

BRIGHT
OF THE SKY

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KAY
KENYON

BOOK ONE *of* THE ENTIRE AND THE ROSE



an imprint of **Prometheus Books**
Amherst, NY

Published 2007 by Pyr®, an imprint of Prometheus Books

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11 10 09 08 07 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data

Kenyon, Kay.

Bright of the sky / Kay Kenyon.

p. cm. — (The entire and the rose ; bk. 1)

ISBN 978-1-59102-541-2 (alk. paper)

I. Title.

PS3561.E5544B75 2007

813'.6—dc22

2007001608

Printed in the United States on acid-free paper

For Mike Resnick

ACKNOWLEDGMENTS



MANY THANKS TO THE EARLY READERS of this manuscript: Karen Fishler; Barry Fishler; Gary Nunn; Barry Lyga; and, as always, my husband, Tom Overcast. Their comments and suggestions greatly improved the story and saved me from embarrassing lapses. Bravo for those who take on a first read! Barry Lyga was kind enough to read the novel twice, and my husband, well—we've lost count. I am grateful for the insights offered by Robert Metzger, although I took liberties with the science above and beyond all advice. I am indebted to my agent, Donald Maass, for big-picture perspectives that can be lost in the tangle of pages. His belief in this story played a major role in keeping me on task in writing the first book and keeping faith with the coming three. During these years of concentration on *The Entire and the Rose*, I benefited greatly from the support and wisdom of Mike Resnick. Coincidentally, it was Mike who first collaborated with me on a short story sold to an editor I hadn't worked with before, Lou Anders. I am delighted to team with Lou and Pyr for the debut of my first series.

*Storm wall, hold up the bright,
Storm wall, dark as Rose night,
Storm wall, where none can pass,
Storm wall, always to last.*

—a child's verse



PART I

**WHERE
NONE
CAN
PASS**

CHAPTER ONE



MARCUS SUND CAME AWAKE ALL AT ONCE. “Lights,” he said.

The cabin remained dark. “Lights,” he repeated, louder this time, but with the same result. He sat up. The station hummed with life support—the ProFabber engines churned in their colossal duties—but something was missing from that profound vibration.

He dressed hurriedly, toggling the operations deck as he yanked his shirt on. “Report.”

“Sir, we have some minor failures in noncritical functions. We’re on it.”

Marcus left his cabin and hurried down the corridor. The lights browned and surged back again. The station exec knew his rig, down to the last bolt and data structure, and therefore he could feel through the soles of his feet that the hum was wrong, the vibration of the carbon polysteel deck plates a few cycles off. That worried him far more than the flickering lights.

The station’s military-grade ProFabber engines simultaneously churned out artificial gravity and monitored the Kardashev tunnel, calming it for company business—the business of interstellar travel. With such critical functions, the engines were under the control of the on-station machine sapient. Thus, if engine performance fell even slightly, and if the system hadn’t alerted Marcus Sund by now, that meant the mSap—the station’s sole machine sapient—was not paying attention. It was unthinkable that the machine sapient was not paying attention.

They were far from home. The Appian II space platform orbited a stellar-mass black hole, stabilizing it. From their position deep in the Sagittarius

arm of the Milky Way near the Eagle nebula, the Earth's sun appeared as a mere dot in the constellation Taurus. Even with Kardashev tunnel transport, the Appian II depended utterly on the station and the twenty-third century AI that ran it. The platform contained living quarters for 103 crew, an advanced research laboratory, and Marcus Sund's entire career.



As Marcus approached station ops, twenty-year-old Helice Maki met him in the corridor. Six years ago she had been the youngest graduate in the history of the Stanford sapience engineering program, a fact that she mentioned with annoying frequency. He didn't like her, but he needed her now. By the expression on her face, she felt it too—that something was wrong.

"I'm going in," she said, nodding at the Deep Room, site of the interface with the quantum sapient.

"Go," he said. The sapient had better not be in trouble, but if it was, Helice Maki could deal with it.

With a sickening blare, the klaxons burst to life. As Helice disappeared into the Deep Room, Marcus rushed to the operations suite a few doors down. Here, tenders were on task, deadly serious. The deputy exec reported that in the last two minutes, the ProFabber engines had powered down to maintenance level, abandoning the K-tunnel. It could hardly be worse news, not because the tunnel had to work, but because the mSap had to. They were dead without it.

"Lock out the mSap from expert systems," Marcus ordered. He had to nod at his deputy to reinforce the order. They were isolating themselves from their central computation resource, a logic device with perhaps limitless capabilities. Now they must fall back on the workhorse savants—simple tronic computers, wickedly fast, duller than stumps. The K-tunnel as a transport route was off-limits for now, but they could clean it up later. They could get through this, Marcus thought, while the word *runaway* kept stabbing at him.

From the Deep Room, Helice's voice came over the comm, throaty with emotion. "Get in here, Marcus."

Ops was erupting with reports from all stations, all decks: *Tronic systems*

failing; K-tunnel functions, off-line; extravehicular communication arrays, off-line; life-support systems moved to auxiliary power. Onboard host experiments terminated; memory caches dumping data, slaved to the mSap for incoming data.

The deputy exec turned to Marcus. “The mSap is hijacking storage capacity from every embedded data structure on station, and slaving it to itself, commanding all station power, and locking out both human and savant overrides.”

Runaway. Marcus brushed the thought aside.

But people in the room heard the assessment, and exchanged glances of disbelief. Not one of them, including Marcus, had ever seen a rogue machine sapient. Stories had it that once an mSap got away from its handlers, it could quickly form goals of its own—a chaotic state known as *obsession*. Pray God this mSap had not acquired one.

Leaving his deputy in charge, Marcus hurried down the corridor to the sapient domain, took a chair in the anteroom, and punched up a screen so that he could see Helice Maki at work inside the Deep Room.

She came on-screen, talking to him as she worked the sapient. “Secure this channel.” He obeyed.

Surrounded by the simulated quantum output, and talking in the sapient code language, she pointed her indexed thumb at sections of the sapient’s mind-field. To Marcus, it looked like she was dancing—or conducting a symphony.

In between code talk, Helice spoke softly to him: “It’s an incursion. We have a worm loose in here.”

“That’s not possible,” Marcus snapped. He’d never used such a tone with Helice Maki before, especially given the rumors of her impending installation as a company partner.

She ignored him. “There are missing responses, rogue strands. I’m beginning error correction.”

“Don’t do that; we’ll lose everything.” It had taken three years to coach this mSap to oversee a space platform. Retraining it would be an ugly smear on his reputation.

“We’ve already lost everything. It’s on a mission, and it’s not mine. Or yours. Isolate the savants from this rogue.”

“I’ve already done that.”

“Okay, okay,” she said, preoccupied. She pointed her hand where she wished to retrain, talking the gibberish of the sapient engineer, looking almost ecstatic, like a believer getting a dose of Jesus.

As he waited for her, he tapped into the comm. “Report.”

“Marcus, we’ve got an imminent life-support failure on deck four. If we evacuate, we’ll lose connection with the main nutrition fabber.”

Food was the least of his worries right now. “Evacuate. Take all self-contained life suits off the deck.” He knew how that sounded. Like they’d need them.

The sapient grooming staff trickled in, leaning against the wall in the small anteroom, waiting to help—or to throw themselves on the funeral pyre. Anjelika Denhov arrived first, with three postdocs trailing her, looking ill. Their research had been running on the mSap. They could pray they hadn’t touched off this disaster.

Marcus saw his career imploding. He thought they’d live through this—Christ, this was a Minerva Company main K-tunnel station, of course they would survive—but his career was over. On his watch, they were abandoning a deck, yanking critical science lab work, dumping all data, and, worst, retraining an mSap. His stomach tumbled in free fall, like his career, heading to a permanent landing in the warrens of the damned. There, the majority of people were unemployed, living off the dole, feeding on the Basic Standard of Living and virtual entertainments, sustained by the wealth of the Companies—the behemoth economic blocs that fueled the world. His parents took the dole, and all his siblings, and all his cousins. He was the only one who had tested strongly enough to groom the sapients, and then, groom the groomers. He had risen high. Looking down, he could see how high.

From the screen, Helice had stopped her dance. “Oh my God.”

After a beat Marcus prodded, “What, what is it?”

She stepped in closer to the knot in the display, a tangle of virtual quantum waves. She mumbled something in code. Then: “It’s a simple evolutionary.” She turned toward the optic and said, “Someone’s let loose a god-damned evolutionary program. And it’s in its three hundred and ninth generation.”

Marcus leaned into the audio pickup. “That could be EoSap, it still could be,” he said, wanting to blame Minerva’s arch competitor and not one of their own crew.

“No. This is a basic vector that any groomer could deliver to the sapient. Somebody sat in your chair out there, Marcus, and goddamn typed in an evolutionary training sequence.”

“If it’s simple, then yank it out,” Marcus pleaded.

She glared into the optic. “It’s not simple anymore.” She turned back to the cocoon of light surrounding her, mesmerized by the visions she saw in the Deep Field.

Rumaway, Marcus thought again. If the mSap had broken out of control, it was in danger of grabbing every resource, every qubit it needed for whatever it was doing. Such things had been seen before. The Jakarta runaway, for one, when an evolution-driven mSap had nearly taken over the world’s entire fleet of orbiting comm satellites. Korea had responded with nuclear strikes, leaving the island of Java a radioactive slag heap.

“Who’s had access here?” Marcus glanced at Anjelika Denhov, who had better know what her postdocs were up to. The people in this room were the only ones who could have interfaced with the mSap.

Anjelika turned to her three gangly charges. “Well?” She eyed them each in turn.

No movement. The team looked slightly green in the glow from the Deep Field room.

“Anybody got a theory?”

Under her stare the newest of them, Luc Diers, swallowed hard. “It was me,” he said.

Marcus turned on the youngster. “Talk. Talk fast.”

“I was just trying to salvage my program.” Luc glanced at Anjelika, his PhD adviser. “I didn’t want to fail.” Realizing that he still had the room’s attention, he stumbled on: “I kept getting nonsense readings, and I couldn’t fix it. I had no idea the mSap would take an interest. Would commandeer everything.”

Marcus didn’t know if he was relieved or sickened that it was one of his own crew.

Luc told about his simple, evolving program that was supposed to reconfigure his experiment on fundamental extragalactic particles so that it was back on track and not outputting data on impossible particles. Particles never seen before. Luc was going home next week. He wouldn't have time to restart the program. It was just a minor program running on the mSap. He thought no one would notice.

Listening in, Helice exploded. "You thought no one would *notice*? You let go of your program goal and assigned it to my sapient?" Luc stared at the floor, and Helice turned away in disgust, concentrating again on the Deep Field.

They all watched, transfixed by the sight of a woman trying to tame a quantum monster. The eerie light flickered on her face like a tormented mind probing for comfort from the one person on-station who could understand it. She murmured, "It's analyzing an anomalous structure. A profound goal that it can't reach. And it's getting lost."

"God help us," Marcus said. He leaned into the comm. "Call Mayday."

The audio responded, "Sending." The nearest help was weeks out of the system.

Helice walked out of the Deep Room, pulling off her data rings. Glancing at Anjelika, she asked, "Which one?" Anjelika nodded at the unfortunate postdoc, who cringed under Helice's predatory stare. "Name?"

"Luc Diers."

"All right, Luc," she said in a too-smooth voice, "describe the anomalous readings that you retrained my sapient to fix."

Luc winced hearing this characterization of his crime. "Neutrinos," he said.

The group stared at him, waiting. He plunged on. "I had impossible neutrinos. Wrong angular momentum, wrong spin state. Reversed, actually."

"Meaning?" Marcus snapped.

Anjelika broke in: "Think of it like the direction of corkscrewing. Neutrinos go to the left."

Luc added, "And the ones I kept registering went to the right, if you want to think of it that way. And the readings were coming from everywhere at once. So it was garbage. Unless it was evidence of another dimension, it was garbage."

Helice put up a hand to stop others from interrupting. "What do you mean, *dimension*?"

"Space-time construct. Universe." Meeting blank stares, he went on, "Nature creates symmetry all over the place, except at the subatomic scale. So some folks figure the missing symmetry is in other universes. Like right-turning neutrinos are in the fifth dimension, and orthopositroniums' missing energy is there. It's all in other dimensions."

Marcus stood and fixed a blank and hopeless gaze on Luc Diers. "Kiss your ass good-bye, son."

Luc nodded. "Yes, sir."

Helice said, "Get out of here, all of you. Except Marcus and Luc. Make yourselves useful somewhere." When they left, she said, "The mSap wants this station, Marcus. And it's taking it."

He nodded, strangely calm, now that he knew the worst. *Runaway*. He glanced at the Deep Room. "Kill it."

"And kill the station?"

A small moan came from Luc as the reality of their disaster sunk in.

"Maybe we can still salvage life-support systems," Marcus said.

"You can't. It's dissolved your networks. You don't have any networks left."

"We've got expert systems."

"That can't talk to each other."

He glanced at the room again. "Kill it, Helice." If they could. There was the Jakarta runaway. It had copied itself into a thousand home computers moments before decoherence.

"First I'm downloading the mSap output." Leaning over the keyboard, she shunted the data into a high-storage optical cube. She was taking it home. She was leaving. "Prime the shuttle and get us a pilot. You can assign whoever you want in the remaining seats." She cocked her head at Luc. "He's coming with me." Her face softened. "You come too, Marcus."

He heard her as in a dream. "Put the sapient down, Helice."

She looked at him a long moment. "Putting down the mSap." She leaned over the control board and typed in the command to collapse wave function. To blow its quantum nature, that of being in several places at once, they

needed to shatter the quantum isolation. Turning on the lights inside the domain could do it.

And did. In an instant, the \$1.3 billion demigod snapped into decoherence.

A soft whine came from the Deep Room, high-pitched and eerie. Aside from terror, Marcus felt relief. At least they could still kill it.

As they opened the door into the corridor, the sickening blare of the klaxons ballooned louder.

“Meet me at the shuttle bay,” she said, already heading out the door.

In automatic problem-solving mode, Marcus began prioritizing the remaining shuttle seats. Send home nonessential personnel. The researchers, the support techs, the . . . he let a wave of nausea pass through him. He decided on the six people who’d fill the remaining shuttle seats. He wasn’t among them.

His rig. His watch.

Hurrying down the corridor, Helice had Luc by the arm, heading for the shuttle bay, avoiding running but wasting no time. She clutched the data cube. The quantum platforms didn’t travel, of course. Too leaky, too vulnerable.

“I’m sorry,” Luc whispered.

Helice nodded. “Yes. Yes you are.” Sorry was only the beginning of his troubles. But first they had to launch out of here. With the mSap down and the savants isolated from each other, the station now ran on human-powered thought, which, as the case of Luc Diers demonstrated, often went awry. Hurrying down the corridor, she debriefed Luc, wringing the salient details from him, of his research gone wrong.

Then, herding him into the domain of the executive quarters, she made a quick stop for Guinevere, her pet macaw.

“Carry this,” she told Luc, passing the hooded cage to him. Guinevere gave a harsh bleat of protest as they rushed on to the launch bay.

A pilot, disheveled and pale, joined them there. Four others trickled in to join them, their faces betraying wild-eyed panic.

As they began finding their seats, she went forward to talk to the pilot. “Before you do anything,” she told him, “isolate your onboards from all station contact.” At his confused expression, she said, “Sapient’s got an obsession. It’ll eat your tronics for a snack.” The mSap was dead, with any luck. But it hadn’t been a lucky day so far. He nodded, somber.

“And go, go now.”

“Still waiting on two more passengers, Ms. Maki.”

“Not any more. Get out of here if you want to save the passengers you have.”

Back in the passenger cabin, she strapped Guinevere’s cage into one of the seats, then herself, as the engines hummed to life. Luc followed suit, looking stunned. She held her hands in a firm clasp to keep them from shaking. She didn’t give the station a snowball’s chance in hell. Go, go, she urged the pilot.

They launched, easing out of the bay, vernier thrusters working.

Holding the cube in her hand, Helice stared at it. She’d made a snap decision that Luc’s discovery was real. Because the mSap had taken right-corkscrewing neutrinos seriously. Because it had marshaled the entire resources of the station to cache its output, pursuing a problem so deep and long that it must be the toughest question in the history of quantum sapients. Helice had known all this, standing in the Deep Field, gazing into the obsession. It suggested not a sapient run amok, but a sapient probing the most astonishing question: Where had the right-turning neutrinos come from? And how could the source’s mass exceed that of the universe?

With the shuttle under way, she looked out the viewport, seeing the lights dim on the top deck of the station. Then another. Deck by deck, the platform was powering down. They would freeze to death before their air ran out. She tried not to think about the dying, but the two empty seats next to her kept the thought fresh. She patted Guinevere’s cage absently, seeking comfort.

They sped homeward. She clutched the data cube in her pocket, all that remained of the mSap and its journey next door. Into an infinite land.