



There was a barked command behind him: "Attention!"

# The Möbius Room

By ROBERT DONALD LOCKE

**T**HE prisoner awoke beneath a glaring white bulb. He was immediately relieved to discover he was alone. The room, simply furnished and minus doors or windows, had blue walls that were bare except for a photograph—in medaled uniform—of the country's leader.

For furniture, there was the army cot on which the prisoner lay, a lavatory, and a writing desk with chair in the center.

Sitting up, the prisoner examined his clothing. At some time his captors had stripped him of his dingy blue serge

*It was more than a vicious circle—it was a vicious square*



business suit and provided him with gray denim and felt sandals. A search through his pockets produced cigarettes, a lighter and a stubby yellow pencil.

His chest began to ache and he stood up to exercise. The air, fresh and fairly cool, filled his lungs. He wondered if he had been drugged yet and recalled with a shudder what he had heard about the *pharmacoeopia of interrogation*. After the sweat came, he buried his face in the lavatory's nozzle spray.

Revived, the man studied his prison further. In one corner a trapdoor opened through the ceiling. He walked over and looked up; but, he could see nothing.

Shrugging, he sat down at the writing desk and laid a sheet of paper before him. Taking out the yellow pencil, he tried to review the day's events. What had happened? Where was he? Before his eyes there flowed a series of esoteric symbols, born from the nervous scribblings of his hand—but they were not recognizable in full.

He had been a mathematician, then.

But of what nationality? He found he had no recollection of his capture, or how he had been brought to this room. He was not even able to visualize his captors' appearance. In that case, narcotics had been used on him; possibly, several. *Lethene*, to destroy the details of his imprisonment; and probably *racefolia*, to injure his will to resist.

Then, his eye happened to meet the photograph of the nation's leader. A memory was reawakened that racked his body with shudders. He trembled in ague. There would be an interrogation. He ceased writing, aware now there would be no further clues buried in the engrams of his fingers. . . .

A CLANGING metallic sound behind him startled his nerves at that moment, so the prisoner's body froze in fear. As the hackles rose, he knew instantly that his control of cortical-thalamic responses had been severely damaged. His animal-like reaction to the

unknown noise told him he could no longer rely upon his mind to ignore any pain reported by his nerve ends. Interrogation, if it came, would now be an ordeal out of the Middle Ages. Summoning all the willpower that remained in his spent nervous system, the prisoner forced his head to turn: he saw that the room was unchanged. Still empty.

No, not quite so empty! An aluminum ladder had been lowered from the trapdoor.

An invitation to leave? Or, to join his captors? His occidental mind, fashioned by centuries of Aristotelian-framed thinking, could not penetrate the oriental subtlety in offering either choice. He struggled with the instinct to remain where he was; in the end, it was the monotony of his present windowless confinement that led him to seek escape from its oppression.

The prisoner grasped the ladder's rung at the level of his eyes and commenced to climb. His weight tired his arm muscles. Just as his head thrust through the roof opening, he experienced momentary vertigo. The pit of his stomach was gripped by nausea. Mounting higher, he now saw that he was in a room similar to the one he had just left.

He continued on the ladder, until he was fully in the room. As he stepped off the top rung, a movement of shadow above him caught his eyes. Glancing towards the ceiling, he saw a man's sandaled foot disappear through a second trapdoor. Some person had just left the cell into which he had risen.

The new room was furnished identically to the former one. On the wall above the coat hung another photograph of the leader. A sheet of paper lay on the writing desk, possibly a message from the individual who had just departed. He walked over, inspected it; suddenly, his brain reeled. The writing was his own—the mathematical symbols more familiar now, though still unclear. He had escaped to nowhere. These were his original quarters!



All semblance of neuron control vanished. His heartbeat triphammered like a hot Geiger counter. Assailed by extreme panic for the first time since he awoke, he only knew he had to get away from these four deadly walls. He rushed to the aluminum ladder, scurried farther up the rungs. Again, vertigo smothered him.

He saw that he had thrust his head and shoulders into still another identical room. Just above him on a ladder, three or four feet past reach, stood the trunk and legs of a man of his own thin build. He raised his knee and the figure above him did likewise.

Now the prisoner wanted to scream as claustrophobia dug deadly fingers into his skin. He raised himself entirely into the room, the figure above him disappearing. He rushed to the table, took out a cigarette, broke it in half and laid it there; then, he scrambled to the metal ladder and climbed as speedily as his nervous condition permitted.

The past events were repeated. He found himself in a prison exactly like his last. Only now the broken cigarette relieved the scheme.

Still unconvinced, he climbed and climbed again, moving through a Jack and the Beanstalk nightmare. Each time, he re-entered the cell he had just left. Finally, sheer exhaustion halted him.

He sat down at the desk, commenced to write:

"I, a prisoner of unknown forces, do hereby make this plea for mercy and relief from unnatural confinement. If I am already under sentence, I demand it be carried out with full regard for the humanity of the prisoner. I have committed no crime other than to work for the good of mankind. . . ."

**H**E HAD intended to say more, but he was interrupted by a barked command behind him: "Attention!"

The prisoner dropped his pencil, stood up and turned around. He saw a tall blond man in a dark green military uni-

form of a nationality he did not recognize. By his bearing, close-cropped hair and corded shoulder insignia, the newcomer appeared to be an officer.

"You are Prisoner M, on the records," the blond man said. "You've had time to look your cell over?"

"Yes."

"Then, you've discovered there is no possibility of escape."

"What do you intend to do with me?" M asked.

"You are to be interrogated shortly," the officer answered. "You were arrested yesterday in the forbidden area past the Pae-Khoi Mountains. Our police took you to Kara, where you were transferred to this prison on Nova Zembla."

The lethene effect seemed to be wearing off. Now, M recalled that perilous threading of the barbed-wire after he'd rowed the skiff across the Yara river. Under the very nose of needle-gun forts, he'd made his way past six deadly hnm-mocks to meet his contact near the largest cracking plant. There, huddled with the dissident scientist who dared to trade secrets of the Pan-Eurasian Combine for money and a promise of security when democracy triumphed, he had memorized formula after formula that would be invaluable to Washington.

Washington! Another chord sounded. He remembered talking to a grey-haired man in an H-bomb shelter on the Potomac months previous—perhaps it had been years previous. Yet the name eluded him, and with it his own name. Yet, that man had been his chief, he felt, for he recalled well the details of his assignment and the grey-haired man had said, "You will be the third we've sent in. The fuel for the warheads is guarded as closely as their leader's life—or as—well we've heard rumors of even stranger weapons."

Then the image faded in M's mind, leaving him only the remembrance of whistles blowing as he stumbled through the marshy tundra and the sudden appearance of a hundred angry, shouting uniformed figures.



"As a spy, you will be treated as a spy," the officer was now saying. He reached inside his blouse, brought out a small vial of tablets which he handed the prisoner. "This will be your ration for the day. The tablets contain a full complement of calories and vitamins."

M stood up, but even his full height did not reach as high as the officer's chin. He said, "What are you? Are you human?"

The officer smiled indulgently. "That's for you to ponder." His handsome face tightened. "There, take your pills. We can't wait all day for you."

The uniformed man strolled about the room. He studied the document on which the prisoner had been working, stroked his clean-shaven chin and crumpled the paper, stowing it in a pocket.

"You won't need this," he said.

The prisoner felt hope slide from his grasp. He looked at the vial of pills in his hand, feeling stupid and lethargic. So this was to be the condemned man's meal—or his glass of hemlock. He extracted two tablets and swallowed them, washing them down with a glass of water from the lavatory.

He looked around and saw that the officer had somehow disappeared while he was engaged. He puzzled over the mystery for awhile, then sat down on the edge of his cot to wait. The chemical action of the tablets swelled in his stomach and he felt comfortable, the brief hunger for food eased.

The next two hours passed slowly. The aluminum ladder still remained suspended from the trapdoor in the ceiling, but M made no further effort to use it. He felt no desire for the further agony of climbing endlessly, particularly since he anticipated greater trials in the interrogation that was to come.

**M**ORE and more isolated segments from his past bubbled up in his memory. For almost a moment, he had his name. That he was a mathematician he was certain. He recalled the symbols he had first written upon awakening and

now they seemed to spell a message for him. He gritted his teeth in an effort at recall. . . they were . . . they were equations for simple two-dimensional manifolds. The term came readily to his tongue, but as yet it still lacked meaning. And now names came in a flood: Riemann, Moebius, Klein.

He heard the sound of boots scraping against metal. Uniformed legs appeared at the ceiling and descended the ladder. It was the same officer returning, although he had changed to an immaculate white dress uniform with interwoven gold shoulder loops.

There had to be an explanation how the other was able to enter and leave at will, but M's fogged brain was unable to grasp it.

The officer said: "Arise."

M stood up; he felt his tongue grow thick in his mouth. "What am I accused of?"

"You were found inside the lines," the officer said, with a slight trace of ennui. "That alone warrants your execution."

"But, there are so many different forbidden areas these days," M protested. "How was I to know?"

"That doesn't matter. You must be interrogated because of what you have done."

"This wouldn't happen in my country," said M.

"So much the worse for your kind of politics. Here, we are more civilized. The state must protect itself against the arrogance and arbitrariness of the individual. The individual does not matter."

"Then, tell me at least what crime I have committed."

"It is we who define the nature of crime," the officer said, growing impatient with his prisoner. "As you must certainly know, no type of individual activity can be tolerated in the closed state."

He raised a white-gloved hand in the direction of the leader's portrait. "We are all units in his organization. We exist only at his pleasure. You people



of the backward nations are somehow stupidly unable to understand that. We accept it."

The officer reached inside his blouse and brought out a leather apron which contained a variety of sharp tools in individual pockets. He tied the apron around his waist, then hooked a portable battery to his belt. His face was impassive as his agile fingers withdrew two of the tools, long delicate scalpels, from the left flap.

"I start at the right of your body and work gradually to the center," he explained. "Beautiful tools, aren't they?"

"You?" said the prisoner, his horror augmented. "What is your meaning?"

"Isn't it clear? I am also to be the interrogator. It seems I'm always being assigned to it. Oh, well, I hope you will be reasonable."

"For the love of God!" cried M.

"You forget you have crossed the border. I see that you don't intend to be reasonable. Screaming for mercy will do you no good. There is no escape. Don't you know you're in a Moebius room, prisoner?"

"A Moebius—?"

"Of the highest order. Are you a scientist?"

"Of sorts," said the prisoner, relieved at any opportunity to delay the proposed interrogation.

**H**IS interrogator looked smug—satisfied. "Then, you know how a Moebius sheet, a rectangular strip of paper whose ends are joined after an 180-degree twist, forms a unilateral surface. Our topological technicians have succeeded in applying the mathematics of analysis situs to the construction of unilateral solids. This room, for example, has null connectivity to the outside universe so long as it remains in its present state of distortion. In other words, it has no outside surface. Every surface is an inside surface. No matter how often you try to leave this room, you only re-enter it."

The officer sighed: "You see, it is very much like your western ideological conception of hell. We meant it to be that way. It is well known that in hell, there is no exit."

"Abandon ye all hope who—" the prisoner started to quote.

"Precisely," said the officer. "You see now, you should never have crossed the Kara. You should never have been interested in our fuel plants. Yet, you are fortunate. There are worse interrogators. I fancy I'm quite gentle. But, you are delaying me. I must get on."

M eyed the two instruments in the officer's hands with intense terror. The tiny elaborately designed barbs along the blades of the scalpels were too obviously intended for—

"You will help yourself by talking early," the officer warned sharply. "We want to know your accomplices, your codes. Remember, there is a limit to the skill with which these instruments may be employed—or doesn't the thought of mutilation frighten you?"

"You're going to use these on me?"

"But, of course."

"Here? Alone? Suppose I resist?"

The officer frowned: "You're not supposed to resist. According to our laws, we have every right to interrogate you. Are you insane? How is it that you, an individual, presume to question this right. How dare you rebel against it?"

Spitting out angry words, the officer pressed forward with the tool braced in his right and supported by the might of his shoulder. M withstood it for several seconds; then, a hideous scream burst from his tendon-tightened throat. Although nothing bound his body to the spot, he was paralyzed where he stood.

Suddenly a drop of blood spurted out, spattering just above the knee on the white cloth of the officer's trouser leg. The interrogator noticed and stopped his work to swear abusively.

"You clumsy hemophilic fool," he said. "So this is the kind of peasant they give me to question. Oh, you soft helpless



animal. You scum, you."

He produced a handkerchief and wiped the spot away, but a pink stain remained on the cloth.

"Now, remove your shirt," he said. "We will work on nerves of the pectoral muscles."

"What?" begged M.

"I said, remove your shirt!"

M felt a great tremor seize him; suddenly, his muscles were free. He leaped away from his tormentor and looked about for escape. With shock, he realized he had forgotten the absence of doors and windows. He rushed to the ladder and mounted the rungs.

When his head emerged above the trapdoor's level, the same interrogator waited for him in the room above. The man had not left his chair.

"You might as well co-operate," he said.

The prisoner was goaded to fury by the intolerable quality of his situation. He dropped back down the ladder and rushed at his persecutor. The officer gave away to alarm for the first time. He backed off in sudden confusion and cried: "You fool! You stubborn fool!" His arms were held up to ward off the rebellious attack.

**B**UT the very speed of the prisoner's forward movement enabled him to bowl the officer off his feet. As the interrogator tumbled backwards, the twin scalpels fell from his fingers. M landed on top of him and his right hand searched along the floor until it contacted an instrument. When his hand grasped the cold metal, he felt a wave of revulsion that sickened his entire body. He lifted the tool high and plunged it into the officer's chest, ripping through the cloth and penetrating flesh. A mottled stain appeared and spread on the white blouse as saliva simultaneously spurted from the interrogator's whitening lips.

Then, the impassive face yielded to pain, contorted and died.

M arose from the corpse, his body

trembling in every nerve. Now, he dared not imagine what punishment his captors would fix upon him.

There was a small amount of blood on his hands. He stumbled to the lavatory and rinsed his fingers in running water until they were clean.

He searched his cell. The oppressive walls of the exitless room seemed to be closing in upon him. He had to escape from this sickening chamber of death.

For the twentieth time that day, he rushed to the aluminum ladder and climbed. In the room he entered, a repetition of the scene he had just left met his eyes. The interrogator's body lay stretched across the floor, dead pupils staring emptily. The prisoner retreated to the corner and again mounted the rungs. Room after room greeted him thus, as he climbed. His breath now heaved in great gasps; his muscles were strained to the point of unendurable weakness.

Then, he felt himself fainting and the rungs of the ladder slipped from his grasp. He was churned in a revolving vortex, falling and spinning toward the center, and then he knew no more.

*Click!*

It was like a key turning in his brain.

*Click! Click!* A curtain rising. A hidden world unveiled.

Identity came to him in a sudden burst of knowledge. He remembered swallowing the lethene pill himself, when the guards of the hidden factory were nearly on him. The sudden flashes of memory he had borne in the past hour now became a veritable explosion.

He was Dr. John C. Markum, former professor of mathematics at Oregon Institute of Technology, U. S. A. He taught seminar courses in abstract spaces, linear vector spaces, and abstract polynomials. He had been an ordnance captain in the War of 1958. Seven months ago, he had been recalled to the New Pentagon and transferred to Intelligence. Seven weeks ago, he had volunteered for a special mission in Europe.

Seven eternities ago.



His cortical control was returning, as his memory cells cleared. He scowled at the dead form before him. Filthy beast, he thought. Execrable sadist.

**A**WARENESS of his predicament super-stimulated his adrenals. Trapped in a Moebius cube! The construction of such an object was theoretically possible; yet practically—he shook his head, mournfully. He tried to calculate the number of dimensions a space would require for torsion of a cube into possession of a surface of connectivity.

The guards would be coming soon, when the officer did not reappear. He calculated his chances with them and dismissed them. Yet, there had to be some method of escape. He studied the walls and ceiling, lowered to his hands and knees and minutely explored the floor; yet, he discovered no sign of a joint or outlet. Electricity evidently flowed through the single blue bulb above and water flowed out of the lavatory faucets, originating somewhere. Perhaps the room collapsed and reassembled itself at 60-cycles per second. A longer collapse would also account for the interrogator's ability to enter and leave the room.

Markum put on his shirt, feeling gingerly the wound near his shoulder. In his pockets, he found the pencil, cigarette pack and lighter that had been left him. He unscrewed the lighter, examined it carefully. The enemy still had a great deal to learn about one-sided surfaces. The case was a variant of a Klein bottle and contained in its hidden section several drams of the new jet fuel being manufactured in the Kara sector.

He scooped up the mathematical notes he had made and studied them. Apparently, his subconscious mind had been aware at the offset of the problem he faced; the symbols appeared to point to a solution. He tried to recall observations that had appeared in papers by Kerejarto and Lefschetz.

The oppression of the four walls was

too overpowering. He had an idea now how Clive's Englishmen had felt in the Black Hole of Calcutta.

Markum removed the apron of interrogation tools off the dead man and regarded an object with a burr on its tip, much like a dentist's drill. He hooked it up to the battery, moved to a wall and commenced to drill. A slight buzzing noise accompanied the incision. Suddenly, resistance gave and the drill pushed through. Markum's ears caught the sound of plaster falling. He wheeled around and saw on the opposite wall, the drill tip protruding into the room in which he stood.

The officer had been right. The room opened only on itself on all sides, regardless of the absence of vertical entrance-ways.

The prisoner returned to the table, commenced to apply new mathematics to his calculations. Sweat poured from his brow. He paused briefly, went through a brief series of Intelligence Section-drilled exercises for heart-beat stimulations. His pulse accelerated, as his mind shifted into high gear. Time was urgent.

Finally, his equations were completed; but he looked at them with dread. There existed dire possibilities in following the course prescribed, many even predicating the probability of losing oneself in extra-dimensional spaces outside the known universe. But topologically, there was no other action to be taken. The equations told only what should be done—not what would be the result!

Markum was now desperate. He gnawed wood off the pencil until its point again was sharp. Then consulting his symbols, he drew a curved line across the floor of the room, along the wall and by dint of much stretching from the ladder across the room's ceiling and down the opposite wall.

The task was only half done. Again examining the assortment of torture tools, Markum picked out one with a rotary blade that presupposed great slicing effect. Connecting it with the battery



he drilled along the path of the line he had drawn, slicing the ceiling and walls. Then before continuing to follow the line's path on the floor, he drew a square about three feet from the line.

This completed, he proceeded to slice through the remainder of the line with the tool. When only one foot remained, he unhooked a slat from the cot and tied the handle of the cutting tool to it. Then standing in the protected square, he held the cutting tool above the last portion of drawn line to be sliced—being careful that no part of his body projected past the square.

**T**HE two sections of the room commenced to separate as the floor was split. A rocking effect, like a mild earthquake, set in. Markum felt new dizziness. Where the walls had drawn apart, there now penetrated an eyewrenching darkness, yet the air in the room showed no tendency to leak away.

The bouncing motion increased. Then as Markum watched, the darkness between the separating sections of the room lightened and he made out star clusters. With chilled recognition, he knew he was looking into deep space far from any comfortable planet. The stars wavered, vanished. Now, a giant blazing sun swung into view, tongues of flame soaring into yellow prominences. Then, a view of a landscape populated by curious globes and parallelopipeds.

The giant sun reappeared, followed by a glimpse of an endless red desert above which three ringed satellites raced through a starless sky.

Scene upon scene crowded in upon Markum's consciousness as the rift between the room's two sections widened. His brain reeled at the almost infinite number of vistas that pressed in and crowded each other for his attention.

How, how out of all of them to select the right one?

Then, finally, the rocking motion ceased and the other half of the room vanished.

Markum knew he had to make his

choice now or never. Stooping, he applied the second drill to the lines of the square on which he stood. Having no slicing edge, the operation took longer; Markum, therefore, had to pause twice to calm his nerves, now over-exhilarated by the effect of the cortical exercises.

Then suddenly, the square was completely excised and it fell away from the floor of the room, Markum's body borne with it as though he stood in iron shoes that clung to a magnetized section of plate iron.

Again, as when he had climbed the ladder rungs in the Moehius room, he found himself floating in a spinning vortex. Blood poured into his skull and a red mist, similar to that experienced by pilots in rocket dives, rendered him unconscious. . . .

The next thing of which John C. Markum, Ph.D., was aware—and he could not have guessed how much time had elapsed since his faint—was his effort to open his eyelids. He struggled and struggled to pry the skin flaps apart; but for what seemed an eternity, the muscles about his eyes refused to obey the intense command of his will.

He knew why—quite well. His too-human brain feared what he might see. But finally, the will triumphed.

He gazed up at a spacious white ceiling from which glowed two even banks of luminescent lights. Cool air fanned his cheeks. Bent over him was a kindly white face of a woman in starched nurse's uniform.

"Where am I?" Markum asked, weakly.

The woman did not answer. She turned away and addressed another person present: "He's conscious, now. Would you like to talk to him, sir?"

"Indeed I would—been through quite an ordeal, apparently."

**M**ARKUM moved his head around. The voice had been familiar; now the appearance confirmed his suspicion of the speaker's identity. His chief at



the New Pentagon, General Harper, was at his bedside. The general said: "Congratulations, Markum. I don't know how you managed to get through the lines and back to America, but it was a wonderful job, however you did it. We got your fuel sample analyzed; imagine we'll be synthesizing it ourselves in a month. Now, if your strength's up to it, let's have your story."

"Yes, sir," said Markum. "Just one thing, General. Mind telling me where I was found?"

The general smiled: "About two blocks from the Library of Congress. Clad in gray denim and sandals. And moaning about some fellow named Moebius."

"A great mathematician," Markum explained. "Founded the science of topology."

The bedfast man then elucidated in detail his experience behind the lines of the Pan-Eurasian Combine, culminating with his escape from the endless room.

"We 'highbrows' of higher math like to think every problem can be solved, if its component elements are set up properly. Sometimes we have to invent imaginary numbers or situations as tools to manipulate the factors in a problem, however. Now, you take this room I've

just described. As soon as I'd calculated the equations for its construction, I realized it could be collapsed by the incision of a re-entrant section. You know how a Moebius sheet may be bilateralized by such a section, thus affecting its connectivity.

"I performed the same operation on the Moebius cube. Result: instead of null connectivity, we developed infinite connectivity and a high number of boundaries. Once that was accomplished, all I had to do was jump off the square whenever I located a boundary contiguous to non-Combine soil. If I'd had a calculating machine with me, I believe I could have stepped right into the Pentagon."

The general stroked his chin: "From what you learned, do you suppose our technicians could make a similar cube?"

Markum laughed: "We can do better. We can build one the size of a fort, slice it with re-entrant sections at any point—and thus, step out into any part of the globe we choose."

"Hmm," said the general.

"I beg your pardon, sir."

"Hmm. I was just thinking. Won't their leader be surprised when a battalion of our troops march out of thin air into his bedroom?"



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