Rendezvous with Rama Study Guide

Rendezvous with Rama by Arthur C. Clarke

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Plot Summary

Rendezvous with Rama by Arthur C. Clarke recounts the mission of the spaceship Endeavour and its staff as it completes an exploratory mission on an alien space vessel traveling though the solar system. The novel underlines the difficulties encountered by the explorers as they try to adapt to an environment that obeys the rules of physics in a place that is very different from the one found on Earth. The story concentrates on Bill Norton's character, the commander of the spaceship Endeavour, and the technical problems he faces as he tries to gather information and understand the world of Rama.

During the last quarter of the 22nd century, mankind spotted an unknown and unexpected space object traveling across the path of the planets toward the Sun. The object is named Rama and scientists send a probe near the object. The probe identifies Rama as an artificial, metallic object the size of a small meteorite, perfectly cylindrical and apparently inactive. A team of explorers is then sent on a mission to land on the object and explore its content. The team aboard spaceship Endeavour discovers a world whose physical characteristics are very different from that which prevails elsewhere in the universe and where the laws of physics apply to a self-enclosed, self-sufficient cylindrical world.

At first, the world of Rama seems to have been either asleep or dead for a million years as it drifted through space. Then as it gets nearer to the Sun, the cold and dark alien ship awakens without a warning and lights up. Life emerges from the depth of the Cylindrical Sea that cuts the Rama world in half. Evolution takes place at a highly accelerated pace as species of aliens are constantly born and later recycled by their environment. The explorers encounter different, non-threatening species of aliens. These alien creatures, party biological and partly robotic, are being repeatedly replaced by more complex beings over cycles lasting a few days.

The adventurers face different technological challenges and have to rely on both their own knowledge and the advice of a committee of scientists located on a different planet to conquer the secrets of Rama. The path of the alien ship forces the explorer's vessel to end its mission and leave just as the world of Rama seems to revert to its original dark, silent and apparently sleepy state. Rama then realigns itself and accelerates towards the Sun, then bounces off the fiery star and continues towards its unknown destination.

Chapter 1-3

Chapter 1-3 Summary

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Until the late twenty first century, the human race has been spared twice by meteorites falling from the sky. The first meteorite missed Moscow on June 30, 1908. The second meteorite landed four hundred kilometers from Vladivostok on February 12, 1947. Then, on September 11, 2077, a meteorite flying at over fifty kilometers per second struck Italy, killing over six hundred thousand people. The blast wiped out Padua and Verona and triggered a tidal wave that drowned Venice and all its treasures. In response to this

catastrophic event, humans put together Project SPACEGUARD, a massive technological enterprise devised to protect the planet against the threat of meteorites from space.

Using powerful computers and radars, the SPACEGUARD project managed to keep track of half a million meteorites. One day, the project's computers locate an unidentified object traveling across the solar system. The object is christened Rama, after a Hindu divinity, and is all but forgotten until the day an astronomer notes some unusual characteristics about the alien object. From what he is able to gather, Rama seems to be a perfectly symmetrical object, forty kilometers across, and spinning at the incredible rate - one revolution every 4 minutes. These conclusions, proving that Rama is indeed a very unusual object, launch a wave of renewed interest for the space intruder.

The Space Advisory Council, led by the renowned astrophysicist Olaf Davidson, meets to debate the need to send a spaceship on intercept course with Rama to take a closer look at the new space intruder. The Council agrees to send a probe to examine Rama. A team of scientists quickly modifies a spaceship originally meant to travel from Mars to Neptune, renames it Sita and proceeds to launch it towards Rama. When the camera pods relay the images of the object back to a billion television sets on Earth, humanity discovers that Rama is nothing like a natural meteorite. Rather, it is a perfectly cylindrical object that looks "almost comically like an ordinary domestic boiler." The spinning cylinder's color is uniform and metallic, except for a kilometer-long mark in the middle of the structure. The body of this first visitor from outer space, measuring fifty kilometers in length and twenty kilometers in width, appears hollow.

Chapter 1-3 Analysis

The novel starts with a reminder of the potentially devastating effects of an alien intrusion into human-controlled space. The reader learns about the (fictional) deadly impact of a meteorite on Earth: near the end of the 21st century, a meteorite struck earth, killing over half a million people and turning an important part of the world's culture and heritage to ashes. Humanity has since prepared itself to face such dangers by developing technology and scattering radar through the solar system and preparing for the worst. Danger should never be underestimated and survival of civilization as a whole is the main drive pushing technology forward. This opening warning is a way of setting the stage for the in

This first group of chapters sets the tone for most of the upcoming developments. The initial reaction of the human race to an alien intruder is one of curiosity. The results of the scouting mission are shared with billions of enthusiastic spectators. The novel provides a wealth of technical details and scientific clues pointing to the possible origin of the space object. However, besides establishing once and for all that Rama is in fact an artificial object of gigantic proportions, nothing conclusive comes out of this deluge of information. This pattern of acquiring mountains of information yet being unable to come to a meaningful conclusion about the object of the research will be repeated systematically throughout the novel.

Chapter 4-8

Chapter 4-8 Summary

Captain Norton, the commander of the space vessel Endeavour, does not know what to expect when he lands on Rama. The sheer size and weight of the unknown space object, estimated at 10 trillion tons, makes his enterprise both inspiring and terrifying. His spaceship was the only vessel in the galaxy located close enough to Rama to enable such an interception course with its trajectory. In order to reach the alien object, he had to borrow fuel from three other space vessels. The spaceship hovers a thousand meters over the northern extremity of Rama while Lieutenant Joe Calvert prepares for landing. The landing site has to be near the pole to avoid the centrifuge effect of the fast spinning cylinder, yet away from the central disc that he imagines serves as a door for Rama's inhabitants. A few minutes later, the spaceship lands safely on Rama, near the circular structure. He relays the message back to the command center: "Rama Base. Endeavour has landed."

The monitoring sensors aboard Endeavour do not pick any sort of signal emanating from the gigantic metallic structure on which the vessel landed. After a 24 hours waiting period, Norton and Lieutenant Mercer slip into their respective spacesuits and set out to explore the surface of Rama first hand using their jet propeller. They start to examine the surface of the alien cylinder around the landing area. A few meters from the landing site, Norton stumbles on a wheel embedded in the metallic frame of Rama. The spacemen help each other and manage to turn the wheel 180 degrees counterclockwise, revealing an opening into Rama.

The Rama committee is a temporary creation of the United Planet Science Organization meant to supervise Endeavour's recognition mission to Rama. The Rama committee meets at the United Planet headquarters located on the Moon. The members all attend in person, except for Sir Lewis Sands, who attends via a stereogram beamed from earth. The committee reviews the credentials of Captain Norton, Endeavour's commander, and agrees that he matches perfectly the requirements of the mission. They also discuss the possible reactions of the visitors and decide that Norton should go forward and continue exploring Rama.

From his desk aboard the spaceship Endeavour, Bill Norton records a message that he intends to send to both his wives. In the video recording, he recounts his careful solo exploration of the alien vessel through multiple dark and silent corridors separated by similar airlocks. He notes that the Ramans seem to do everything in threes. Norton explains that after 30 hours of exploration, he finally reached the entrance to the inside portion of Rama. He then turned back without entering the actual cylinder and returned to the spaceship Endeavour. As he is recording this message, he is waiting for an official authorization from the Rama Committee to continue the journey. He wonders if Rama is simply a giant tomb, like one of the great pyramids of the Egyptian kings, only this time wandering through space instead of sitting in the middle of the desert.

After going through the last air lock, Bill Norton starts his jet engine and immediately finds himself in total darkness, just as he expected. His flashlight beam isn't powerful enough to cut through the darkness and doesn't reveal much of the inner world of Rama. He decides to throw a lighting flare ahead of him to light up the area. The burning flash lights up the area and reveals incredible scenery. The captain of the Endeavour is standing at the entrance of an enormous cylinder measuring 16 kilometers in diameter and extending at least 50 kilometers ahead. The cylinder is an artificial terrain scattered with geometrical structures and traversed by a network of rivers or canals extending into darkness. Bill Norton realizes that he is the first human to witness the work of an alien civilization.

Chapter 4-8 Analysis

This section introduces Captain Bill Norton along with the spaceship Endeavour and its crew. Endeavour turns out to have been chosen solely for its availability and its proximity to the alien object's expected path. This fact points to one of the limitations of technology, as well as one of its advantages. Time and physical distance are the Achilles' heel of technology. To paraphrase a recent general, "You explore with the equipment you have available nearby, not with the equipment you want or need." Endeavour might not have been the best-equipped or most efficient spaceship for the job, but it was the closest, which is sufficient given that there were no other alternatives. However, where the physical resources are unavailable, humans can compensate with intelligence and experience. The staff of Endeavour will have to do its best with what it has.

Rama is an artificial world - an alien vessel whose dimensions are beyond any self-propelled object ever manufactured by human technology. The description of the landing of Endeavour on Rama uses a terminology that could otherwise be used to describe landing on any "natural" planet. From the beginning, the crew of explorers is bound to explore a world where each and every "unknown" element is artificial. Rendezvous with Rama is the scientific counterpart to a typical explorer's diary set in the natural world. In the latter, the newly discovered world will be filled with mysteries and drama that doesn't require an explanation beyond the simple metaphoric description. However, in the case of Rama, every question posed by the artificial environment must be answered in technological terms. Each fact and observation must eventually fit like the pieces of a puzzle in the greater picture that will undoubtedly emerge as the mission progresses. The first of such mysteries is the shape of Rama itself. The spinning cylindrical shape poses unexpected challenges to a ship trying to land on its surface.

From the very start, the qualities and shortcomings of Commander Bill Norton are made quite clear. He mostly relies on his staff to perform the technical feats required by the ongoing events. He sticks very closely to the rules and the laws and he rarely improvise. He does not use his authority to give orders, but he reserves his position to make the final and critical decision after consulting with his staff. Whereas most people would quickly resort to an aggressive behavior in order to extract a solution from a difficult

source, Norton will exhaust all non-violent possibilities when confronted with such a problem. This sometimes overly cautious attitude may (or may not) cost humanity essential knowledge about the alien intruder.

Chapter 9-16

Chapter 9-16 Summary

The Endeavour spaceship sends a special communication to the Rama Committee. The communication describes the details of the reconnaissance mission's findings. It outlines the analysis of the visual data collected after the launch of five long delay lighting flares inside Rama. The explorers depict a complex structure consisting of two circular hemispheres on opposite ends of one fifty-kilometer-long cylinder using terms borrowed to earth's geography. The members of the Committee debate what this discovery means to the human race as a whole. They envision that Rama must be similar to an Ark for an alien civilization fleeing some catastrophic event. They deduct from its estimated trajectory that the vessel must have traveled for at least a few hundred thousand years, and possibly even millions of years, before reaching the solar system. They also speculate that the Ramans are probably dead and that the vessel is a tomb drifting through space. While they find it sad that they were unable to interact with the aliens, they conclude that they have at least answered an age-old question: Humans are not alone in the universe.

A team made of Karl Mercer, Willard Myron and Joe Calvert leave Endeavour to descend into Rama. The aim of their mission is to evaluate the problems presented by accessing the main part of Rama through the Northern entrance. In order to access Rama, they have to use one of the three ladder-like structures and descend toward the cylinder. The rungs of the three symmetrical ladders are recessed into the wall of the ship and they are arranged evenly, although the half-meter space between each of them seems a little uncomfortable for humans. Because gravity on Rama is roughly one-thirtieth of earth's gravity, the men are able to carry along an enormous load of life-support equipment and tools. However, they anticipate that gravity will change as they descend into the spinning cylinder. Because of the absence of gravity, it was nearly impossible to tell whether they are traveling up or down the ladder.

Mercer goes in first, followed by the other two spacemen. Mercer compares the journey to swimming in a sea with no current or water resistance. He starts feeling the weight around the four hundredth rung. He decides to stop for a break around the five hundredth rung and contacts the commander to let him know that they are doing okay. Myron then turns around and uses the gravity to drop to the platform located one hundred meters below him. Norton gives him permission to continue toward the next platform. Myron and his companions conclude that the only possible usage of the stairway would be form going upward and use the rail to pull themselves down instead of trying to use the rungs. Once on the second platform, Mercer is happy to enjoy the effects of the gravity. He decides to try and take a breath of the alien air by removing his helmet. The exercise confirms that the oxygen content is too low to sustain life. Having reached the goal of their mission, the exploratory team turns around and starts climbing back toward the exit by pulling themselves up between every step of the way.

In a meeting with the Surgeon Commander Laura Ernst, Commander Norton inquires about the health of the members of the crew who participated in the last reconnaissance mission. The doctor reveals that Myron shows signs of physical exhaustion but the others are doing fine. The commander decides to impose a more vigorous exercise program to his crew. Norton announces that he will head the next mission and take along Joe Calvert and another crewmember, explicitly excluding Karl Mercer.

The crew of the spacecraft Endeavour consists of men, women and "simps". Simps are genetically engineered creatures that resemble monkeys. They are the products of a company called Superchimpanzee Corporation and are designed to handle almost 3 times the amount of chores that can be performed by humans under the same conditions. The simps look like monkeys and they are equipped with a long tail that enables them to perform manual tasks more efficiently than humans can. They cook, clean and perform other mundane and routine chores for the crew. Simps are friendly and sexless beings that can only communicate with humans through sign language. The names of the simps serving aboard Endeavour are Blackie, Blondie, Brownie and Goldie.

Bill Norton, Joe Calvert and Boris Rodrigo travel down the ladder toward the bottom of Rama. The stairs remind Norton of a visit he once made to the ruins of an Aztec temple on planet Earth, but he finds the proportions and the absence of physical signs of decay difficult to compare. After traveling between the six platforms, the exploration team reaches the bottom of the cylinder. Since the oxygen content is now sufficient to sustain life, the spacemen are able to remove their helmets and breathe on their own. The gravity is about half the level of Earth, thus making it possible for the explorers to move around relatively easily while wearing their heavy life-support equipment. Because of the proportions of the cylinder, the curvature of the terrain at the bottom of Rama appears flat to the explorers. After consulting with the doctor through their radio, they decide to go ahead and walk toward the nearest structure, nicknamed Paris. Paris lays 8 kilometers ahead of them. They imagine that this "city" should reveal some secrets about the Ramans through pictures, artifacts or maybe even bodies. The explorers imagine that the Ramans could be humanoids, quite possibly 50% taller than humans. They wonder if the fact that the Ramans are oxygen breathers implies that all alien life also relies on oxygen to survive. The commander worries that the journey back to the ship though thousands of stairs will pose physical challenge much greater than the men anticipate.

The three spacemen continue to walk across the Straight Valley in the silent darkness toward Paris. Joe Calvert imagines he can break the monotony of the walk with his rate talent and he starts whistling themes from ancient movies, starting with the "Heigh-ho, it's off to work we go" from Disney's classic Sleeping Beauty. Calvert soon realizes that his whistling is annoying his companions and refrains from making anymore sound. On his way to Paris, Norton decides to make a detour in order to examine the 100-meter wide groove that looks like a river stretching across Rama. There are three such trenches going across Rama, 120 degrees apart. He uses his companions as anchors and lowers himself in the 40-meter deep groove. He tries to use his hammer to recover a sample of the white crystalloid material that covers the bottom of the groove but finds

it too hard to break. Standing in the river reminds him of an old train track going through forests and tunnels back on earth.

The Rama committee calls a special meeting because Dr. Perera has something important to announce. Professor Solomons and Dr. Taylor had to be excused from the meeting for personal reasons. Summarizing the state of exploration of Rama since the last meeting, Dr. Price says that all the buildings in Paris are identical 35-meter high rectangular structures. None of them has any door or window and there is no apparent joint between them and the ground. A grid of 5-centimeter wide grooves runs through the city streets. There is a track ending in front of each of the buildings, but since there is no visible opening, it is impossible to confirm that the tracks were build for some transportation system. Dennis Solomons, a science historian taking part in the committee, suggest that the buildings might be artificial cocoons designed to seal and protect their content from decay. Dr. Perera hints that the Endeavour mission might need to be cut short. He explains that while it traveled through space, Rama remained frozen. However, since Rama is getting closer to the Sun, its surface is heating up at a rapid pace. Dr. Perera expects this phenomenon to create a major obstacle for the explorers inside Rama: hurricanes.

A team composed of Surgeon Commander Laura Ernst, Boris Rodrigo and Sergeant Pieter Rousseau set out to explore the edge of the Cylindrical Sea. The Cylindrical Sea is a wide body of water that separates both hemispheres of Rama. The distance between the stairway and the sea is about 15 kilometers, but the low gravity makes the journey feels like half that amount. The adventurers reach the northern edge of the sea and are stopped by a fifty-meter high cliff. They aim their powerful light beam at New York, the distant city-like agglomeration of buildings that stands on the southern side of Rama. Boris Rodrigo spots a stairway descending along the cliff and to the frozen sea. Dr. Ernst uses it to explore the surface and collect samples with a hammer. After returning to her party, she concludes from her analysis of the samples that it is indeed water in the form of a dense soup of multiple pathogens. Since it is frozen, the team wonders if it is possible to use it to cross over to New York before deciding against walking on kilometers of icy surface. On her way back, Dr. Ernst pays little attention to the slight breeze that brushed against her neck.

Speaking to the members of the Rama Committee, the mathematical meteorologist explains that the heated atmosphere combined with the spinning of Rama will thaw the Cylindrical Sea and create violent winds. However, this situation should only last a few hours. Everything should return to normal after the temperature stabilizes across the metallic enclosure. From his station on camp Alpha, Bill Norton starts to record identical to both his wives. The commander recounts his crew's latest discoveries and mentions that although New York is a collection of building-like structures, he does not believe that it is actually inhabited. He is interrupted by an urgent message from Earth. The Rama Committee warns him of possible sudden onset of high velocity winds. The Commander of the Endeavour recalls the voyages adventures of his personal hero, Captain James Cook, who had sailed around the world between 1768 and 1771. He decides that the matter may not be so urgent as to require him to recall his exploring

teams immediately. Instead, he chooses to send back a message to Earth asking for the exact meaning of "sudden onset."

Chapter 9-16 Analysis

This section recounts the initial exploratory ventures into Rama by the Endeavour team. The size of the alien vessel is a major obstacle for the mission. The kilometers of ladders and stairways descending into Rama occupy most of the time and energy of the explorers. The members of the Rama Committee try to assess the meaning of Rama by equating it with Noah's Ark but fail to come to a meaningful conclusion.

Arthur C. Clarke takes care of reminding the reader of the laws of physics as they apply to the particular universe of Rama. He repeatedly refers to the law of gravity and its effect on the explorers. The laws governing the flow of air and the change in temperature across the Rama environment are just as important. From a literary point of view, Rama can be seen as a fictional scientific experiment where the laboratory rats are replaced by human explorers trying to find their way through the maze of alien technology.

The multiple expeditions into Rama are little, progressive steps into an alien world. Each one of those steps brings more raw information but until something conclusive is found, there is nothing on Rama worthy of awe. Norton's reference to the historical voyages of Captain Cook is an attempt to establish a link between the two kinds of explorations. However, beside the particulars of Rama's configuration, nothing truly extraordinary is found on the alien ship. It appears to be nothing but a geography with no identifiable purpose. It points to the fact unless it has a definite purpose, an artificial construction such as Rama has only limited interest for civilization. All the videos and data transmitted to the scientists sitting on the Rama Committee and elsewhere fail to bring any new knowledge about the elusive Ramans. This mass of information remains, for all practical purpose, a map with nowhere to go.

Chapter 17-23

Chapter 17-23 Summary

Norton and his sleeping party members are awakened by incredibly loud noises. The noises are felt as if the whole of Rama was suddenly ripped opened. The sounds came in waves of monstrous cracking noises followed by series of crystalline crashes. The cameras and light beams aimed at the Cylindrical Sea relayed the images of icebergs crashing violently onto each other. The Cylindrical Sea was thawing from the bottom up, creating an unexpected and quite unusual phenomenon. The explorers are ordered to retreat to the safety of Endeavour and they start to ascend the northern hemisphere along the stairway leading to the air locks, eight kilometers above. Norton, who is the last individual to ascend the stairway to the air locks, was near the end of his journey when he is suddenly blinded by a light so bright that he has to close his eyes and keep them shut for more than a minute.

Rama is now wholly illuminated by powerful light coming from the trenches that were noticed in the previous explorations. The light sources are located in six equidistant areas arranged symmetrically along the surface of Rama. Commander Bill Norton continues to climb along the last stretch of the ladder leading to the air locks while he tries to get used to the new, blinding environment. The Commander wonders for a moment what the purpose of this sudden change of season is and who, or what, triggered the dawn on Rama. As much as he tries, Norton is unable to come up with a plausible answer. As he reaches the end of the ladder and the entrance of the air locks leading to the surface of Rama, Bill Norton turns around and observes the early effects of the trade winds on the horizon. This is the beginning of the formation of giant hurricanes in this artificial environment.

Professor Solomons and Dr. Taylor are back on the Rama Committee where they are discussing whether further and possibly unexpected atmospheric changes could compromise the Endeavour mission. They decide that once the temperature stabilizes, it should be not only safe for the explorers to return to Rama, but also imperative for the sake of science. The Ambassador from the planet Mercury, speaking through a video conferencing device, suggests that more attention should be given to the possibility of Rama being belligerent. If the vessel managed to stop on its course and start orbiting the Sun instead of continuing back into space, it would be in a strategic position to dominate the solar system. The members of the Rama Committee wondered what kind of propulsion system hidden in Rama would enable it to change course. Dr. Perera suddenly concludes that acceleration is the only way to explain the tenfold in the size of cliffs bordering the Cylindrical Sea. The Committee says that exploration of the southern hemisphere of Rama is nonetheless necessary to assess the alien technology. The Ambassador from Mercury ads that since it is impossible to assess the presence of a military capability on board Rama, it is also impossible to eliminate the possibility of the alien object having intention to use it. Obviously, time is getting short and Rama is like an egg ready to hatch.

While the Endeavour team waits for the temperature on Rama to return to normal, Lieutenant Boris Rodrigo asks Commander Bill Norton for permission to use a priority channel to contact the Earth. He says he needs to inform the Mother Church of Fifth Church of Christ that Rama is probably the cosmic version of Noah's Ark. The Commander promises that he'll relay his discovery as a scientific theory to the Rama Committee and he will send a copy to the Church.

After waiting in Endeavour for two days for the weather to return to normal, Norton sends Karl Mercer, Joe Calvert and Willard Myron back to Rama. The alien spaceship is now filled with low hanging clouds. The atmosphere inside Rama is warmer and, to the explorers' surprise, breathable. The spacemen are thus able to do down the stairs without having to wear their masks. The clouds are thick and it is hard for the adventurers to see more than a couple of meters in front of them. The sound of a distant waterfall fills the air as they emerge from under the cloud. They contemplate for a moment the strangeness of the curved Rama universe. Lieutenant Mercer notices the change in the color of the Cylindrical Sea and the team concludes that the organic soup has already evolved into life, which would explain the increased presence of oxygen and CO2 in the atmosphere. Apparently, the artificial universe of Rama accomplished in a 48-hour cycle what evolution on planet Earth required 375 million years to deliver.

More members of the crew are sent to help. After several days of gathering the material that was scattered by the intense winds of Rama, the exploration team reaches the edge of the Cylindrical Sea. They build a vessel out of empty storage drums and a metallic frame. They christen the new ship "Resolution," after the name of one of Captain Cooks' ships. Ruby Barnes, an experienced and certified navigator, takes Resolution out for its maiden voyage. The ship proves its ability to travel reliably at a speed of around 12 kilometers per hour. Barns, Rousseau, Rodrigo and Norton then set out to cross the five kilometers of the Cylindrical Sea and enter the alien version of New York. A close examination of the photographs of Rama's New York showed that because of structural redundancy, it should be sufficient to explore one ninth of the city. Commander Norton is the first to climb the ladder going up the 500 meters cliff. He reaches the edge of New York only to find that there is no imminent danger. He then calls on his two fellow male team members to follow him while Ruby Barnes stays on the Resolution, ready to depart in case something goes wrong.

Commander Norton quickly concludes that New York is a machine, and possibly a factory. However, the explorers find no evidence of any mechanical or electrical activity. Just like the buildings found on Paris, all the buildings populating New York are completely sealed and the city is utterly silent. Karl Mercer suggests that since New York is an island, the raw material for the factory probably comes from the sea. Through a radio communication, Simp Master Ravi McAndrews suggests that New York could in fact be a factory designed to manufacture Ramans. On the opposite side of the island, access to southern hemisphere is blocked by half-a-kilometer high cliffs acting as levees. The explorers are unable to locate a ladder, leaving them to wonder how they will ever be able to explore this part of the alien ship. Norton and his team then return to Endeavour empty handed.

Chapter 17-23 Analysis

Without a warning, the cold, dark and silent world of Rama turned into an active and brightly illuminated universe. The sequence of events that follows will dramatically alter the course of the mission led by Bill Norton. These events will also modify the requirements from the men and women involved in the reconnaissance mission. Up to that moment, Rama was suspected to be either a dead alien artifact or a sleeping spaceship devoid of activity. The scientists theorize that Rama might have been through a sleepy season for millions of years. The unexpected change of season means that the explorers will have to adapt quickly to their new conditions. The adventurers will also have to foresee what else awaits them if changes come without a warning.

As predicted by Dr. Perera, the dramatic change of conditions is accompanied by the building up of violent storms inside Rama. The unforeseen melting of the Cylindrical Sea from the bottom up triggers the clash of huge blocks of ice breaking through the surface of the sea. This melting of the sea makes it even more difficult for the explorer to cross the distance between the edge of the northern hemisphere and the island of New York. The explorers are then forced to retreat to their mother ship while the introverted world of Rama lights up and comes to life.

Even though science had predicted the effects of the rising temperatures on Rama, it has failed to foresee the fundamental change of season. The dawn of a new season opens up new possibilities for the adventurers and makes the whole scientific endeavor much more interesting to the reader. Some scientists had abandoned the Rama Committee that was designed to oversee the mission, as science itself has limited interest in dead objects. Without heat, light, air and eventually life, science itself is of very limited use to humanity.

Because of its introverted organization and its constant spinning, the world of Rama has literally no "up" or "down". Again, the author provides constant reminders to the impact of such an organization on the conditions of living for humans. The explorers are constantly trying to keep up with Rama and to adapt their behavior according to the changing conditions. In a strange twist of fate, the explorers are becoming the aliens in the world of Rama.

Chapter 24-30

Chapter 24-30 Summary

James Pak, a junior officer on board Endeavour, requests a private meeting with Commander Bill Norton. The officer's main interests are sex and sports and he is known for his participation in the Lunar Olympics a year earlier. He suggests that he could use his ability to fly a sports device called a sky-bike to cross over to the southern side of Rama. He reveals to the ship's skipper that he brought "Dragonfly," his own sky-bike on board and that he's ready to take the risk of flying it across the Cylindrical Sea. Norton agrees, but warns him that should he survive the ordeal, his adventure could earn him either a much-anticipated promotion or a court-martial appearance.

The sky-bike is an ultra light device that uses wind power combined with human energy transmitted through foot pedals. Dragonfly is made of a thin frame and supported by transparent, molecule-thin wings controlled by a simple joystick. The sky-bike's maiden voyage on Rama proves successful. Dragonfly and its passenger are virtually weightless when it is at the center of the cylinder, where the gravity is almost null. Pak manages to fly Dragonfly for a significant amount of time without problems and he figures out a way to land it safely by first jumping off the bike and pulling the vehicle back to him before anchoring it to the ground. Surgeon Ernst decides that some necessary physical tests should be performed before letting Pak go ahead on his solo exploration mission.

Jimmy Pak pedals his way through the northern hemisphere of Rama at an altitude of several kilometers without any problems. He crosses the Cylindrical Sea over the island nicknamed "New York". The complex and repeating structures of the island is meaningless to him but he nonetheless relays the panoramic video images to the team on Endeavour. He reaches the southern hemisphere and discovers that it is essentially made of a central, gigantic spike over five kilometers long surrounded by six smaller, identical horns. The aviator anchors his vehicle on the summit of the main spike using his sticky-bomb. Communication with the mother ship is temporarily disrupted by what appears to interferences from a magnetic field of unknown origins. Pak abandons his hope of landing on the spike, retrieves his sticky bomb and begins his journey back to the northern hemisphere.

Jimmy Pak is starting to feel like Icarus as he is approaching the circular sea. He is overwhelmed by an uneasy sensation of general oppression and discovers that he is in the middle of an electrical field. He calls the control to let them know that the buildup of static energy is most likely the result of an upcoming storm. He notices that spikes of electrical bolts are coming out of the tip of the six smaller horns. A growing humming sound coming out of the big horn convinces Jimmy Pak that there is a major electrical storm in the making. Suddenly, six huge ribbons of fire shoot out of the main horn and into each of the smaller horns.

The electrical storm created by the activity on the ground of Rama created a turbulence that finally hits "Dragonfly." Each of the sky-bike wings fold and the machine starts spiraling downward. As the broken equipment spins toward the ground, Jimmy Pak has to use all his skills and knowledge to control the fall.

When Jimmy Pak wakes up, he appears unharmed but observes that a giant crab-like creature is taking the remains of his sky-bike to pieces and packing it on its own back. The metallic creature seems oblivious to the fallen aviator's presence. Jimmy radios the control hub and relays images of the monster feasting on the remains of the Dragonfly. Jimmy Pak is able to grab his water flask and emergency ration-pack from the pile on the creature's back. The crab is walking toward a 500 meters wide pit named Copernicus by the cartographers of Rama. Instead of descending in the symmetrical shaft, the crab-like creature shrugs off the debris of the Dragonfly down the hole. The creature then walks towards Jimmy and past him, ignoring him totally.

Jimmy Pak decides that instead of losing his time and energy exploring the depths of Copernicus, he should try to find his way to the edge of the circular sea, which lays 3 kilometers ahead. However, the road to the sea turns out to be a maze of roads separating fields of different content. After traveling for a while, the officer climbs over a triple fence surrounding a metallic grid set around a small and colorful flower. This finding of an earth-like plant growing in this artificial environment is so unusual that Pak informs the central command hub that he is going to try to collect the flower. The skinny explorer crawls through the openings and retrieves the plant. While he's crawling backward in order to exit the grid, he observes the rest of the plant retreating back into the ground.

Chapter 24-30 Analysis

The section spanning chapters 24 through 30 is entirely dedicated to Jimmy's journey to the southern hemisphere of Rama. The young man displays an incredible amount of courage, if only for the fact that he pushes himself to the front line of the mission. While most every other member of the exploration team tend to stick to their official duties and systematically avoid unnecessary risks, James Pak compensate by lending his talent and courage to the mission's objectives. Without him, the southern hemisphere would have remained a complete mystery.

His enterprise comes very close to a successful completion. He even manages to control his flying device while crashing without becoming a victim. He emerges from the crash unhurt and continues his mission on foot. This outstanding display of courage and endurance is a reflection of the qualities required from a true Olympian. Upon his return to Endeavour, Norton will in fact mention that he probably earned the medal that he didn't get while competing in the Lunar Olympics a year earlier.

Pak is also the first explorer to encounter the creatures spawned by Rama. He is slightly upset by the fact that the alien creatures are ignoring his signs. His choice of a flower

over a fortune in gems is a sign that life takes precedence over money. It shows the true value of the character and the importance of the mission over the individual.

Chapter 31-38

Chapter 31-38 Summary

Commander Norton and his team reviewed every solution to recover Jimmy Pak that they could possibly think of. Climbing the half kilometer-high cliff was a virtually impossible task, even with reduced gravity. EVA thrusters were unreliable and balloons were notably unstable. However, a priority communication from Dr. Perera provided them with an easy solution. They used Resolution once again to go around the island and position it right below Jimmy's position. The space biker wrapped the only flower on Rama and threw it down to the ship below. Then he jumped off the cliff, using his shirt as a parachute to minimize the velocity of his body on impact. The shock of his body hitting the water was great but not overwhelming. Jimmy managed to keep his eyes and mouth closed to the poisonous water and to swim up to the surface safely. Just when they thought they were safe, a message from Endeavour warned the sailors that a small had just shook Rama for a few seconds. They realized that a tidal wave triggered by the tremor was forming along the Cylindrical Sea and that it was coming right at them.

After making sure that Endeavour and its crew was okay, Commander Norton turns to Master Ruby Barnes to navigate Resolution in order to minimize the impact of the coming tidal wave. The ripple circling the sixteen-kilometer long sea looked like an avalanche coming right toward Resolution and its crew. Undisturbed by the magnitude of the challenge, Barnes manages to position the makeshift boat in the middle of the water, in between two sets of submerged baffles intended by the architects of Rama to break down the tidal waves. The roaring depression barely shook the boat as the wave passed Resolution to continue its cycle around Rama, losing strength along the way. While sailing back toward a safer shore, the improvised sailors encounter a gigantic, nine-legged creature resembling a starfish surfacing along the anticipated ship path. Their first reaction is to try to maneuver in order to avoid it, but they realize that it is being dismantled by a few smaller, shark-like creatures. Jimmy Pak notes that this process is identical to the way the crab-like creatures on the southern hemisphere were treating the remains of his sky-bike. Once all the crewmembers are safely ashore, Norton swears that he will not tempt the gods of Rama by sailing the Cylindrical Sea again.

The explorers are surprised by the sudden appearance of a spider-like creature. The alien has a relatively small body that resembles a regular typical soccer ball in both shape and size. The body is surrounded by three eyes, possibly allowing for a 360-degree vision. The creature is supported by a trio of 2 meter long articulated legs. Three long, whip-like tendrils also extend from the body. The inquisitive creature from Rama uses the tendrils to investigate its inanimate surroundings while totally ignoring the humans. Identical copies of this alien spider are soon popping up everywhere around Rama. Dr. Ernst patiently waits for one of the creatures to die before taking its body to the lab and puts it under the scalpel.

The Rama Committee meets once again, this time without the Ambassador from Mercury. The absence of the Mercury representative only furthers the Committee president's suspicions that the Hermians are up to something. In his opening address, Professor Davidson notes that the discharge of energy felt by Jimmy Pak were by-products of the spaceship's internal changes. He also states that Rama is altering its path and that it may choose to orbit the Sun instead of exiting the solar system. Dr. Perera presents the results of Dr. Ernst's autopsy on the spider's body. The alien creature has no organ allowing it to either breathe or eat. The spider's brain is a relatively big organ whose main purpose is computing the movement of the legs and the triangulation of the eyes. Eighty percent of the creature's body is occupied by an organic cell shaped like a honeycomb. According to the scientist, the creature is designed for a single task and has no life beyond the power that its cell is able to deliver. He also suspects that the explorers are very likely to encounter increasingly complex creatures as the accelerated evolution progresses on Rama. The Ramans themselves may just be the final link in this particularly fast chain of evolution.

Norton receives a top-priority message from headquarters. The message is encoded and for security reasons, it has to be handed to him personally. Lieutenant Commander Kirchoff has to leave his commanding post on Endeavour to relay the message.

Sitting on a platform at the end of the stairway, Sergeant Pieter Rousseau is using his telescope to keep track of the many species that are now appearing and disappearing on Rama. Kirchoff relays him a container addressed at Norton and Rousseau manages to deliver the good to its addressee by throwing the container. The message warns the Commander of the Endeavour that a high-speed vehicle launched from Mercury on a high-speed intercept course with Rama is only a few million miles away from reaching its target. Concluding that there is no real urgency to act on it, Norton destroys the secret message and goes back to his post.

Norton receives another message from headquarters, warning the Commander that the vehicle is in fact a missile-like probe loaded with explosives. The skipper is advised to stay tuned to a broadcast of the General Assembly of the United Planets and to contact Commander in chief afterward to decide on a course of action. The message further notes that debris from the destruction of Rama might pose a greater danger to Endeavour than the explosion itself.

During the assembly of the United Planets, His Excellency the Ambassador from Mercury keeps busy with his computer until it is time for him to speak. He starts by delivering a summary of the situation regarding Rama. He then proceeds to explain the particular position of Mercury. He reminds his audience that despite the knowledge acquired by Endeavour and its staff, the purpose of Rama is still unknown. He notes that Rama has now proven its ability to alter its own course and that the full spectrum of creatures spawned by the alien vessel remains a complete mystery. Therefore, the Hermians have decided to pro actively send an explosive probe near the alien vessel as a preventive measure. He says that the missile would only be used if Rama was determined an actual threat to the security of the planets.

Chapter 31-38 Analysis

The rescue mission aimed at bringing back Jimmy Pak to a safer shore is an example of the discipline that characterized the crew of Endeavour. Obviously, the team will leave no man behind. The whole rescue mission is a risky adventure, given the constantly changing conditions on Rama, but insuring that all the team members are safe and sound is worth the trouble. Once again, Jimmy displays incredible courage by jumping right into the depth of Cylindrical Sea. The importance of teamwork is once again tested against the elements when the makeshift boat encounters some alien creatures on its own. Surprisingly, the aliens ignore the boat even though it is an inanimate object fitted for recycling. Human abilities are put to the test when Resolution, the makeshift boat used to pick up Jimmy, has to face the giant tidal wave that is circling the Cylindrical Sea. Experience and talent comes to the rescue of the team's limited technology when Master Barnes is able to navigate the boat to avoid a disaster.

The appearance of the inquisitive spiders on the northern hemisphere also underlines the isolation of the explorers. The creatures are systematically ignoring the humans and seem only interested in the material that can be recycled. To the creatures of Rama, the humans are once again the aliens, just as useless to them as the spiders are to the explorer's quest to discover the true meaning of Rama.

Millions of miles away from Rama, a drama is brewing. The Hermians have decided that Rama is a possible threat to their power and they launched a missile aimed at destroying the intrusive spaceship. They are described as essentially belligerent, and as such, they tend to consider the unknown as a menace to their security. They hold a position at the exact opposite of that of the explorers on Rama: they are like those barbarians "who smash what they cannot understand."

Chapter 39-46

Chapter 39-46 Summary

Rodrigo asks Norton for permission to land on the Hermian probe and disable its explosives. He says that he has the technical skills required to perform the mission and that there is no way for the Hermians to counteract his actions before the bomb is actually disabled. After debating the ins and out of Boris Rodrigo's proposal, Norton agrees and allows him to sabotage the probe.

Lieutenant Rodrigo leaves Endeavour aboard a space scooter and lands on the Hermian probe. A few minutes after Rodrigo's departure, Norton receives a message from Mercury telling him to gather his staff and leave the vicinity of Rama within the hour using maximum acceleration. By then it is too late for Norton to contact Rodrigo and the commander decides to ignore the message completely, hoping that the Hermians would rather delay their action than destroy Endeavour and its crew. After weighting all the possibilities, Rodrigo anchors his scooter on the Hermian probe and disables both remote trigger mechanisms. By then the space bomb has fired up its accelerators. The Lieutenant decides to disable the remote control antenna as a preventive measure. The missile misses its intended target and fails to detonate.

Norton records a message to his wives, telling them that Rodrigo's heroic mission was successful in preventing the destruction of Rama. The Commander adds that his next trip inside Rama will be his last, as the proximity of the Sun will soon make it impossible for Endeavour to remain operational.

Commander Bill Norton decides that during their last venture into Rama, the explorers should be allowed to use force and penetrate the sealed structures of "London." He reasons that by piercing though the surface of Rama, they should be able to occupy the scientists on Earth and elsewhere with a new and much needed data about the alien vessel. Joe Calvert uses a laser torch to cut away a piece of one of the sealed structures. The team members enter the structure and discover a gigantic field of glass pillar. The pillars are holographic images representing tri-dimensional objects such as tools, machines and utensils. Some of these objects look quite conventional while others remain a mystery. The explorers imagine this collection of virtual objects to be a catalog for the Ramans. Such a catalog could allow the Ramans to choose the objects to be created at will by their environment. Joe Calvert calls on his teammates to look at a specific item: A 2-meter high uniform apparently designed for a giant creature with three arms and as many legs. The explorers suspect that this uniform must be what the Ramans wear. From his outpost, Pieter Rousseau warns the adventurers that they should start to retreat because the lights are starting to fade out.

As they are exiting the structure, the team feels a slight tremor shaking the vessel, an indication that Rama is changing course. The Endeavour staff is ordered back to the mother ship, abandoning all the material behind. As the adventurers painfully climb the

endless stairways toward the air locks, the fading suns of Rama start flashing in sync, calling all the creatures back to the Cylindrical Sea. The creatures of Rama rush back to the sea after performing their last recycling duties in an apparent hurry.

Two days later, Endeavour was hovering a few hundred kilometers away from Rama and the staff was resting. Calvert suddenly warns the ship's skipper that although the instruments are not registering any movement, Endeavour was spinning uncontrollably. The explorers' spaceship, caught in Rama's powerful space drive as it realigned itself into a different orbit, manages to pulls itself to a safer distance from the alien vessel.

The crew of Endeavour can observe Rama as it seemingly plunges right into the solar star. The alien ship then avoids being melted away by turning on some kind of shield around itself. The scientists conclude that far from being on a suicide mission, the ship is actually fueling up using the Sun's energy. Rama then starts orbiting extremely fast around the Sun. After a few hours of elliptic revolutions, the alien cylinder leaves the area and head for its unknowable destiny.

Surgeon Ernst pays a visit to Bill Norton, bringing him the good news that he was issued a permit to father a baby to his wife on Mars. The two individuals fall into each other's arms. Norton knows that fame awaits him when he returns to civilization, but he also feels that a part of his life went away with Rama.

Chapter 39-46 Analysis

Rodrigo saves the day when he decides to disarm the missile sent by the Hermians to destroy Rama. His religious beliefs play an important role in this series of events and he is the only individual who is opposing violence against the non-threatening alien vessel. This underlines the fact that principles and beliefs are just as important as technological tools in countering the effects of political decisions.

The late discovery of the collection of holographic images hidden by the buildings in the city of London highlight the fact that the lack of leadership can leads to lost opportunities. The importance of this discovery is probably lost forever because the explorers hesitated for so long to pierce through the surface of Rama.

As the alien craft nears the Sun, the whole world of Rama starts to revert to its virginal state. The lights that were used to keep Rama alive are now used to call the creatures back to the sea where they can be recycled. In an ultimate drive to recycle every bit of material, the creatures dismantle everything in sight. Rama appears to be the ultimate recycling machine. On Rama, it seems like nothing is ever lost and nothing truly dies. The true aliens of the world of Rama, the ones that cannot be recycled, escape just in time to witness the refueling of the vessel.

Characters

Bill Norton

Bill Norton is the 55-year-old commander of the spaceship Endeavour. He leads a mission whose task is to explore the alien spacecraft Rama. As a commander, he takes an active role in most of the missions. Just like a true captain, he is always the first one to go in and the last one to come out.

Norton has two wives, who live on different planets. He is traveling through space for most of the time, so he keeps in contact with his spouses by sending them near-carbon copies of his messages. His hero is Captain James Cook, a mythical explorer of the 18th century. He often relies on the imaginary advices of Captain Cook to make important decisions regarding his missions. Whenever he faces a difficult decision or a problem that science alone cannot resolve, he imagines what Cook would do in the same situation.

As a leader, he uses very little authority or directive pressure on the staff of his spacecraft. He mostly relies on his companions to perform the technical feats required by the ongoing mission. He sticks very closely to the rules and the laws and he rarely improvise. He does not use his authority to give orders, but he reserves his position to make the final and critical decisions after consulting with his staff. He will usually choose to let his team members use their own experience and judgment to decide on a course of action during the mission. The most important steps of Endeavour's mission to Rama are the result of plans and ideas put forward by the members of the team. For instance, the exploration of the southern hemisphere was entirely planned and performed by Jimmy Pak. The same is true for Rodrigo's mission to sabotage the Hermian missile.

Bill Norton's shortcomings as a commander become obvious when he postpones the use of force until the very last moments of the mission. It appears that a lot of the missing data pointing to Rama's secrets could have been uncovered if the explorer team had been more aggressive towards the alien environment.

In spite of having no apparent close friends aboard Endeavour, Norton had a short-lived relationship with Surgeon Ernst during a past mission. The latter relationship is temporarily re-activated at the end of the novel, once the mission is over for all practical purposes.

Boris Rodrigo

Lieutenant Boris Rodrigo is a communications officer aboard the spaceship Endeavour. Rodrigo is also a member of the Fifth Church of Christ. His religion is based on the belief that Jesus was in fact a visitor from space. Not surprisingly, the great majority of members of this Church, also known as Cosmo Christers, happen to work in a space-

related domain. Lieutenant Rodrigo is appreciated among his peers and he makes no attempt to convert them to his own religious beliefs.

Boris Rodrigo was part of the second exploratory mission on Rama. He was also part of the first team that reaches the edge of the Cylindrical Sea. His religious beliefs lead him to believe that Rama may be the equivalent of Noah's Ark, sent by remote aliens to seek and save the worthy humans from an imminent disaster. His request to Commander Norton to relay the urgent message of his discovery to his Church is granted, though somewhat indirectly. Boris Rodrigo is also part of the team that explores the island of New York.

Lieutenant Rodrigo, like the rest of the Cosmo Christers, tends to see the Hermians as the evil side on the war between good and bad. After learning about the Hermians' plan to destroy Rama, he volunteers to land on the loaded probe and single-handedly disable the missile's explosive charge. He travels to the passive bomb and manage to disable it before it reaches its target. He is then treated as a hero.

James Pak

Lieutenant James Pak is junior officer on board Endeavour. The officer's main interests are sex and sports. He was a participant in the Lunar Olympics a year prior to the mission, but he lost the competition due to technical difficulties. He uses his own sky-bike, which he christened "Dragonfly," to fly over the New York levees and reach the southern part of Rama. His device becomes the victim of a series of atmospheric disturbances and he crashes on the southern hemisphere, a few kilometers short of the Cylindrical Sea. He manages to stay alive until a rescue team comes to rescue him aboard the makeshift boat named Resolution. He steals the only flower growing on Rama from one of the fields on the southern hemisphere and jumps off a 500-meter cliff into the Cylindrical Sea to save his life.

Laura Ernst

Surgeon Commander Laura Ernst is the chief doctor aboard Endeavor. She is an authority in biological matters and she is also a nice specimen of biology herself, according to Commander Bill Norton. She had a single and quick affair with Norton during a previous mission but the relationship never went further. She advises Commander Bill Norton on the various health-related aspects of the mission.

Surgeon Ernst participates in several missions and collects a sample from the frozen sea during one of the initial missions. Laura Ernst is also responsible for giving Jimmy Pak the go-ahead for his solo sky-biking mission to the southern hemisphere of Rama. Dr. Ernst got very excited when she first meets the alien creatures and wishes she could get one of them in her laboratory for a thorough examination. The rules of encounter with alien species are preventing the team from capturing an alien creature for research purposes. Yet her wishes are granted when a spider falls to its "death" and can be safely gathered and examined. She brings the corpse aboard Endeavor to have it

dissected. She was literally shocked by her findings when her scalpel slits through the alien's flesh.

Joe Calvert

Joe Calvert is the lieutenant of the vessel Endeavour. He maneuvers the ship the initial landing of Endeavour on the northern hemisphere of Rama. He later takes part in the initial scouting team that evaluates the possible problems of descending Rama through one of the long stairways along the northern entrance point. He later joins Commander Bill Norton in the first mission that attempts to reach the "bottom" of Rama. During in the last missions on Rama, he operates the laser torch to cut through the sealed building in London.

Calvert is an expert in primitive cinema of the 20th century. His extensive knowledge of the soundtracks from ancient cinematography is rather annoying to the other explorers, who have no experience of these cultural artifacts. Joe Calvert once tried to break the monotony of their walk through the plains of Rama by whistling themes from some popular movie, but he ended up having to stop for fear of reprisal by his annoyed team members.

Karl Mercer

Lieutenant Commander Karl Mercer is the second officer on board Endeavour. He is a strongly built individual with a special ability to control his own biological feedback, such as heartbeat or his respiratory rhythm. He is an authority in life-support systems and has written a few textbooks on the subject.

Karl Mercer is part of the initial team that descends into the heart of Rama. He has a weight control problem that prevents him from joining one of the initial missions. Surgeon Ernst enjoins him to a stricter regime of exercise and eating. He manages to lose the necessary weight and is able to join the later missions. He is the first one to note that the higher level of oxygen in the atmosphere is related to the life developing in the Cylindrical Sea. He is also the first to suggest that the island of New York is a factory that uses the Cylindrical Sea as a source for its raw material.

Dr. Bose

Dr. Bose is part of the Rama committee. He is now 115. He lived on Earth until he was 30, and then emigrated to Mars where he is now living.

Olaf Davidson

Professor Emeritus Olaf Davidson is the chairman of the Space Advisory Council (SAC). He is also a member of the Rama committee.

Willard Myron

Technical Sergeant Willard Myron is an expert in mechanics. Willard Myron can repair most anything that is broken. He can also design efficient solutions and tools where a mechanical solution doesn't already exist. Despite his abilities, Myron is known for having no ambition at all when it comes to climbing the ladders of the hierarchy.

Conrad Taylor

Conrad Taylor is an anthropologist who first displays little interest in Rama, because it appears dead and no artifact has been found. He is the Ambassador from Mercury.

Pieter Rousseau

Sergeant Pieter Rousseau takes part in several initial missions into Rama. However, his skills as an expert in telescopes are put to better use when he uses his talents to track the creatures evolving on Rama from his outpost at the bottom of the stairway. His position allows him to issue critical warnings to the explorers' teams when the conditions on Rama change unexpectedly.

Ravi McAndrews

Ravi McAndrews is the Chief Steward and Simp Master on Endeavour. He posesses a limited amount of scientific knowledge but is otherwise an intelligent individual capable of drawing conclusions when factual evidence is in short supply. He is the first one to suggest that New York is probably a factory designed to manufacture Ramans.

The Ambassador from Mercury

The Ambassador from Mercury represents the Hermians (the name given to the population of the planet Mercury) at the United Planets. He is despised and feared by many members of the council. He uses diplomacy as a tool to promote a politically aggressive stance.

Objects/Places

Rama

Rama is a gigantic cylindrical object traveling though the solar system. It is an artificial environment built by alien beings for an unknown purpose. According to Hinduism, Rama is also the name of a great king as well as the seventh avatar of Vishnu.

Sita

Sita is the name of the first space probe that provided humanity with close-up images of Rama. According to Hinduism, Sita is the name of Rama's wife.

Simps

The simps are genetically engineered monkey-like creatures provided by Superchimpanzee Corporation. They are sexless animals trained to perform human tasks with great efficiency inside the spaceship. They are smaller than their human counterparts. The names of the simps aboard Endeavour are Blackie, Blondie, Brownie and Goldie.

Dragonfly

The Dragonfly is name of the sky-bike used by James Pak to cross over the New York Levee and land on the southern part of Rama.

Resolution

Resolution is the name of the makeshift boat used to the explorers to reach New York and to rescue Jimmy Pak from the southern hemisphere.

Endeavour

Endeavour is the spacecraft hired on the mission to explore Rama. It carries the team of explorers and the necessary material to the alien vessel. It remains stationed on Rama until its time to leave the premises.

The Stairway

The stairway leads from the air locks to the bottom of Rama. It is eight kilometers long and separated by several platforms. The stairway is the only way in and out of Rama.

The Rama Committee

The Rama Committee is a consortium of several scientists from the solar system meant to supervise the Endeavour mission. The Rama Committee meets on the Moon.

The United Planets

The United Planets is a council of seven diplomats similar to the 20th century's United Nations.

New York

New York is a collection of sealed buildings and trenches located on an island in the middle of the Cylindrical Sea. It is delimited by a 50-meters high cliff on the northern side, and a 500-meters high cliff on the southern side.

London

London is a collection of sealed buildings and trenches located on the opposite side of Paris, in the northern hemisphere. It is the last city explored by the Endeavor mission before it leaves Rama.

Paris

Paris is a collection of sealed buildings and trenches located on the northern hemisphere of Rama. It is the first city visited by the members of the Endeavor mission.

The Biots

Biots is a generic name for the creatures spawned by the Rama environment. They are a cross between robots and biological entities. They are moved by biological energy cells and automatically recycled by other biots when they break or become useless. Biots are referred to as crabs, cranes, spiders, starfish, sharks and other earthly creatures by the members of mission Endeavour. They have specific tasks to accomplish on Rama and always avoid contact with the humans they encounter.

The Ramans

The Ramans are the builders and maintainers of Rama. No Raman was ever seen on Rama and, if they exist at all, they seem to be oblivious to the presence of humans.

The Hermian missile

The Hermian missile is the high speed probe loaded with explosives launched by Mercury to destroy Rama.

Themes

Technology

In the universe imagined through the words of Arthur C. Clarke, the power of science and technology is virtually limitless. The only barriers standing in the way of what technology can accomplish reside in the mind of the individuals who are using it. The alien world of the Ramans is a purely technological response to the problem of survival through time and space, and to an extent, to the problem of life itself. Rama is a self-contained, artificially created universe that is, from a technological perspective, perfect. Rama is designed to "live" forever as it recycles itself indefinitely. No one and nothing ever dies on Rama. Everyone and everything is simply recycled and reused. Rama is a purely functional world where everyone and everything has a purpose from which it does not deviate. The "biots" that the world of Rama generates are neither alive nor dead. Rama is a machine that lives for the sole purpose of keeping itself alive indefinitely. In a way, it mirrors the human world while turning it outside in.

The laws of Rama are just an extension of the laws of Nature on Earth. The inhabitants of Mars, Mercury or the Moon are nothing more than immigrants from Earth that have evolved and adapted to the laws inherent to their new environment. They have expanded civilization through technology and they depend on it to survive in their essentially hostile environment. The author extrapolates technology by relying for the most part on solid knowledge of the basics of physics and by projecting the developments of the technology available at the time of writing into the future. The result is therefore limited by the knowledge available a few decades ago.

Anyone familiar with the current technology will recognize the limitation of such an approach to science fiction writing. While the novel was written less than four decades ago, it still shows its age in many areas. More specifically, the author failed to anticipate the evolution of computer technology or its importance in the world beyond that which could be foreseen in the early 1970's. In the novel, computer time is still a high priced commodity, whereas in today's reality, it has already ceased to be an issue a long time ago.

The lack of data is the only reason why many of the mysteries of Rama remain intact after the alien ship leaves the solar system. The Commander's refusal to break through the surface of Rama or use intrusive technology to gather more data is protecting both the Ramans and their secrets. Had sufficient data been available to the crew, there would be no question triggered by the world of Rama that could not be answered with science or with one of its technological applications. Given enough information, Rama would not be much more than a curious mathematical puzzle waiting to be solved, similar to what the problem of three-legged walking is to the science of robotics.

In a way, Rama is a creationist's dream; it is a completely "designed" universe where even evolution is kept under control. The Ramans are the unseen gods of their own

universe, controlling everyone and everything, yet keeping a secret of the planet's own destiny. On Rama, everyone and everything has a purpose and a destiny.

Time and Space

In the world foreseen by the author of Rendezvous with Rama, time and space are the two major problems standing in the way of the human race's effort to understand Rama. While every single problem seems to have either a technological solution or at least a scientific explanation, the limitations of time and space are the real culprits for the exploration team. The first sign of the impact of time and space on the mission is Endeavour itself. The reason why Endeavour is chosen as the exploration device in the first place has nothing to do with the quality of its staff or the reputation of its commander. In fact, Endeavour happened to be the only ship in the vicinity of Rama capable of intercepting the alien object before it reaches the Sun.

Distance dictates much of what happens on Rama. The extraordinary size of the vessel forces the explorer to spend most of their time and energy traveling and transporting material from one place to the other. Space proves to be a major obstacle to the quest of understanding the mysteries of Rama.

While the modern reader might have trouble imagining the usage of "computer time" being a problem 200 years from now, the problem of space traveling has not evolved much during the last decades. Because of the distances involved, it is still a slow process that actually accomplishes little on a scale as grand as the Universe. In Rendezvous with Rama, information technology has more or less overcome the problem of transmitting images and sounds through space. Members of the committee meet in real time while sitting on totally different planets and video messages can be sent over extremely long distances without affecting the content. Except for a few practical details, Arthur C. Clarke's predictions regarding information technology have already come true. Space has indeed been conquered by mediating reality with information.

Rama can also be seen as a theoretical experiment in the geometry of space itself. The alien vessel is an introverted, self-contained and self-sustained planet. Just like Earth, it depends on the Sun's energy to provide its own life forms with necessary light and energy. However, contrary to their counterparts on Earth, the creatures of Rama do not inhale or exhale, they do not feed themselves and they don't emit anything except energy. The creatures of Rama are 100% recyclable, just as they born from 100% recycled material. Therefore, even though the actual life of the creatures of Rama only spans over a relatively short period, these beings are not limited by time. This characteristic of the creatures of Rama is in striking contrast with the explorer's own limitations. Humans depend on inhaling and exhaling as well as feeding and rejecting. Jimmy Pak, the young Olympian who crosses over to the southern hemisphere of Rama, is a characterization of this dilemma. Once he has survived the crash of his space-bike, Pak can only survive for so long with no food or drinkable water. Caught in a world where nothing is really "living" and where interaction is impossible - and

possibly deadly - Jimmy Pak finds himself more interested in a simple specimen of flower than he is in mountains of gems worth a fortune. The flower comes to represent the only link between the artificial world of Rama and the living beings locked in the time-space continuum.

Nature vs. Technology

In the novel, the only "natural" elements are the human beings. Everything else, including the pets carried by Endeavour, is essentially a product of technology. Everything is artificial and at least partly engineered. From the onset of the story, nature is described as an intrusive and often destructive element that is nothing but a hurdle set in the middle of the evolution path of the human race. To the humans of the novel, "nature" essentially means randomness and the inability to predict with any kind of precision the outcome of any given action. The meteorite catastrophes that open the first chapter of the novel provide a justification for the human race to try and obliterate any occurrence of natural randomness. This historically event in turn justifies the later knee-jerk reaction of the Hermians who launched a probe loaded with explosives to try and prevent the possibility of Rama being used as a military device against civilization. However, this paranoid reaction to the presence of aliens could also trigger defense mechanisms that would have unforeseeable consequences to the exploring team. The novel makes the point that anticipating violence is, more often than not, the action that actually triggers it. This point is otherwise underlined by noting that the belligerent inhabitants of Mercury are generally considered as physically weak. The aggressive political reflex is then but a way to compensate for the Hermians' inability to cope with physical violence on a personal level.

For all its benefits, technology proves to be quite inefficient when it cannot be anchored in the environment. When the time comes for the Endeavour staff to explore the southern hemisphere, technology has to be augmented by human power and experience. Jimmy Pak is a sports fanatic whose past as a failed Olympian space-bike competitor foreshadows his failure to complete the mission. However, he provides the Endeavour team its only link to the southern hemisphere of Rama. Jimmy can compensate the limitations of technology with human-specific intelligence, skills and abilities. He "flies" a human-powered, bicycle-like device to the southern hemisphere where he eventually crashes.

The technology underlying all forms of indigenous life on Rama is so advanced that its creatures have the innate ability to differentiate between a technological object and a natural one. Every creature spawned by the alien ship automatically avoids contact with the humans. These creatures seem only interested in the material that is inherently recyclable and they ignore everything else - in this case, biological humans. In turn, humans refrain from any kind of interaction with the aliens that could be perceived as violent.

The anticipated clash between nature and technology never happens, and the latter remains a tool to be used in the process of understanding and exploring. Just as the

explorers have managed to prevent any confrontational encounter between the explosive-loaded probe sent by the Hermians and the alien vessel, they also systematically avoid destructive behavior towards the self-contained world of Rama. In a strange twist of the traditional point of view of science fiction, the only true menacing aliens aboard Rama are the humans.

Style

Point of View

Rendezvous with Rama is written exclusively from the third person point of view. This approach is traditionally preferred in the realm of science fiction literature because it allows the author some freedom in dealing with technical description. Arthur C. Clarke takes great care of presenting every angle and aspect of the unfolding story by delving in the scientific details of the alien artificial environment, yet he does in a simple manner.

The reader is never directly challenged by the novel's characters or by the evolution of events taking place on Rama. Much like the spectators of the 23rd century, who could only witness the passage of Rama as relayed through the televised media, the reader of the novel is never called to answer any of the alien mysteries. In other words, the reader's guesses are as good as anyone else's. However, some of the questions posed by the presence of Rama are echoes of current cultural and political challenges taking place today.

The novel builds its fictional subject in a way that may appear quite different from the typical science fiction novel to the modern reader. The "alien" is not inherently menacing or terrifying, as it is limited to a gigantic object traveling through space. All alien life is contained within the object itself and never strays out of it. In fact, the real aliens in Rendezvous with Rama are the human explorers. In Rama, there are no menacing creatures to threaten the humans. Rama does not present a direct threat of invasion by an unknown race to human civilization. In the end, it appears that the passage of Rama in human-controlled space is but a scientific curiosity. Rama's passage leaves behind a trail of question and mysteries that the inhabitants of the solar system are left to cope with.

Setting

Rendezvous with Rama presents the reader with the first encounter between the human race and an entirely alien form of life. The novel shows the possible reaction of human civilization to close encounter with a functional alien artifact. The story highlights the contrasting point of view and the political and cultural reflexes of humankind at different levels.

The initial premises of the story insure that the novel is quite easy to follow. Beside expanding into deep space and colonizing the planets around Earth, the human race seems to have evolved little since the early days of the 1970's. Rama is an alien object that appears unexpectedly in an area of space where human civilization has authority. The alien ship has a cylindrical shape, making it completely different from the kind of vessel or habitat that humans would otherwise want to build for themselves. Though its

initial trajectory can be calculated, we as readers know nothing about Rama's aim or goal. As the exploration mission unfolds and the alien container gets heated up by the proximity of the Sun, the world of Rama bursts into life and light only to slip back into darkness and apparent sleep once the situation becomes too hot.

The most interesting points of the novel are scientific. In order to understand the many details of the story, it is preferable to have some basic understanding of the implication of space travel, its technology and its limitation. A good knowledge of the basic laws of physics is also required to fully understand the events taking place on Rama. Most of the problems faced by the explorers have to do with having to adapt their behavior so that the laws of physics and movement to a different environment. The world of Rama is a world turned outside in.

References to human culture are usually limited to references to the early to twentieth century, as it is assumed the reader's background. Apart from the opening scene of a meteorite striking Italy and killing over half a million people, there is barely any reference to the fictional events that could have modified the behavior of civilization after the twentieth century. Most of the characters are fond of references, objects, cultural behaviors or historical characters that existed prior to the end of the last century. This set of references anchors the novel in a reality that can be easily understood by the reader.

Language and Meaning

The novel written by Arthur C. Clarke uses a relatively technical vocabulary anchored in simple, descriptive style and a correspondingly simple syntax. The text is objective and does not stray from the simple constructions and straightforward descriptions. The whole novel is meant to be read at the first level, as there is almost no character development or second degree meaning anywhere. However, since the content is quite technical in nature, the novel is scattered with simple metaphors and familiar images, making this fictional account easy to imagine even for the non-technically inclined reader. The sentences are short and the text uses a straightforward structure and syntax. There are no literary artifice, no flashback and no stylistic trickery.

Since the aliens creatures do not talk, write or otherwise communicate, all the words used by the author should be familiar to the reader. When there is a need for a new word to describe an aspect of the environment unfamiliar to the reader, the author uses a metaphoric collage of known references. However, these makeshift words are few and far between, as most alien creatures and objects are christened with corresponding names of animals or objects whose characteristics they resemble the most.

For the most part, Rendezvous with Rama is an anticipation novel meant to describe the reaction of the human race to the presence of an alien object in their familiar world. The dangers that Norton and his staff face are never the result of a direct threat from Rama's inhabitants, but rather the by-product of either the explorers' inadequate technology or their inability to react to a world where the laws of physics are applied in

an unexpected way. The novel is notably devoid of any violence directed at the explorers. There are no "action" scenes, except during the flight of Jimmy Pak and its Dragonfly over the southern hemisphere. Since the creatures that populate Rama are systematically avoiding contact with the explorers, interaction with indigenous life is also quite limited.

In spite of its scientific and technical content, the novel of Arthur C. Clarke remains easy to read. The novel can be understood by most any reader equipped with a minimal knowledge of the laws of physics. Because it has been written in the early 1970's, many of its premises as a novel have been used and re-used in popular culture items such as movies, televised programs, interactive fiction and other well-known novels. For that reason, the first part of Rendezvous with Rama will feel like déjà vu to many modern readers. The absence of any kind of violence or and the lack of interaction between the human explorers and the alien creatures is a bit unsettling, according to modern standards. However, when the lights are finally turned on in Rama and once the mechanisms of evolution specific to the alien vessel start to come into play, the novel turns out to be quite fascinating. The pace of the story accelerates quite dramatically from that point on. There is also much to be learned as far as science is concerned. Many of the questions left without an answer will linger on in the reader's mind once the last page is turned.

Structure

Rendezvous with Rama is a science fiction novel organized in a traditional linear fashion divided in 46 short chapters of a few pages each. Each chapter has a descriptive title that gives away a clue about its content. For example, the chapter titled "The Flower" sees the character discovering the only flower on Rama and picking it up. Most chapters end with either an opened question or the description of a dramatic turn of events foreshadowing the upcoming development of the story. Structurally, Rendezvous with Rama builds up the suspense slowly, as though the story was written to be absorbed in little doses at a time.

Throughout the novel, the Rama spaceship goes from a state of deep sleep to a state of active life evolving at an accelerated pace, dispensing energy as needed. Rama then apparently goes back to a sleeping state when the conditions outside the spaceship make it difficult to sustain life inside. The spaceship then realigns itself and starts accelerating towards the Sun. It then gathers energy from the fiery star and uses the accumulated energy to bounce off the solar system and continue its course into the darkness of space. By the end of the novel, both Rama's purpose and final destination remain a mystery to the reader as the vessel disappears into the depth of space, navigating toward its unknown destiny.

The characters of Rendezvous with Rama are relatively flat and uninteresting by themselves. Beside Bill Norton, Jimmy Pak and Boris Rodrigo, little is known about the background of the actors in this novel. The characters have little personality beside their ability to perform the tasks required from them. This type of character is usually referred

as "cardboard" characterization. The specifics of the individuals seem to play no role whatsoever in the decisions they take or the actions they perform. The author typically avoids physical descriptions of the characters, making the novel practically race and gender neutral. There is little if any emotion involved during the unfolding of the events. The characters simply obey their orders and the rules and they seemingly care little for their own individual needs. The mission takes precedence over the needs of the people involved. In a way, the humans in the story are not very different from the task-oriented specialized creatures populating Rama.

Quotes

"The mass of Rama was at least ten trillion tons; to any spaceman, that was not only awe-inspiring but also a terrifying thought. No wonder that he sometimes felt a sense of insignificance, or even depression, as that cylinder of sculptured, ageless metal filled more and more of the sky." Chap. 4, Rendezvous, p. 11

"In zero gravity, a prehensile tail is an enormous advantage and all attempts to supply these to humans had turned into embarrassing failures." Chap. 11, Men, Women and Monkeys, p. 52
"Everything happened in less than a second. In a soundless concussion of light, dawn burst upon Rama." Chap.17, Spring, p. 88

"The downward swoop of that immense stairway was so overwhelming that it was impossible to appreciate its true scale." Chap. 18, Dawn, p. 93
"Feeling extremely foolish, the acting representative of Homo Sapiens watched his First Contact stride away across the Raman Plain, totally indifferent to his presence." Chap. 29, First Contact, p. 153

"Even a doomed man might reasonably be expected to take some slight interest in a few thousand square meters of gems." Chap. 30, The Flower, p. 156

"The mystery of Rama was still growing; the more they discovered about it, the less they understood." Chap. 31, Terminal Velocity, p. 168

"It reminded Norton of nothing so much as a three-legged spider or daddy longlegs, and he wondered how it had solved the problem - never attempted by any creature on Earth - of tripedal locomotion." Chap. 33, Spider, p. 176

"Their patterns, or templates, were stores in some central information bank, and when the time was ripe they were manufactured from available raw material - presumably from the organometallic soup of the Cylindrical Sea. Such a feat is still somewhat beyond our own ability, but does not present any theoretical problem." Chap. 38, General Assembly, p. 203

"The sky of Rama contracted above him as he descended into the central crater of the hub. When the door of the inner air lock shut off the view forever, he found himself thinking: How strange that night should be falling now that Rama is closest to the Sun!" Chap. 44, Retreat, p. 233

Topics for Discussion

What is the purpose of leaving questions unanswered in the novel? List a few of the mysteries that are left unsolved by the author.

Discuss the attitude of the members of the different committees meeting on Earth and elsewhere to discuss Rama. Is preparing for war, as the ambassador from Mercury would rather have it, the best way to insure peace and security?

Discuss the importance of the vocabulary in the novel. List of few words made up by the author to fit the alien world of Rama. In the absence of any self-referential written or sounded words, what would be the rules for constructing a vocabulary to describe alien objects or environments?

Why did Jimmy decide to pick up the lone flower of Rama instead of filling his pockets with the valuable jewels that are littering some of the fields nearby? What would you have done in a situation such as this one, and why?

Discuss the possible purpose of Rama. Is Rama just an experiment lost in space, a vessel with a definite yet unknown purpose, or something else completely?

Discuss the difference between the creatures that evolve on Rama and the explorers from the solar system. Are the creatures of Rama engineered biological devices or simply robots? Give a few example of how you could engineer a device to differentiate between humans and other automated and animated objects in your world.

Discuss the implications of the physical characteristics of Rama in the novel. Which laws of physics are broken, if any, inside Rama? Why is Rama cylindrical? Why is Rama spinning so fast?

Discuss the impact of evolving technology on fiction writing. If you were to write Rendezvous with Rama today, what would you need to change to make it more believable? How different is the future world that the current state of technology enables you to anticipate now from the fictive creation that the author was able to foresee just a few decades ago?

Discuss the importance of evolution versus design in the world of Rama. Does science fiction provide clues to answering the dilemma of creation vs. evolution? What role does this dilemma plays in the decisions of Commander Norton?