



Moonwar

Book II of The Moonbase Saga

Ben Bova

CONTENTS

- [Prologue MOONBASE CONTROL CENTER](#)
 - [Part I Skirmish](#)
 - [Part II Siege](#)
 - [Part III Battle](#)
-

War is an evil thing, but to submit to the dictation of other states is worse... Freedom, if we hold fast to it, will ultimately restore our losses, but submission will mean permanent loss of all that we value... To you who call yourselves men of peace, I say: You are not safe unless you have men of action on your side.

-Thucydides

Once we have lived through the rapid changes that are now marking our transition from the third to the fourth phase of history, from a period of diversification to one of unification, we shall be squarely faced with a number of serious problems...

It has been shown by many social experiments that man cannot control every facet of life. All we can do is to try to isolate the factors that are the keys to the entire structure, and to work on them. These are basically: the conservation of natural resources; power-production; population-control; the full utilization of brainpower; and education. The details of the social structure will fall into place automatically as the end product of all these forces; as they always have done...

Political unification of the world is not the first necessary step. By the time it has become possible without turmoil, it will also have become unnecessary.

-Carleton S. Coon

PROLOGUE: MOONBASE CONTROL CENTER

[Contents](#)—[Next](#)

"L-I's out."

The chief communications technician looked up sharply from her keyboard. "Try the backup."

"Already did," said the man at the console beside her. "No joy. Every frequency's dead."

The third comm tech, seated at the console on the chief's other side, tapped one keypad after another. His display screen showed nothing but streaks of meaningless hash.

"They did it," he confirmed. "They pulled the plug."

The other controllers and technicians left their own stations and drifted tensely, expectantly toward the communications consoles. Their consoles flickered and glowed, untended. The big electronic wall screen that displayed all of Moonbase's systems hung above them as if nothing unusual was happening.

The chief pushed back her little wheeled chair slightly. "They did it right when they said they would, didn't they?"

"That's it, then," said the male comm tech. "We're at war."

No one replied. No one knew what to say. The knot of men and women stood there in uneasy silence. The only sounds were the low humming of the electronics consoles and the soft whisper of the air-circulation fans.

"I'd better pipe the word up to the boss," the chief technician muttered, reaching toward her keyboard. She started to peck at the keys.

"Shit!" she snapped. "I broke a fingernail."

PART I: *Skirmish*

[Contents](#)—[Prev/Next](#)

TOUCHDOWN MINUS 116 HOURS 30 MINUTES

Douglas Stavenger stood at the crest of Wodjohowicz Pass, listening to the silence. Inside the base there were always voices, human or synthesized, and the constant background hum of electrical machinery. Out here, up on the mountains that ringed the giant crater Alphonsus, he heard nothing but his own breathing—and the faint, comforting whir of the spacesuit's air circulation fans.

Good noise, he thought, smiling to himself. When that noise stops, so does your breathing.

He had climbed down from the tractor near the spot where the plaque was, a small square of gold riveted onto the rock face, dedicated to his father:

On this spot Paul Stavenger chose to die,
in order to save the men and women of
Moonbase.

Doug had not driven up to the pass for the sake of nostalgia, however. He wanted to take a long, hard look at Moonbase. Not the schematic diagrams or electronic charts, but the real thing, the actual base as it stood beneath the uncompromising stars.

Everyone in the base thought they were safe and snug, dug into the side of the ringwall mountain they had named Yeager. Sheltered by solid rock, they had little fear of the dangers up on the airless surface, where the crater floor was bathed in hard radiation and the temperature could swing four hundred degrees between daylight and night, between sunshine and shadow.

But Doug saw how terribly vulnerable they all were. They had protected themselves against the forces of nature, true enough. But now they were threatened with destruction by the hand of war.

Doug looked out at the solar farm, thousands of acres of dark solar cells that greedily drank in sunlight and converted it noiselessly into the electricity the base needed the way a man needs blood. They could be blown to dust by conventional explosives or blasted into uselessness by the radiation pulse from a nuclear warhead.

Even easier, he realized, an enemy could knock out the radiators and we'd all stew underground in our own waste heat until we either surrendered or collapsed from heat exhaustion.

His eyes travelled to the rocket pads. They were empty now that the morning's lunar transfer vehicle had loaded up and departed. Beyond, he saw the geodesic dome that sheltered the construction pad; inside it, a half-built Clippership was being built by virus-sized nanomachines that converted meteoric carbon dust into the hard, strong structure of pure diamond. How could we protect spacecraft sitting out on the pads? We can't shelter them and we don't have the facilities to bring them underground. That dome is no protection against missiles or even bullets.

He looked farther out across the crater floor, to where the mass launcher stretched its lean dark metallic finger to the horizon. A single warhead could wreck it forever, Doug knew.

Well, we can't beat them in a shooting war, he told himself. That's certain.

Turning his gaze back to the edge of the solar farm, Doug saw the dark slick-looking

film on the ground where the nanomachines were busily converting the silicon and metals of the lunar regolith into more solar cells.

That's what this war is all about, he knew. Nanomachines. And he thought he could feel the trillions of nanos inside his own body. If I go back to Earth I'll be a marked man. Some crackpot nanoluddite will murder me, just the way they've killed so many others. But if the only way to avert this war is to close Moonbase, where else can I go?

His mind churning, he turned again and looked down at the deep pit that would one day be Moonbase's grand plaza. If we ever get to finish it.

All construction jobs begin by digging a hole in the ground, he said to himself. It doesn't make any difference if you're on the Moon or the Earth.

Under the brilliant illumination of powerful lamps spaced around the edge of the pit, front-loaders were working soundlessly in the lunar vacuum, scooping up dirt and dumping their loads onto the waiting trucks. Clouds of fine lunar dust hung over the machines, scattering the lamp light like fog. The first time I've seen mist on the Moon, Doug mused. Not a molecule of water in that haze, though.

All of the machinery was controlled by operators sitting safely inside their stations at the control center. Only a handful of construction workers were actually out on the floor of the crater Alphonsus.

I should be inside, too, Doug told himself. The deadline comes up right about now. I ought to be inside facing the music instead of out here, trying to avoid it all.

In the seven years of his exile on the Moon, Doug had always come out to the lunar surface when he had a problem that ached in him. The Moon's harsh, airless otherworldliness concentrated his mind on the essentials: life or death, survival or extinction. He never failed to be thrilled by the stark grandeur of the lunar landscape. But now he felt fear, instead. Fear that Moonbase would be closed, its potential for opening the space frontier forever lost. Fear that he would have to return to Earth, where fanatic assassins awaited him.

And anger, deep smoldering anger that men would threaten war and destruction in their ignorant, blind zeal to eradicate Moonbase.

Simmering inside, Doug turned back to the tractor and climbed up to its bare metal driver's seat. The ground here along the pass was rutted by years of tractors' cleats clawing through the dusty lunar regolith. He himself had driven all the way around these softly rounded mountains, circumnavigating the crater; not an easy trek, even in a tractor. Alphonsus was so big its ringwall mountains disappeared beyond the short lunar horizon. The jaunt had taken almost a week, all of it spent inside a spacesuit that smelled very ripe by the time he came home again. But Doug had found the peace and inner tranquility he had sought, all alone up on the mountaintops.

Not today. Even out here there was no peace or tranquility for him.

Once he reached the crater floor he looked beyond the uncompromising slash of the horizon and saw the Earth hanging in the dark sky, glowing blue and decked with streams of pure white clouds. He felt no yearning, no sense of loss, not even curiosity. Only deep resentment, anger. Burning rage. The Moon was his true home, not that distant deceitful world where violence and treachery lurked behind every smile.

And he realized that the anger was at himself, not the distant faceless people of Earth. I should have known it would come to this. For seven years they've been putting the pressure on us. I should have seen this coming. I should have figured out a way to avoid an outright conflict.

He parked the tractor and walked along the side of the construction pit, gliding in the dreamlike, floating strides of the Moon's low gravity. Turning his attention back to the work at hand, Doug saw that the digging was almost finished. They were nearly ready to start the next phase of the job. The tractors were best for the heavy work, moving large masses of dirt and rock. Now the finer tasks would begin, and for that the labs were producing specialized nanomachines.

He wondered if they would ever reach that stage. Or would the entire base be abandoned and left suspended in time, frozen in the airless emptiness of infinity? Worse yet, the base might be blasted, bombed into rubble, destroyed for all time.

It can't come to that! I won't let that happen. No matter what, I won't give them an excuse to use force against us.

"Greetings and felicitations!" Lev Brudnoy's voice boomed through Doug's helmet earphones.

Startled out of his thoughts, Doug looked up and saw Brudnoy's tall figure approaching, his spacesuit a brilliant cardinal red. The bulky suits smothered individual recognition, so long-time Lunatics tended to personalize their suits for easy identification. Even inside his suit, though, Brudnoy seemed to stride along in the same gangly, loose-jointed manner he did in shirtsleeves.

"Lev—what are you doing here?"

"A heart-warming greeting for your stepfather."

"I mean... oh, you know what I mean!"

"Your mother and I decided to come up now, in case there's trouble later on."

Nodding inside his helmet, Doug agreed, "Good thinking. They might shut down flights here for a while."

"How is the suit?" Brudnoy asked.

Doug had forgotten that he was wearing the new design. "Fine," he said absently, his attention still on the digging.

"Do the gloves work as well as my engineers promised me they would?" Brudnoy asked, coming up beside Doug.

Holding out a hand for the Russian to see, Doug slowly closed his fingers. He could feel the vibration of the tiny servomotors as they moved the alloy 'bones' of the exoskeleton on the back of his hand.

"I haven't tried to crush any rocks with them," Doug said, half in jest.

"But the pressure is not uncomfortable?" Brudnoy asked. "You can flex your fingers easily?"

Nodding again, Doug replied, "About as easily as you can in regular gloves."

"Ahh," Brudnoy sighed. "I had hoped for much better."

"This is just the first shot, Lev. You can improve it, I'm sure."

"Yes, there is always room for improvement."

The suit Doug wore was a cermet hard shell from boots to helmet; even the joints at the ankles, knees, hips, shoulders, elbows and wrists were overlapping circles of cermet. The ceramic-metal material was strong enough to hold normal shirtsleeve-pressure air inside the suit even though the pressure outside was nothing but hard vacuum. Thus the suit operated at normal air pressure, instead of the low-pressure mix of oxygen and nitrogen that the standard spacesuits required. No prebreathing was needed with the new design; you could climb into it and button up immediately.

The gloves were always a problem. They tended to balloon even in the low-pressure suits. Doug's gloves were fitted with spidery exoskeleton struts and tiny servomotors that amplified his natural strength, so he could grasp and work even though the gloves would have been too stiff for him use without their aid.

"Maybe we could lower the pressure in the gloves," Doug suggested.

"We would have to put a cuff around your wrist to seal-"

"Priority message.' The words crackled in their earphones. "Priority message for Douglas Stavenger."

Tapping at the keypad built into the wrist of his spacesuit, Doug said, "This is Stavenger.' He was surprised at how dry his throat suddenly felt. He knew what the message would be.

"All frequencies from the L-1 commsat have been cut off," said the chief communications technician. "Communications directly from Earth have also been stopped."

Doug's heart began hammering inside him. He looked at Brudnoy, but all he could see was the reflection of his own faceless helmet in the gold tint of the Russian's visor.

Swallowing hard, Doug said, "Okay. Message received. Thank you."

He waited a beat, then added, "Please find Jinny Anson for me."

"Will do."

An instant later the former base director's voice chirped in his earphones, "Anson here."

"Jinny, it's Doug. I need to talk with you, right away."

"I know," she said, her voice sobering.

"Where are you?"

"In the university office."

"Please meet me in my place in fifteen minutes."

"Right."

Doug turned and started along the edge of the construction pit, heading for the airlock in swift, gliding strides. Brudnoy kept pace beside him.

"It's started," he said.

"I'll inform your mother," said the Russian.

With a bitter smile, Doug replied, "She already knows, I'm sure. They couldn't declare war on us without her knowing about it."

TOUCHDOWN MINUS 115 HOURS 55 MINUTES

"So they've done it," said Jinny Anson, with a challenging grin. "Damn flatheads."

Anson, Brudnoy and Doug's mother Joanna were sitting before Doug's desk. Anson was leaning back in her webbed chair almost casually. Wearing comfortable faded denim jeans and an open-collar velour blouse, she looked vigorous and feisty, her short-cropped hair still golden blonde, her steel-gray eyes snapping with barely suppressed anger.

Joanna seemed calm, but Doug knew that her composed expression masked an inner tension. She had let her shoulder-length hair go from ash blonde to silver gray, but otherwise she looked no more than forty. She was dressed elegantly, as usual: a patterned coral skirt, its hem slightly weighted to make it drape properly in the soft lunar gravity, and a crisply tailored white blouse buttoned at the throat and wrists, where jewelry sparkled.

Seated between the two women was Brudnoy, his long face with its untidy gray beard looking somber, his baggy eyes on Doug. Brudnoy's dark turtleneck and unpressed denims seemed almost shabby, next to his wife's impeccable ensemble. His gray lunar softboots were faded and shiny from long use.

Although Doug's office was little larger than a cubbyhole carved out of the ringwall mountain's flank, its walls were smart screens from padded tile floor to smoothed rock ceiling; flat, high-definition, digital display screens that could be activated by voice or

by the pencil-sized laser pointer resting on Doug's desk.

Doug kept one eye on the screen covering the wall to the left of his desk; it was scrolling a complete checkout of Moonbase's entire systems. He needed to reassure himself that everything was operating normally. The other two walls could have been showing videos of any scenery he wanted, but Doug had them displaying the security camera views of the base, switching every ten seconds from one tunnel to another and then to the outside, where the teleoperated tractors were still working in the pit as if nothing had happened. The wall behind him was blank.

Feeling uneasy as he sat behind his desk, Doug said, "Now I don't want people getting twitchy about this. The base should run as normally as possible."

"Even though Faure's declared war on us?" Anson cracked.

"It's not that kind of a war," Doug snapped back. "There's not going to be any shooting."

"Not from our side, anyway," said Anson. "The best we could do is throw rocks at 'em."

"At whom?" Doug's mother asked testily.

"Peacekeeper troops," said Doug.

Everyone in the office looked startled at the thought.

"You don't think they'd really go that far, do you?" Anson asked, looking worried for the first time.

Doug picked up his laser pointer and aimed its red spot at one of the icons lining the top of the wall screen on his left. The wall became a schematic display of the Earth-Moon system, with clouds of satellites orbiting the Earth. A dozen navigational satellites clung to low orbits around the Moon, and the big crewed station at the L-1 position still showed as a single green dot.

"No traffic," Doug said. "This morning's LTV's stopped at L-1. Nothing at all moving between LEO and here."

"Not yet," muttered Brudnoy.

"They wouldn't invade us," Joanna said firmly. "That little Quebecer hasn't got the guts."

Brudnoy ran a bony finger across his short gray beard. No matter how carefully he trimmed it, the beard somehow looked shaggy all the time.

"That little Quebecer," he reminded his wife, "has fought his way to the top of the United Nations. And now he's gotten the U.N. to declare us in violation of the nanotech treaty."

Joanna frowned impatiently. "We've been violating that treaty since it was written."

"But now your little Quebecer has obtained the authority to send Peacekeeper troops here to *enforce* the treaty on us," Brudnoy continued.

"You really think it'll come to that?" Anson asked again, edging forward slightly in her chair.

"Sooner or later," Doug said.

"They know we can't stop using nanomachines," Joanna said bitterly. "They know they'll be destroying Moonbase if they prevent us from using them."

"That's what they're going to do, though," said Brudnoy, growing more gloomy with each word.

"Then we'll have to resist them," Doug said.

"Fight the Peacekeepers?" Anson seemed startled at the thought. "But-"

"I didn't say fight," Doug corrected. "I said resist."

"How?"

"I've been studying the legal situation," Doug said. "We could declare our independence."

His mother looked more irked than puzzled. "What good would that do?"

"As an independent nation, we wouldn't sign the nanotech treaty, so it wouldn't apply to us."

Brudnoy raised his brows. "But would the U.N. recognize us as an independent nation? Would they admit us to membership?"

"Faure would never allow it," Joanna said. "The little Quebecer's got the whole U.N. wrapped around his manicured finger."

"How would the corporation react if we declared independence?" Jinny Anson asked.

"Kiribati couldn't do anything about it," said Doug.

Brudnoy sighed painfully. "If they hadn't knuckled under to Faure and signed the treaty-"

"They didn't have much choice, really," said Doug. Looking straight at his mother, he went on, "But what about Masterson? How's your board going to react to our independence?"

"I'll handle the board of directors," Joanna replied flatly.

"And Rashid?"

She smiled slightly. "He'll go up in a cloud of purple smoke. But don't worry; even though he's the board chairman now I can keep him in his place."

"Independence," Anson murmured.

Doug said, "We're pretty much self-sufficient, as far as energy and food are concerned."