

Kick, slide, left heads brush fingerlets; hind leg kicks, partner shies. The Hindmost kicked. Flat on his eyes emerged from beneath his torso. *Spin, kick;* the Hindmost lurched to his forefeet and tripped.

to turn. Was this a dance or martial arts?

The Hindmost whistled. The dance dissipated. "Louis," the puppeteer said.

"How long were you out?"

"I sleep much. I have not been comatose. Where is Tunesmith?"

"Fighting a war, I think."

A head turned to the display. "Yes, I watched him build that. The Fringe War grows ever hotter. Have they invaded the Ringworld?"

"I have no idea. Hindmost, how did *Needle* come to be in this state?"

"Recall that Tunesmith accepted me as his teacher, on your advice."

Tunesmith the Night People musician had been newborn as a protector and thirsty for learning. "He needed training, and fast," Louis said. "The more he learned from us, the more we could guess what he'd do... I thought. Did you try to keep secrets?"

"Yes."

"Duh. And you barred him from the flight deck, of course."

"Duh," the puppeteer said. "I taught using your displays in crew quarters. I taught well, but he learned faster, always faster. He demanded access to my tools. I refused. Six days after you entered the 'doc, I woke to find him standing over me *here*. I gave him everything."

"When did he chop up your ship?"

"Sometime afterward. I was terrified, Louis. I was in fear-coma for eleven days. I woke and found this. Little has changed since. But, Louis, he has repaired the hyperdrive!"

"A fat lot of good—"

"Louis, he will reassemble the ship. When he does, I flee. Be aboard."

"When?"

The puppeteer's eyes looked at each other.

That meant confusion, or amusement, or any form of internal conflict. Louis asked, "What's he been doing? Building a warship—"

"Yes, and tracking the Fringe War, delving the secrets of my machinery—he wouldn't trust me to teach him—and ridding himself of my allies and yours. The Machine People are returned to the library. Acolyte is sent to spy on nothing at all. Louis, I must instruct you. You must know everything you might need."

Louis asked, "Why?"

"We are allies!"

"Why?" The droud was gone from its place, a bulge in Louis's pocket. Would the Hindmost mention it?

"Tunesmith has us enslaved! Can't you see what he plans for you?"

"I think so. I've got twenty-five years. What if he waits that long before he puts *Needle* back together?"

"Then I am lost. Severed from my family, my home. Slave to a creature brighter than myself, hardwired by his evolution to hold nothing of worth beyond his own bloodline. Louis, you face the same. You are not of Tunesmith's species."

"On the Ringworld I'm not of any species."

"Yes, Louis, yes, don't you see the implication? He will feed you tree-of-life. You will be protector. He will certainly not give you power over *him*. You are to be only a prisoner and advisor, talking head, the protector who has no descendants to guard. The voice that speaks only for the safety of the Ringworld itself."

“Yes,” Louis said patiently, “but not for twenty-five years. I’m not old enough to make the change.”

“But do you want that?”

“No. Tanj flup, *no!* What can you do for me? I’ve been studying your placement of stepping disks and made a few changes.”

The Hindmost whistled up the Map Room, Ringworld and stepping disks and vectors and all. He turned a complete circle, heads held wide apart for extreme binocular vision. “Good enough.”

“I expect you could reset all positions in an instant. Understand, though, if a service stack was where I expected it, that could kill me. You should give me access codes.”

“Yes.”

“By now Tunesmith must know everything about the ’doc. What don’t I know?”

“You would not have the mental capacity. An Earthborn genius, Carlos Wu, built the system for the ARM more than two hundred years ago. It disappeared along with Carlos Wu, and reappeared twenty-six years later on Shasht-Fafnir. My agent Nessus was able to buy it. My research team determined that it is based on an experiment in nanotechnology. We modified it to accommodate Kzinti and Pierson’s puppeteers and to increase its dependability.

“Bram has studied the system thoroughly. He has modified it again, to accommodate Night People physiology. He’s mastered this form of nanotechnology and is using nanomachines to make more stepping disks. What else is there? The ’doc is set to rebuild certain life forms from their genetic codes. In the case of you and Acolyte and Tunesmith, that is DNA coding.”

“He rebuilt it to heal himself, too?”

“Would he not? Accidents happen.”

“*Needle*. Has he added weapons?”

“Yes, and mastered mine, and boosted my thrusters beyond sane safety limits—”

“What’s he doing now?”

In the holoscreen, the black silhouette of Tunesmith wasn’t doing anything. All the action was in deep space, where a point was moving away from the Ringworld at high speed.

“A very agile ship with a miniature cabin. A small Hanging People protector is the pilot,” the Hindmost said. “Little fuel, large thruster and reaction motors, weapons not from my library. As you saw, launched via linear accelerator, fuel used only to dodge and decelerate. Tunesmith names it *Probe*.”

Probe was hard to see when its motor was off, but the motor was sputtering now as it dodged plasma weapons and missiles and, somehow, even lasers.

Tunesmith’s instruments followed it out toward interstellar space. The Ringworld system retained its comets. They were no threat to the Ringworld; there were no big masses to change their orbits and hurl them inward. Ships of half a dozen species had been hiding among the comets ever since Chmei and Louis revealed the Ringworld’s existence, thirty-five years ago.

Now ARM ships—human-built, serving the United Nations police—streaked in from offscreen. *Probe* lit like a flashbulb—*guessed wrong about a laser!*—and vanished.

Tunesmith’s screen swung wide, following nothing obvious...

“Hanging People” was a generic designation for hominids who lived a monkey lifestyle. Some weren’t sapient. A Hanging People protector would still have at least human intelligence. Hastily trained for spaceflight, it might outguess ARM defenses, but Tunesmith would still outthink it, would still keep control.

Tunesmith’s telescope swung half around the sky, a hundred and eighty degrees, or nearly that. Tunesmith’s viewpoint focused on a fuzzy object... a comet, loosely packed ice drifting apart. The

on a spacecraft emerging from within the cloud.

~~It was lens shaped, painted black with vivid orange markings in the dots-and-commas of Kzinti script.~~

“Markings name it *Diplomat*,” the Hindmost said. “We’ve observed. It seems well armed, but never enters the singularity around the Ringworld star. Always it lurks among the comets. Always can flee in hyperdrive.”

“Doesn’t sound like Kzinti.”

“They learn. I deem it the command ship for the Patriarchy fleet.”

Probe was back. It had circled Ringworld’s sun through hyperspace in less than thirty minutes. No its huge intrinsic velocity carried it inward, and straight toward *Diplomat*.

Word from the other side of the sky would not have reached *Diplomat* yet. Minutes passed before *Diplomat* reacted. Then threads of interstellar dust glowed a bit in *Diplomat*’s laser fire, and a handful of tiny ships zipped out of the comet cloud. *Probe* began dodging. A laser: *Probe* flared brilliantly. Louis squinted; Tunesmith’s screen wasn’t built to protect viewers from blindness. *Probe* dodged out of the beam and into a scintillation of impacts and was still going.

“General Products hull?”

“No. Tunesmith has armored *Probe* in *scrith*, in Ringworld floor material.”

Another ship popped out nearby, just long enough for Louis to get a good view. It was much larger than *Diplomat*, a transparent sphere with complex machinery packed tightly inside the hull... gone.

“*Long Shot*,” Louis said, anger rising.

“I saw it,” the Hindmost said.

“They ran. Kzinti don’t do that.”

“*Long Shot* is being used for courier service. Too valuable to risk, and the Patriarchy will not have found room for armaments.”

“ARM and Patriarchy were supposed to *share* that ship.”

Probe was too near the lens ship, accelerating sideways to get around it while fighting pyrotechnic displays and lesser ships. Suddenly there was actinic light. Louis’s eyelids clenched. When he could see again, *Probe* was gone.

“What the futz was that?” he demanded.

“Antimatter weapon. The newer ARM ships are all powered by antimatter, but we had not seen its use by the Patriarchy. They must manufacture their own in a particle accelerator somewhere. The ARM has a source, an antimatter solar system.”

“Antimatter. Hindmost, that makes the Fringe War a *lot* more dangerous. The Ringworld is too fragile for this.”

“Duh.”

“What’s he doing now?”

The shadow of a protector leapt from its chair, arced like a ballet superstar across the view of comets and warships, touched down and was gone. A hand like a sackful of ball bearings closed on Louis’s forearm, and he spasmed like a man electrocuted.

“Louis! Good, you’re awake. Without you this would have been difficult. Hindmost, come out there. Danger does not await our convenience. Louis, are you all right? Your heartbeat sounds funny.”

INTRODUCTION TO SVETZ AND THE BEANSTALK

This book derives from events of more than thirty years ago. When I was still a novice, I had an insight that delighted me:

Time travel is fantasy.

But the only way to get fun out of it is to treat it as *Analog*-style science fiction. Keep it internally consistent. Lay out a set of rules and invite the reader to beat you to the consequences.

Hanville Svetz doesn't know that time travel is fantasy. He was born deep into a future polluted to match the sorriest predictions of Greenpeace. Most life-forms are extinct by Svetz's time. To Svetz, the creatures of the past may be strange, dangerous, horrifying; anything but surprising. Svetz has the scientist's talent: he can wrap a theory around what he finds, rather than altering the evidence to fit the theory.

I dreamed up "The Flight of the Horse" one morning, spent the afternoon outlining it, and told it as a cocktail party story that night, without losing any listeners. You can't do that with every good story, but *when* you can do that, the story is *ready*.

I sold "Leviathan!" to *Playboy* magazine. It's the only time I've ever managed that. *Playboy* was a joy to work with. Editorial work was minimalist, all changes explicitly described, and the money was good too. I sent them "Bird in the Hand" too, but they sent it back.

"There's a Wolf in My Time Machine!" was set in an altered version of the Haunted House ride at Disneyland. The characters are alternate-timeline versions of the Keeshond show dogs I grew up with.

Time travel is fantasy! And the universe of fantasy is large... but after "Death in a Cage" I decided the joke was played out.

* * *

In the 1970s, Carl Sagan persuaded Kip Thorne, a world-class mathematician, to design him a time machine for a science fiction novel. Tipler got interested in the challenge, and other mathematicians joined in.

The time machines that emerged are solid science fiction, if you'll accept that the Ringworld is possible. That is, they require exotic materials and construction techniques, and the engineers need near-godlike powers. But give them these, and all the laws of physics hold except what has never been proven: the law of cause and effect.

These time machines look less like a Delorian automobile than a freeway. You can't ride on a freeway except where it's been built! That is, we won't be seeing time travelers because the freeway hasn't been built in our time. Time travelers will already have godlike powers before they can travel in time... unless we should chance to find somebody's abandoned freeway... .

But in any era previous to the 1970s, time travel is fantasy.

Worlds don't disappear on me.

A notion was kicking around in my head... and on my computer disks, once Jerry Pournelle talked me into switching from a typewriter. For a quarter of a century I would occasionally stumble across "Beans": my file of disorganized notes comparing "Jack and the Beanstalk" to the orbital tower invented by Tsiolkovsky and later popularized in several stories including Arthur Clarke's *The Fountains of Paradise*.

I knew by then that I wouldn't ever lack for story ideas. "We are the masters of time," as Svetz says. "Svetz and the Beanstalk" could wait.

In 1990 a leaflet from Dangerous Visions, a bookstore in Van Nuys, alerted me that Terry Pratchett and Neal Gaiman would be in to autograph *Good Omens*. That sounded like fun. I'd barely discovered Neil Gaiman, but already I would buy anything by Terry Pratchett. I went to say Hi.

His flight had been delayed by six hours.

We went back to my place. I didn't know how that would work out, but Marilyn and I have one of the better art collections, and I have some computer games, or we could hike Mulholland... .

Nah. We started talking collaboration and spent our whole time that way. I tossed in the notion of Beanstalk that's a plant. We carved out a loose novel structure from there.

And I've got those notes around somewhere, but I've never looked at them since.

We live eight time zones apart. He admitted to a tendency to blitz: to start writing and never quit. These things might make a collaboration awkward. Unless I could get the jump on him, he'd wind up handing me completed text!

But we were both involved in other projects. The Beanstalk would wait.

My first published story, set on Mercury, was obsolete before it hit print. When the world was told the truth about Venus' surface temperature, I was just behind it with "Becalmed in Hell." The astrophysicists kept changing Mars on me, and I wrote a string of stories to keep up.

Then I fell behind.

Now it's the nineties, and every hard science fiction writer has written a Mars story. *Red/Green/Blue Mars*, *Moving Mars*, *Mars Underground*. With competition like Robinson, Greg Bear, William Hartmann, how was I going to find anything *new* to say? If I wanted to write about Mars, I would need another approach.

Then it all came together.

When a story is ready to be told, I write.

I started *Svetz and the Beanstalk* on a portable computer aboard a cruise ship docked at Ensenada, Mexico. We'd already seen the Blowhole. Marilyn went off to shop. I set up my laptop computer in the lounge that sells cappuccino, and began writing.

I saw nothing impossible about writing two Beanstalk stories, the second with Terry Pratchett... .

Except that I never leave anything out. It was my first insight as a writer. Never hold anything back from the reader. It was basic to Robert Heinlein's style too. Take one idea and explore every implication.

Yggdrasil (and a lot of Norsemen) was one of Terry's suggestions. A lot of that six-hour conversation must have worked its way into the novel.

Worried and embarrassed. I e-mailed Terry and told him what had happened. His opinion matched mine: ideas are cheap, it's the writing that makes them golden. He tells me he's ready to write a Beanstalk novel too. But, set on the Diskworld, it's likely to follow wildly different physics.

Then there's Suzanne Gibson. I met her through her husband, Warren James, who runs *Hour 25*, a local radio show, on Friday nights. When I was deep into Svetz and time travel and Mars, Suzanne volunteered to do some of my research.

The chapter heads all came from her. It seems as if every separate branch of humanity has its own

tower to Heaven. I found some wonderful quotes from South America too, but I lost them.

So this is my take on Mars, and Yggdrasil, and (again, God help me) the space program.

What came before doesn't count. We always build from *now*.

Jacob's ladder. *Typifies a soul's approach to perfection. A universal axis or World Tree. Equates with Ama-no-Hashidate, the Beanstalk, Lugh's chain, stem of Jesse, Yggdrasil.*

—Dictionary of Mythology, Folklore and Symbols,

by Gertrude Jobes

A flyer ruptured and began to sink in a scattered cloud of men.

Mars still pulled like a planet. The flight stick was lifting at maximum, but Svetz's belly still thought he was sliding down a smooth glass hill. But the treescape slowed, slowed... until the black forest was a world-sized bulge above him and he was starting to float back up.

Miya drifted alongside. Below them the trunk was infested.

Svetz had barely heard of termites. He had to picture something like Von Neumann nanotechnology machines turning living wood into more of themselves until there was nothing left but the machines. It looked like that, just a haze of motion, until he turned up the zoom.

He had not anticipated that the wealth and power of Mars, five hundred and fifty years before Earth's first atomic bomb, could match the wealth of the United Nations of 1108 AE. But armor and manpower of that order was crawling up the tree at them.

The twinkling wasn't all mirrors. Close below them, slender man-shapes were fighting green-clad six-limbed giants. Faceplates winked like silver mirrors. Here and there were twinkling blades. Stick-figure shapes, improbably tall, moved about the trunk undisturbed, observing the fighting like hundreds of wandering referees.

Svetz said, speculating, "It's a technology race, like the First Cold War. Somebody saw us using tools that no Martian has. They can't let anyone else get to us first. We came to rob them. They're all swarming up the tree to be first to rob *us*."

One of the factions was getting too close. Svetz saw puffs of gunfire. Swords or not, they still had kinetic projectiles.

"Let's get into cover," Miya said. The forest flared briefly and left a charred tunnel. Miya jetted into it. Svetz fired rockets and followed.

It was soft, cushiony. Wriggle through, wriggle down. "That's me behind you, so don't shoot."

"Good. I don't see any parasites," Miya said. "Or seeds."

Even seeds of Earth could take *any* shape. Pinecones, spiky peach pits, smooth almonds, green melons with tiny seeds, avocados, acorns, sesame.

Whatever their form, skyhook seeds would look all alike. They might be armored against reentry heat. Otherwise Svetz had no idea what to look for, and Miya of Space Bureau had even less. He was seeing nothing but foliage—

"Have a look here," Miya said.

He saw her below, by pink Marslight. He wriggled down beside her. They'd left most of the trees above them now, and Mars was close below. They peered down through a hole in the sky.

The lower sixty clicks of tree were swarming with troop carriers and cargo vehicles. Miya said, "I'm wondering—"

The tree shuddered. They had that instant's warning, and then the trunk lashed like a whip.

It was worse than any earthquake. Svetz was totally disoriented. His arms and legs strangled a black

branch that was trying to fling him into the sky. His grip was being shaken loose.

Eerily calm was Miya's voice. "Hanny, I've lost my flight stick. Can you come and get me?"

"What was that?" The tree was shuddering still. Miya was nowhere in sight.

"Don't know. Don't care yet. Come and get me."

She was falling!

Stop a moment. Think. "Was it lifting?"

"My flight stick? No. Maybe it stayed in the tree."

Svetz saw it wedged in branches. He reached, and the tree shook it and him out like overripe fruit.

He was spinning down, dizzy and disoriented, with his own flight stick in one hand and the other falling with him.

A flare of rockets sent him close enough to grab.

"I've got them both. Wait one." He wrapped himself around his flight stick, gripped the other in his armpit, and barely stopped himself from twisting the lift throttle. He'd lose her if he lifted!

"Miya, you've got your rocket pack. Find me and come get your flight stick. Do it before we both burn up."

"Understood. Can you see me?"

"No! You're the same color as Mars! Who picks your wardrobe? Look for me; I'm green and I'm turning on my blinks."

"Blinks, aye aye."

"We'll make great targets. Oh, *futz!*" He screamed in terror as the tree ripped loose.

Whatever was happening below was half hidden in a cloud of chaff. Some of that chaff was vehicles and men. The tree's lateral surge must have shaken most of its parasites loose. The torn base of the rising tree trailed wood chaff and artifacts: twisted silver rails, pressure suits of human and nonhuman shape, falling sky ships. A falling lift cage: men and green giants and big crabs were swarming out around it, and what they hoped to accomplish was beyond Svetz.

Svetz's emergency suit lights were scintillating in preprogrammed panic. He was a clear and vivid target. Maybe Miya—

"I see you, Hanny."

—Maybe Miya would get to him before anyone else. And there she was, a flickering orange flare rising past him. Svetz twisted the flight stick throttle hard over. "Do *not* make your burn. I'm chasing you," he called.

She was there again, coming down, and he twisted again to kill the lift, rockets too close. "Let me do the docking—"

"Just give me the flight stick!" she screamed. He hadn't guessed how frightened she was. She snatched at the brush discharge with both hands, and had it.

The tree's torn base rose past them, big as a wooden moon. He glimpsed Miya again, high above him on the flight stick, and lost her. They were falling fast. Already he could hear a whisper of wind. They'd burn as meteors if they couldn't kill their velocity.

It was not a time to worry about staying together.

Her voice was clear, almost calm. "Too much weight on the tree. They overloaded it."

"Are you all right?"

"Decelerating. I lost it for a moment there, Hanny. Look out overhead, there's a lot of *futz* falling around us."

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