What Do YOU Care What Other People Think?: Further Adventures of a Curious Character Study Guide

What Do YOU Care What Other People Think?: Further Adventures of a Curious Character by Richard Feynman

(c)2015 BookRags, Inc. All rights reserved.

BOOKRAGS

Contents

Plot Summary

What Do You Care What Other People Think?, Further Adventures of A Curious Character is the story of Richard P. Feynman, who is a world-renowned Physicist and Nobel Laureate in Physics. He also is a physics professor at Cal Tech. Feynman is the author of this book and is also the author of several volumes preceding this book. As such, the book has some gaps in Feynman's life and career that are no doubt covered in other books.

This book briefly covers Feynman's life growing up with a father who has a unique curiosity and unusual methods of looking at the world. Richard's father definitely sparks the mindset necessary for a budding scientist and mathematician. Feynman pays tribute to his mother for her influence on his successful life and career. He learns from her that the highest forms of understanding one can achieve are laughter and human compassion. Although Richard is born and raised in the Jewish faith, his curiosity leads him as a young man to question his faith to the point where he can no longer believe and finally becomes a life-long atheist.

In high school Richard meets his future wife, Arlene. Both sets of parents agree that the couple is too young to marry, but Arlene and Richard remain devoted. Although Richard spends much time away from Arlene while at MIT for undergraduate work and then at Princeton in advanced studies in physics, they stay close and commit to marriage as soon as possible. Sadly, Arlene is stricken with a serious disease from which she never recovers. But since Arlene is the love of Richard's life, he insists on marrying her.

After graduating from Princeton, Richard takes a position with the Manhattan Project, an organization whose mission is to develop the Atomic Bomb. While Richard is working, Arlene is at a hospital nearby in New Jersey. Richard visits as much as possible. When Richard is transferred with the Project to Los Alamos, New Mexico, Arlene is transferred to a hospital in Albuquerque. Arlene does not last very long and dies while Richard is still working on the Manhattan Project.

Subsequently, Richard marries Gweneth and has a happy union with her. They have two children, Michelle and Carl. Richard travels world-wide as a speaker and leader at many Physics and Scientific conferences and seminars. Several years before his death, his country calls upon him for help. Richard's reputation and brilliance proceeds him and leads him to membership on the Presidential Commission investigating the Challenger disaster. Without his natural curiosity, intellect, vast experience and background in physics, the Commission would have been missing its most important member. Richard puts in optimum effort and time in chasing down the cause of the horrible accident. His curiosity leads him to a myriad of puzzle pieces and his intellect allows him to make sense of the complex information with which he is confronted.

Part 1: The Making of a Scientist

Part 1: The Making of a Scientist Summary and Analysis

As a baby, Richard Feynman has an early introduction to math and science. His father sets up small bathroom tiles on his high-chair tray in distinct color patterns—two blue, one white, etc. This process establishes a basis and appreciation for math in the future scientist. Richard's father takes the young boy on nature hikes. The behavior of wild birds has more interest to his father than the names given to them by humans. Richard's father teaches him to be curious and question things, not assuming conventional wisdom is correct and delving deeper and beyond just the superficial level. Why did the birds peck at their feathers? Did they peck at them more before or after flying? Richard observes the ball in his wagon moving and stopping when rolling his wagon about, questioning why and how it reacts to the varying speeds of the wagon. His father explains to a very young Richard that he is observing inertia.

Richard uses this cultivated questioning nature to learn mathematics in his own unique way. As a young boy, Richard conquers calculus, something even his father could not understand. His father encourages him to look at human beings as all the same, regardless of their title or a uniform they may be wearing. While his father teaches him to be a scientist; his mother educates him on the importance of laughter and human compassion.

Part 1: What Do You Care What Other People Think?

Part 1: What Do You Care What Other People Think? Summary and Analysis

At thirteen, Richard is friends with a group of older boys. He starts becoming interested in girls and begins dating. Richard meets Arlene, the prettiest and most popular girl in their group. Arlene seems just out of reach—she is always dancing with another boy or going steady with someone else. But finally Arlene comes around and the couple falls in love. Richard excels in High School and wins many awards.

In his formative years Richard becomes an atheist. Raised Jewish, Richard's parents see to it that he goes to Temple and receives proper instruction from the Rabbi at Sunday School. Richard has a scientific mind and takes everything literally, learning from a baby on to question what appears to be finite. When he questions how it is possible that a written account of what the iconic figure Ruth "thought" before she died, the Rabbi concedes that the story of Ruth was fabricated to illustrate a moral. That does it for Richard—how can he now believe any of the stories? From that point on, Richard becomes a life-long atheist.

After graduation from high school, Richard becomes a freshman at MIT and then goes on to Princeton as a graduate student. Although Richard and Arlene do not spend a lot of time together during his college years, they are devoted to each other and plan to marry. Arlene becomes very sick. Richard does some research and concludes that she has terminal Hodgkin's Disease. The doctors eventually agree with Richard's diagnosis. She has at the most two years to live. Richard, Arlene and her parents are devastated. After further tests are conducted, however, Arlene's disease is actually lymphatic TB a serious disease but one that gives her more time and one from which she could even recover.

Richard and Arlene marry but because of her TB, she spends most of the time in a New Jersey hospital while he is working on the Manhattan Project in New York. The Manhattan Project is charged with developing the atom bomb. He visits her as much as possible, and she fills her time sending him funny letters and catalogs containing things she wants in the future. He is transferred to Los Alamos, New Mexico where he must continue his work on the project. Arlene is moved to a hospital there in Albuquerque and again stays upbeat sending letters to him and busying herself with hobbies one of which is Chinese writing. Arlene is a little more flamboyant than the conservative Richard and always taunts him with, "What do you care what other people think?"

When she grows weaker, Arlene's father visits from New York. Sadly, Arlene dies a short time later. Richard copes with her death by trying to be scientific about it. His colleagues

at work sense he does not want to talk about it. A month later, he finally breaks down when he sees a pretty dress in a store window which would look good on Arlene.

Part 1: Simple as 1, 2,3; Getting Ahead; Hotel City; Who Is Herman; Sexist Pig

Part 1: Simple as 1, 2,3; Getting Ahead; Hotel City; Who Is Herman; Sexist Pig Summary and Analysis

It's as Simple as One,

While at Princeton, Richard does a number of experiments in counting. He tries counting while doing a chore, running up and down the stairs, typing, or talking. Working with other students, he concludes that counting methods are entirely different to a person.

Getting Ahead

On a vacation in Trinidad, Richard has a cab driver take him to the poorest areas of the island. One area is a poor East Indian community. The cab driver, who is black, tells Richard that one of the East Indian families has a son in medical school in the US. Another family saved and bought a sewing machine to start a sewing business. He tells Richard that his people do not get ahead like the East Indians although they are both members of poor communities. Richard responds that the black people have not had a chance to develop the traditions of the East Indians, or if they had, they lost it through conquest and slavery. Richard feels bad that the black cab driver plans on getting ahead by making money betting on the horses.

Hotel City

Richard is in Geneva, Switzerland, for a Physical Society meeting. Six weeks later he is scheduled to speak at the United Nation's Atoms for Peace Conference also in Geneva. He learns that all the major hotels are booked for the UN meeting. He finds a little out of the way hotel and secures a registration for his stay during the UN meeting. While at the UN meeting, the proprietor of the hotel is embarrassed when he sees Richard witnessing one of the other guests escorting a prostitute to his room. Although the hotel manager is uncomfortable, Richard thinks the incident is delightful.

Who the Hell is Herman?

Richard has a dark but funny experience. He is told that an old Los Alamos colleague, Herman, with whom he was very close was killed in a car accident. Herman's mother was killed in the accident as well. The person who calls Richard with the news asks him to be a pallbearer. Richard cannot place who "Herman" is but attributes it to his bad memory for remembering names. He agrees to be a pallbearer and travels to Los Angeles for the services. Richard looks in the casket of Herman Goldschmidt and is certain he never saw the man ever before in his life. He fulfills his duties as a pallbearer

but later finds out that the person who contacted him was mistaken about Richard knowing Herman.

Feynman Sexist Pig!

Some of Richard's lectures on physics are included in a text book. A feminist group complains in a letter to Richard about his portion of the text book noting that using a "woman driver" in a negative manner in a segment about velocity is anti-woman. Richard thinks the letter is silly and responds with simply, "Don't bug me, man." Of course, this only enrages the woman who write back. Richard does not respond a second time. However, this group of women have protesters at a speech he is making at the American Associate of Physics Teachers in San Francisco. Once Richard takes the stage, his words assure the woman that he is not sexist at all—in fact he is pro-woman and was the integral influence for his sister's career in Physics.

Part 1: I Just Shook His Hand

Part 1: I Just Shook His Hand Summary and Analysis

The University of Tokyo has been inviting Richard to visit Japan and speak at the school. Although Richard had always wanted to accept the invitations, he had been sick on several occasions and therefore unable to attend the meetings. In the summer of 1986, Richard is once again invited to speak at the University at a conference. He is in good health this time but feels he cannot accept since he has no current paper prepared. But the University is determined to have Richard be part of the conference and offers him a chairmanship of one of the sessions. This would relieve Richard of having to provide a paper and so he agrees to the offer.

By 1986, Richard has remarried so he and his new wife, Gweneth, travel to Tokyo for the conference. Things go rather smoothly for Richard in his role as Chairman of the session. One of his jobs in this capacity is to make sure that the speakers do not speak over their time limits to ensure that the next speaker is on schedule. Richard actually has two assistant chairmen who do all the work. Richard feels a little guilty since he did not really do much but had his trip and expenses paid.

Richard and Gweneth speak with one of their hosts about traveling to a remote area of Japan called Iseokitsu. The host tries to talk them out of going to Iseokitsu since there are no western-style facilities, and it is not an area typically visited by tourists. But Richard and Gweneth are adamant. They both enjoy going to such out-of-the-way places. The host reluctantly calls a Japanese style inn in the area. The proprietor does not want to have Richard and Gweneth stay there mainly due to their toilet facilities—they are not western style. But the Feynmans are not deterred—the style of toilets has no effect on their intention to visit the area.

During their stay in Iseokitsu, they visit a shrine located a mile a way. They walk to the shrine and are given a lift back when it starts to rain. Gweneth leaves one of her rolls of film in the person's car. Miraculously, the inn keeper is able to locate the person who gave them the lift. The man finds the film and returns it to Gweneth. The next morning, they decide to stay at the inn another day instead of going on to a more luxurious spa where they had reservations.

Richard and Gweneth learn that a new shrine is to be dedicated nearby and attend the ceremony. There was quite an elaborate celebration led by the head priest. To their surprise, the head priest comes to them after the ceremony and introduces them to the mayor and other dignitaries. Richard is called upon by the Mayor to give a speech. Of course, his Japanese is very poor but he manages to compliment the Japanese on their technological advances while still being able to maintain their cultural traditions. Afterwards a policeman is thrilled that Richard shakes his hand. Richard has become a local celebrity in Iseokitsu, Japan.

Part 1: Letters, Photos, and Drawings

Part 1: Letters, Photos, and Drawings Summary and Analysis

In 1961, Richard is in Brussels and writes a long letter to Gweneth. Gweneth has to attend another meeting so she is unable to accompany him. He and his colleagues are staying at a new hotel—Hotel Amigo—which is quite nice indeed. Richard gives a short talk the first morning of the conference. That evening, Richard and the others attend a reception at the palace where they meet the King and Queen. As the royalty arrive in their long, black chauffeured cars, royal guards are numerous. The royal reception is being held in the ballroom. There is a delay but finally the large doors at the end of the hall open and the royal couple enter.

The group of scientists exit to an anteroom where seats for six illustrious scientists are aligned in a front row across from the King and Queen. Richard was not one of those chosen for this honor. In response to the King, the six scientists give dull lectures to brief the King on their current work. After the speeches, everyone heads for the banquet area for food and drinks. Richard speaks privately with first the King and later the Queen. They are both amazed at how intelligent the physicists are and how difficult it must be to deal with the complex issues they face.

The next morning, Richard's colleagues are impressed when he receives a call from the Queen's secretary. Richard had quite a long talk with the secretary the evening before. He had wanted Richard to meet his family. Richard gave the secretary an open invitation to his home in Pasadena should the gentleman travel to the US. Richard is impressed by the secretary's Belgium style home and the vast grounds around it. Richard misses Gweneth and wishes she could have been with him.

The next letter from Richard to Gweneth is one while he is in Warsaw, Poland. The most astonishing thing he notices about Warsaw is that it is virtually a new city—all rebuilt since the destruction it suffered during World War II. He is staying at the Grand Hotel and describes the rather dismal state of his room—lumpy bed and all. Richard at first thinks the hotel is old but learns it is only three years old. The Poles have an uncanny ability to make new things look old.

Richard wonders if his room is bugged and whether to investigate. Suspiciously, there are a lot of wires behind a plate in the wall, but Richard sees no microphone. Richard finds the Polish people very nice but under Communist rule, common things—like pencils—are almost impossible to purchase. Richard attends the luncheon meeting at the newly-built palace. Unfortunately, he is not getting much out of the meetings and is getting into arguments outside the formal discussions. Richard considers the work of many of the other scientists as completely inane. He tells his wife that all the good men are occupied elsewhere. He tells her to remind him not to attend any more gravity conferences. Richard describes the biggest monstrosity of a building the "Palace of

Culture and Science," which was given to the Polish people by the Soviet Union. As in all his letters, Richard ends sending his love to his wife.

The next letter from Richard is when he is in Athens in 1980. He addresses the letter to his wife, daughter, Michelle, and son, Carl. He tells his family that the climate of the city is very similar to that of Pasadena; however, the traffic is snarled and loud reminding him of Mexico City. Richard takes in an archaeological museum and does quite a bit of shopping in the many small shops. He also visits the Acropolis and the Parthenon, which are quite impressive. He notes that Greek archeology is taught in elementary schools. The Greeks have a kind of ancestor worship for the ancient Greeks. Richard describes the Greek work day. Due to the excessive heat in the afternoon, all workers are off from 1:30 p.m. To 5:30 p.m. for naps. He is using this off time to write the letter home.

In November 1947, Freeman Dyson writes a letter to his family in which he mentions Richard Feynman. He tells his family that he and Richard will be attending a Seminar in Rochester. Richard is a professor at Cornell who Freeman has grown to admire. Richard has developed his own version of the quantum theory, which someday may prove to be more beneficial than the orthodox version. Life is not dull around Richard, whose latest idea is replaced by a newer one before he can finish explaining the former.

Freeman writes another letter in 1981 to Sara who is a family friend. He tells Sara that he has just spent three days with Dick Feynman. Although 60 years old and a survivor of a big cancer operation. Richard is the same as when they knew him at Cornell. They attend a physics conference at the University of Texas. The meeting is held at the World of Tennis, an elaborate country club for rich Texans. Feynman is so offended by the extravagant ugliness that he leaves for the woods, spends the night and reappears the next day no worse for the wear. Most of Richard's conversation centers around his children.

In February 1988, Henry Bethe, writes Gweneth a letter. Henry does not know Gweneth well but wanted to write to express his sympathy at Richard's passing. Richard was a friend of Bethe's parents. Henry knew Richard from a young boy on. Richard always played games with Henry even though there was serious adult conversation going on. For example, Richard told Henry there were twice as many numbers as numbers. When the boy said one million, Richard would say two million. When Henry offered 27, Richard would respond with 54. Henry caught on, then Richard explained that no matter how big the number, there is always a bigger number. Richard told the young Henry that what he just illustrated to him was infinity.

Part 2: Preliminaries; Committing Suicide

Part 2: Preliminaries; Committing Suicide Summary and Analysis

Preliminaries

Richard describes the shuttle. The large central part is the tank which holds the fuel. The engines are located at the back of the orbiter. The crew sits in the front of the orbiter; behind them is the cargo bay. Richard describes how after launch the tank separates from the orbiter and falls back to earth. He then describes the types of seals used to hold the joint sections together: "factory joints" and "field joints." Field joints are sealed at the space center while factory joints are sealed at the Morton Thiokol factory.

Committing Suicide

The space shuttle Challenger of course had a terrible accident on January 28, 1986, in which the entire crew perished. Richard knew of the tragedy but is surprised when he was called by head of NASA, William Graham, asking Richard to be on the committee investigating the accident. Graham told Richard that he was a student of his at Cal Tech, which Richard does not readily recall. Richard's first instinct is to decline since the investigation would be held in Washington, D.C. — a city which he avoids like the plague. Gweneth encourages him to participate as he would probably be the only scientist to look at the evidence in an unorthodox manner. And, she continues, if there is anything to be found, it would be Richard who would find it.

Richard commits to only six-months, figuring the commission would deteriorate from a fact-finding body to a blame assigning entity. It would then evolve to whether the entire space program should be abandoned. He did not want any part of that. Richard decides he will have to commit himself fully to the investigation and drops all other current projects. He describes his decision to his wife as "committing suicide for six months."

Part 2: The Cold Facts

Part 2: The Cold Facts Summary and Analysis

Richard understands that his acceptance on the Commission still needs approval. As he says, "There is still hope!" But he does get the call that he is part of the "presidential commission" headed by William P. Rogers. Rogers is the former Secretary of State who was shoved aside by Nixon in favor of his National Security Advisor Henry Kissinger.

In preparation for the first meeting, Richard contacts colleagues at JPL to arrange a briefing in order to gain insight into the operation of the space shuttle. Richard is impressed with their knowledge and enthusiasm. They are ahead of the curve as they focus on possible problems with O-rings in the booster-rocket field joints. Richard notes their reference to "ZN CrO4" that "makes bubbles." The chromate putty used as an O-ring insulator has a tendency to make bubbles which can become enlarged very quickly from hot gas leaks which can then erode the O-ring. Richard learns of the delicate structure of the shuttles and how they are impacted by the thrusts and forces of the engines.

The briefing is not brief; rather, it is intense, in-depth and thorough. If the first group of engineers do not know an answer, they call in a colleague who does. Richard arrives in Washington and gives the cab driver the address which he had written down incorrectly. They wind up in a part of town that is obviously wrong. Richard is taken to the NASA offices who finally directs him to William Rogers' law offices where the commission is holding its first meeting. In addition to Rogers, the only other person he recognizes on the committee is Neil Armstrong, former astronaut. Sally Ride is also on the commission, but he did not at first recognize her.

Rogers sets the mission of the commission to 1) review the circumstances of the accident; and, 2) develop recommendations for corrective action. Rogers cautions committee members against leaking information to the press. There will be private meetings as well as open meetings where information will be shared with the public. The first official meeting would be a public one the next morning. A limousine driver takes Richard to the first meeting. NASA uses so many acronyms that they supply a NASA acronym dictionary to the participants. Immediately Richard sees a difference in focus from the lawyers/administrators versus the physicists/scientists. The laymen could not answer many of the technical questions and the scientists were told continuously that the information would be provided later.

Richard feels the commission is bogged down by inaction. He presses Rogers to allow him to talk directly to NASA engineers before the commission travels to the Kennedy Space Center for a scheduled briefing. Rogers is cautious due to his responsibility for documenting every piece of information and allowing each commissioner equal access to all information. Richard receives thorough briefings from NASA engineers on the orbiter, engines and most importantly the sealers. The sealer expert, Mr. Weeks,

confirms the problems with the O-rings as first described at his briefing by JPL engineers. Thiokol was aware of the problems with the O-rings and had struggled to make the devices work. Richard discovers that although NASA was aware of the O-ring malfunction and recognized damage to the O-rings after some shuttle flights, no effort was made to permanently fix the problem. It seemed to them more of a random problem although somewhat of a Russian roulette scenario.

One of the commission members mentions that the temperature when the shuttle took off was 28 or 29 degrees. The coldest previous temperature for a launch was 53 degrees. Immediately, Richard knows that temperature could have been a contributing factor in the accident. The temperature would have made the integral O-rings stiff. Although inconclusive, photographs show a flame in the area of the O-rings just prior to the explosion. The flame could have originated in a test area which would not have caused the accident. However, an employee of the Thiokol Company testifies that they had warned NASA to abort the launch if the temperature was below 53. NASA's response was that evidence that a lower temperature would cause a malfunction was incomplete.

Richard decides to try an experiment. He gets a piece of the O-ring rubber and brings tools to the next meeting. Mr. Mulloy of NASA is describing the O-ring problem to the public meeting. Richard assumes NASA is trying to preempt the later testimony of Thiokol on their advice to abort the launch. Richard has the waiter bring him a glass of ice water. Richard dips the O-ring encased in a C-clamp in the icy water. When he brings the c-clamp out and removes the O-ring, the sealer is stiff and not resilient as it needs to be to function properly.

Part 2: Check Six

Part 2: Check Six Summary and Analysis

Richard is the darling of the press and is asked the most questions by them. He assures Rogers that he is only giving them technical information about the O-rings. Rogers has no problem at all and thinks Richard is doing a fine job dealing with the media. Richard's cousin works for CNN and her son works for the Washington Post. He reveals this to Rogers adding that he does not discuss the work of the Commission with them.

General Kutyna, another Commission member, invites Richard over for a briefing at the Pentagon to understand the relationship between NASA and the Air Force. One of the things that General Kutyna covers with Richard is the political connections of Commission members—how it is difficult to drive home some questions when one has a political agenda. He tells Richard that he is the only Commission member who is free of politics. However, one can never feel completely safe. He explains the Air Force "check six" rule. A pilot sees no one around him and thinks he is safe. Another plane flies up directly behind him at 6 o'clock and shoots him down. So, one has to check six.

Richard writes home concerned that he is not trusted by Rogers and feels that some people may be keeping some information from him. They are scheduled to fly to the Kennedy Space Center for a briefing. Richard is determined to stay there until he gets all his questions answered. The press is reporting that NASA is under pressure to launch a shuttle. Richard is feeling the forces but intends to fulfill his obligations to the Commission, find out the truth but also watch out for himself. Check Six.

Part 2: Gumshoes

Part 2: Gumshoes Summary and Analysis

The Commission members are at gathered at Cape Kennedy. They review numerous photos from the many cameras that encircle the shuttle on take-off. They focus on the spot adjacent to the O-rings where large puffs of dark smoke are obvious. The trails of smoke are approximately six feet long and two feet thick. The members find out later that there had never been such trails of smoke in any launch before. One of the launch workers informs the group that the temperature was very cold over that night 22 degrees, but curiously some spots around the launch registered as low as 8 degrees. The worker did not understand why it was that low.

Richard surmises that the very low temperature that was registered that night could have been due to the liquid hydrogen and oxygen which could lower the temperature below the environmental 22 degrees. Richard does some testing of the temperature measuring device and his calculations show that the extremely low degrees registered were in error due to the incorrect use of the tool. Richard then tries to determine if the O-rings could have been squashed in transit to an shape other than completely round—which would make them vulnerable to gas leaks.

Richard hears that the President wanted to talk to the school teacher during his State of the Union address and thus there was pressure for the launch to take place. He also heard that there was the comment, "Let's go for it" written in one of the launch documents which could have ominous meaning. Richard talks directly with the team of employees responsible for the actual assembly of the rocket. Richard finds evidence that some of the nuts may have been tightened over the allotted pressure. This overage causing undue internal pressure could have been a contributing factor to the accident.

Part 2: Fantastic Figures

Part 2: Fantastic Figures Summary and Analysis

The Commission is split into groups with Richard spending most of his time in General Kutyna's group, which is leading the Accident Analysis group. This group travels to Marshal Space Flight Center in Huntsville, Alabama. One of the range safety officers has the responsibility of placing self-destruct charges on the rockets. The perceived chances of failure of manned rockets are one in 100,000. However, these self-destruct charges are routinely placed on them. Without them, the more perilous scenario of a doomed rocket flying around loose and ready to explode upon impact would be far worse than having to destroy a rocket remotely.

Richard determines that there are no good lines of communication between management and the actual working teams in both the booster rockets and engine areas. Management seems too willing to accept errors while the engineers and workers are screaming for support in correcting them. There are many problems with the engines that are routinely noted after missions. The shuttles, unlike airplanes, are designed "from the top down" which calls for extensive redesign after problems are found. High-frequency vibrations seem to affect some shuttles more than others.

The next several months, Richard spends time running back and forth between Marshall Space Center who designed the engines, Rocketdyne who built them, Lockheed who wrote instructions, and the Kennedy Space Center who installed them. It is a confusing maize in which Richard tries to get answers to his questions. He finds another confusing situation existing in the repair of the engines. Since parts of engines are replaced as needed, an engine's overall age and usage time is impossible to determine.

Part 2: An Inflamed Appendix; The Tenth Recommendation

Part 2: An Inflamed Appendix; The Tenth Recommendation Summary and Analysis

An Inflamed Appendix

Richard writes up his findings thus far on what he has learned on the engines, temperature issues and booster rockets and forwards them in a report to the Commission. Richard visits Houston where he looks into the avionics aspect of the investigation. Richard questions the team members at Houston and finds good rapport exists between team and management. He does note that much of the hardware is outdated, and the software is developed in workarounds to cope with the dated hardware. Richard tries but fails to find any strong evidence of undue political pressure for launching the Challenger.

Richard participates in writing a portion of the final Commission report. His group's report focuses on "The Accident" and "The Cause of the Accident." Richard feels that not interacting with the other groups writing their separate reports may present a disjointed finding. He feels that too much emphasis is placed on wordsmithing the report and on how the report looks. The report that Richard had sent preliminarily is not made part of the main report. Rather, it is added as Appendix F.

The Tenth Recommendation

The Commission makes a recommendation to create a safety board. Richard thinks this is superfluous since safety is covered by existing procedure. In the end, Richard feels there is not enough discussion about substance with the focus on wordsmithing and the aesthetic properties of the report. In the end the Commission makes nine final recommendations. Mr. Rogers, probably thinking like a politician, suggests another, a tenth recommendation. The tenth recommendation is a laudatory comment about the hard work of NASA and how the country and the administration should continue to support it. Richard considers such a statement as policy and thinks it is inappropriate to include it. There is a struggle back and forth, and finally Richard reaches a compromise with the Commission. He threatens to remove his name from the report unless they change the last recommendation from "tenth recommendation" to "concluding thought." Richard also insists that his unedited Appendix F be used in place of the edited version. He gets his way on both counts.

Part 2: Meet the Press; Afterthoughts

Part 2: Meet the Press; Afterthoughts Summary and Analysis

Meet the Press

The report is presented to President Reagan in a formal ceremony in the Rose Garden in June. The report will not be released until the next Monday so the President has time to absorb it. The press is asking questions but Richard refuses to talk to them until after the report is issued on a broad basis. Richard is lined up to appear on the MacNeil/Lehrer Report on Monday evening. He plans to have his own press conference at Cal Tech on Tuesday where he will release copies of his report that will appear as an appendix in a report to be released several months later. Richard gives a copy of his report to members of the MacNeil/Lehrer staff. He realizes that releasing an early copy was a mistake and asks the reporters not to use the report until Tuesday. Richard finally convinces them not to use the report in advance of his Tuesday press conference.

Afterthoughts

In reflection, Richard views Mr. Rogers as a successful Commission head. He understands that they are from two different worlds but recognizes that Rogers had to juggle quite a few things in running the Commission. One thing that continues to haunt Richard is the undue pressure that was placed on launching the Challenger despite some warnings and misgivings. Richard's theory about the lack of communication between engineers and management was due to a let down in enthusiasm after the success of the moon shot. Once the moon project was over, the shuttle was presented with false enthusiasm and false promises. Managers did not want to hear about costly problems the engineers were clamoring to fix so eventually the engineers stopped asking. Thus, the managers may not have been advised of some of the problems that existed with the shuttles.

It was President Reagan's idea to put a teacher in space as a symbol of the nation's commitment to education. He wanted to talk over the air with that teacher during his State of the Union address. However, Richard had found nothing to convince him that the White House put undue pressure to have the launch.

Richard feels the report did not represent the whole truth about the Commission's findings. He concludes that while scientists have integrity and present a theory with both good and bad sides, a politician is more like a salesman—he wants to sell something even if he has to fool someone.

Characters

Richard P. Feynman

Richard P. Feynman, the author of What Do You Care What Other People Think?: Further Adventures of A Curious Character is a world-renowned Physicist and Nobel Laureate. Additionally, Feynman is an author of several other books about his life and experiences.

Life begins for Richard with a father who is eternally curious. Although Richard's father is apparently not at the intellectual level of his gifted son, he is uniquely curious. He does not look at anything in a conventional manner. For example, when he takes Richard on nature walks, he teaches his son to look at the behavior of animals rather than what humans have named them. He teaches his son the fundamentals of mathematics by placing small, different-colored tiles in Richard's high chair tray in patterns that provide numeric basics. His father teaches him to never look at anything the way others tell him to. Richard is taught to look at something through unbiased eyes, treating the item as though it has never been seen by humankind before. Richard's father's avant garde approach to teaching his son how to learn forms the basis for this future scientist. Although Richard is born and raised in the Jewish faith, his curiosity leads him as a young man to question his faith to the point where he can no longer believe and finally becomes a life-long atheist.

Although he readily admits that his mother knows nothing about science, he attributes to her a characteristic that he deems just as important. He learns from his mother that the highest forms of understanding one can achieve are laughter and human compassion. Throughout this story, the strong influence of his mother's characteristics and personality is obvious and provides Richard with a powerful tool to cope with various aspects of his personal life and stellar career choice beyond just intellect and education.

After graduating from advanced studies at Princeton, Richard is given an assignment on the Manhattan Project first in New York and later in Los Alamos. The mission of the Manhattan Project is to develop the atom bomb. In later years, Richard is awarded the Nobel Prize in Physics, which he considers secondary to the actual work itself. There is a modesty and kindness of spirit that sets Richard apart. Although he is the typical absent-minded professor, when he realizes his words may have offended he feels awful and tries to make amends. Richard may not understand exactly why his words hurt, but he does not like hurting anyone. As any bright person, he is aware of his superior intellect but takes pains to avoid talking down to anyone. He is a decent, honest person who wants to help humanity in a big way but is careful not hurt his fellow man even in small ways.

Richard's reputation and brilliance proceeds him and leads him to membership on the Presidential Commission investigating the Challenger disaster. Without his natural curiosity, intellect, and vast experience and background in physics, the Commission

would have been missing its most important member. Richard puts in optimum effort and time in chasing down the cause of the horrible accident. His curiosity leads him to a myriad of puzzle pieces, and his intellect allows him to make sense of the complex information with which he is confronted.

Arlene Feynman

Richard Feynman is a shy, young high school student when he meets the love of his life, Arlene. Richard is sitting on the couch trying to kiss another girl at a party when he hears another boy say, "She's here. She's here." Naturally, Richard is curious about all the excitement . He turns to see a very pretty girl named Arlene. He begins noticing Arlene at school dances. She is very popular and always arriving with a boy and dancing with many others. Richard decides to cut in and winds up chasing her around the floor. He finally snags a dance with her only to be cut in by another boy almost immediately.

Somehow Richard gets the nerve to ask Arlene to a dance. Miraculously she accepts but even his best friends cut in on dances with her. Richard does not feel very appealing as he is an egg head and not a jock but nonetheless Arlene starts to warm up to him. She has a party at her house and purposely comes by to sit with him. Soon Arlene announces that she is boyfriend-free and from that point on Richard and Arlene are inseparable. Richard, of course, is a stand out at school and excels in mathematics and science. His teachers encourage his parents to send him to school. Richard is awarded scholarships at MIT undergraduate and at Princeton for advanced studies.

Both sets of parents feel that Richard and Arlene are too young to get serious. However, even when Richard is away for months at a time at school, the two remain devoted to each other and plan to one day marry. While still at Princeton, Arlene becomes ill with a swollen gland on her neck. The doctors diagnose her with a curable glandular condition, but Richard is suspicious. He does quite a bit a research and feels that the doctors are wrong and decides that Arlene has terminal Hodgkin's disease. The young couple is close and open with each other so Richard tells Arlene of his fears. The doctors at first agree with Richard but on further testing Arlene's actual diagnosis is serious, though less grave. The doctors tell Arlene she has tuberculosis of the lymphatic gland. Arlene tells Richard that she could have seven years to live or even recover totally.

Richard stays devoted to Arlene and insists on marrying her. Through most of their marriage, Arlene is bed-ridden. While he finishes up at Princeton, Arlene is in a hospital not far away in New Jersey. After graduation, Richard is given a position on the Manhattan Project in New York. Later the project head transfers him to Los Alamos, New Mexico. Arlene's health is deteriorating, and she is transferred to a hospital in Albuquerque to be near Richard. Unfortunately, Arlene never recovers and dies in the hospital. Richard suppresses his emotions and returns to work immediately, his colleagues sensing he wants to be left alone. A month after Arlene's death, he sees a pretty dress in a shop window. Only then when he pictures Arlene in the dress does he break down and openly grieve.

Mel Feynman

Mel Feynman is Richard's father and is central to his son's development as a scientist and mathematician.

Gweneth Feynman

Gweneth Feynman is Richard's third wife. After Arlene dies, Richard marries a woman named Mary, but that union lasts only a short time.

William Graham

William Graham, head of NASA, is a former student who contacts Richard inviting him to be a member of the Presidential Commission investigating the Challenger disaster.

William P. Rogers

William P. Rogers, former Secretary of State under President Nixon, is the head of the Presidential Commission investigating the Challenger accident.

Sally Ride

Sally Ride, scientist and astronaut, is a fellow member of the Challenger Commission.

Neil Armstrong

Neil Armstrong, astronaut and aeronautical engineer, is a fellow member of the Challenger Commission.

General Kutyna

General Kutyna, US Air Force, heads the accident investigation portion of the President's Commission. Kutyna and Richard develop a quick rapport and work well together.

Carl and Michelle Feynman

Carl and Michelle Feynman are the children of Gweneth and Richard Feynman. Michelle is their adopted daughter.

Objects/Places

New York City

New York City is where Richard works on the Manhattan Project while Arlene stays in a hospital nearby in New Jersey.

Far Rockaway, NY

Far Rockaway, NY is the birthplace of Richard Feynman.

Los Alamos, New Mexico

Arlene stays in Albuquerque while Richard works on the Manhattan Project in Los Alamos. Arlene subsequently dies in in that Albuquerque hospital.

Albuguerque, New Mexico

Arlene stays in Albuquerque while Richard works on the Manhattan Project in Los Alamos. Arlene subsequently dies in in that Albuquerque hospital.

Trinidad

Trinidad is a place that Richard visits and explores while on a brief vacation.

Geneva, Switzerland

Geneva, Switzerland is the site of the Atoms for Peace Conference where Richard gives a speech on physics.

Tokyo, Japan

Tokyo, Japan is where the University of Tokyo is located. The University invites Richard to attend a conference there and serve as chairman of one of the sessions.

Brussels, Belgium

In Brussels, Belgium Richard meets the King and Queen of Belgium while attending a conference in Brussels.

Washington, DC

Washington, DC, is a city that Richard usually tries to avoid. However, he spends many months there while serving as a member of the Presidential Commission on the Challenger disaster.

Kennedy Space Center, Florida

Kennedy Space Center, Florida, is the location where part of the investigation of the Challenger disaster takes place.

Themes

Science/Physics

Physics is one of the main themes of What do You Care What Other People Think? Further Adventures of a Curious Character. The subject and author of the book is famed physicist Richard P. Feynman, who is a renowned Nobel Laurette in Physics and a popular professor of Physics at CalTech. Mathematics is one of the fundamentals of science and Richard learns its basic at a young age. Richard's father, Mel, would line up different-colored tiles in varying patterns on baby Richard's high chair tray. Observing these patterns helps Richard at a very young age to discern number relationships. His father teaches him not to look at anything in a conventional way; rather, he should question conventional wisdom and draw his own conclusions.

As a young college student, Richard does independent research on simple counting. He times how long it takes to count sitting still, running up and down the stairs and under other physically exerting conditions. He has other students go through the paces as well and reaches the conclusions that the time it takes to count depends on the person and the condition. This may sound rather dull but keep in mind that Richard conducts such research in his leisure time for fun. His curious mind and scientific way of looking at things lead him to question and delve into any matter that catches his attention.

During the last several years of Richard's life, he is called upon by his country. A former student is the head of NASA when the Challenge disaster occurs. A Presidential Commission is formed to investigate the causes of the tragedy. The NASA head invites Richard to become a member of the Commission. Richard's contribution of effort, time and knowledge would have been sorely missed had he not be made part of the Commission. His unique way of approaching any problem, opens up possibilities that would have been missed by the ordinary mind.

In discussing the subject of science, Richard says that if one has a theory, he must try to explain what's good and what's bad about it equally. In since, you learn a kind of standard integrity and honesty.

Humor

Richard P. Feynman, world-renowned physicist and Nobel Laurette, attributes the development of his curious mind and scientific approach to his father's emphasis on throwing aside conventional wisdom and delving into issues in an original way. However, his mother plays a major role in Richard's successful life and career as well. Although his mother is first to admit that she knows nothing of science and advanced mathematics, she has a great influence on Richard in another way. Richard's mother has a wonderful sense of humor, and he learns from her that the highest forms of understanding that a person can achieve are laughter and human compassion.

There are dozens of comments and incidents throughout the book that reflect Richard's mother's influence. At one point, Richard contributes some items for a physics text book. After it is published, Richard receives a letter of complaint from a women's group. In the letter, the women complain that when Richard discusses velocity, he refers to a "woman driver" in a derisive manner. Richard thinks the complaint is silly and answers in kind. He writes back and says, "Don't bug me, man!" Some of these women show up at a protest. Richard easily convinces them that he has no prejudice against women entering the field of physics—in fact he had encouraged his younger sister to do just that.

Richard's compassion shows up in many ways. When he is asked to be a pall bearer by mistake for someone he never saw in his life, he plays along. He offers his sympathies to the family and fulfills his duties as a pall bearer. He would have never hurt them by exposing the gaff. As a member of the Presidential Commission on the Challenger disaster, he must question NASA workers and non-scientific people. He is careful not to appear condescending although he is well aware of his superior intellect. He is kind, enjoys the humor in life and works very hard for the good of mankind.

The Curious Mind

If Richard P. Feynman was not born with a curious mind, he soon developed one thanks in large part to his father. Life begins for Richard with a father who is eternally curious. Although Richard's father is apparently not at the intellectual level of his gifted son, he is without doubt uniquely curious. He never looks at things in a conventional manner. For example, when he takes Richard on nature walks, he teaches his son to look at the behavior of animals rather than what humans have named them. People who speak English name a red bird one thing—across the world in Japan, the same bird is called something else.

Mel Feynman teaches his son the fundamentals of mathematics by placing small, different-colored tiles in Richard's high chair tray in patterns that provide a basic understanding of numbers. His father teaches him to never look at anything the way others tell him to see. Richard is taught to look at something through unbiased eyes, treating the item as though it has never been seen by humankind ever before. Richard's father's avant garde approach in teaching his son how to learn forms the basis for this future mathematician and scientist.

Near the end of his life, Richard is called on to help determine the cause of the Challenger disaster. Coupling his vast education and experience with his curious mind, Richard is the perfect tool the Commission needs to discover what brought about the tragic Challenger accident.

Style

Perspective

The book, What Do You Care What Other People Think?: Further Adventures of A Curious Character is the story of world-renowned Physicist and Nobel Laureate Physicist Richard P. Feynman. The majority of the book is written by Richard Feynman himself. Therefore, the reader has the advantage of the experiences, thoughts and feelings of the main character first hand. However, there are a few segments that include letters from several other people—one to the widow of Richard Feynman. These letters provide glimpses into the life of the famous scientist.

Richard describes his young life with his parents and younger sister. His father although apparently not as intellectually gifted as his son, has a curiosity about everything he encounters. He takes his young son on nature hikes. He does not know nor does he consider important the name of birds they see. Names are given to animals and birds by humans. What is important is the behavior of the birds, how they interact with other birds and its young—not what a human calls them. His father sets up different colors of small tiles in Richard's high chair in varying patterns which fosters Richard's interest in mathematics. Richard's father's natural curiosity teaches his son from a baby on to question everything and to not take conventional wisdom gospel. A more perfect foundation for a budding scientist could not exist. Richard's mother contributes to her son's success as well. Her wonderful sense of humor was passed onto her Richard who relies on it as much as anything else.

Richard carries this curiosity throughout his education at MIT and then Princeton as well as his career as a physicist and professor at Cal Tech. His nurtured curiosity along with his scientific credentials make him perfect for his role as a member of the Presidential Commission investigating the tragic accident of the Space Shuttle Challenger. Richard's dedication and curiosity leads to conclusions that without his participation would have probably been missed.

Tone

Surprisingly for a very serious person—one can't get much more serious than a Nobel Laureate Physicist—the tone of What Do You Care What Other People Think?, Further Adventures of A Curious Character is light and care-free. The self-described absent-minded professor lives up to that image. Richard attributes his scientific curiosity to his father, and more important to him, his sense of humor to his mother. Richard readily admits his mother knew nothing about science, but he learned from her that the highest forms of understanding that can be achieved are laughter and human compassion. Richard's sense of the ridiculous and compassion for others shines throughout the entire book.

Richard can rattle off difficult formulae from memory but cannot remember that the head of NASA is a former student of his. When he receives a phone call that a former colleague, Herman, has died he does not recall the person by the name but attributes that to his proclivity to not remember names. He agrees to be a pall bearer. However, when Richard looks in the casket, he knows he has never seen him before in his life. But true to form, he is not about to hurt the family and feigns his sorrow and fulfills his obligation as a pall bearer.

Structure

The book is one of a series by the author. The structure of What Do You Care What Other People Think?, Further Adventures of A Curious Character is undeniably loose. The author, Richard P. Feynman, world-renowned Physicist and Nobel Laureate, is a self-described absent-minded professor. The book confirms that the author's self-description is right on target. The book includes photos of Richard and his family and charts and pictures covering some of his work.

There are two main parts. Part 1 is titled, "A Curious Character" which is a fitting double-entendre. His father teaches him to be curious from a young age which follows through the rest of his life. He is also somewhat of an odd (curious) character. The chapters in Part 1 are not in any particular chronological order. Many of the segments are not dated, although some are. Therefore, there is no real sense of a start and finish. In the middle of "Letters, Photos, and Drawings," there is a letter from a friend to Richard's widow addressing his passing. After that, the entire story of Richard's involvement with the President's Commission on the Shuttle Challenger accident takes place.

Part 2 is entitled, "Mr. Feynman Goes to Washington: Investigating the Space Shuttle Challenger Disaster." The chapters in this segment are more or less in chronological order because Feynman is recounting the steps taken to determine the cause of the tragedy. The ending of the book contains a speech on his personal observations on the reliability of the shuttle. The book ends with a preface entitled, "The Value of Science," which is an eloquent speech and professorial exposition on the subject matter.

Quotes

"Although my mother didn't know anything about science, she had a great influence on me as well. In particular, she had a wonderful sense of humor, and I learned from her that the highest forms of understanding we can achieve are laughter and human compassion." Page 19.

"Elder brother also speaks. I'm a real bastard—I would never let my little sister score one on me." Page 50.

"I must have done something to myself, psychologically. I didn't cry until about a month later, when I was walking past a department store in Oak Ridge and noticed a pretty dress in the window. I thought, 'Arlene would like that,' and then it hit me." Page 53.

"Queen: It must be very hard working thinking about those difficult problems. . . . Feynman: No, we all do it for the fun of it." Page 86.

"The real question of government versus private enterprise is argued on too philosophical and abstract a basis. Theoretically, planning may be good. But nobody has ever figured out the cause of government stupidity—and until they do (and find the cure), all ideal plans will fall into quicksand." Page 91.

"I guess the Greeks think all Americans must be dull, being only interested in machinery when there are all those beautiful statues and portrayals of lovely myths and stories of gods and goddesses to look at." Page 96.

"It turned out that apart from Mr. Rogers and Mr. Acheson, who were lawyers. . .we all had degrees in science. Most of us seemed to have done some preliminary work on our own. We kept asking questions that were much more technical than some of the big cheeses were prepared for. When one of them couldn't answer a question, Mr. Rogers would reassure him that we understood he wasn't expecting such detailed questions, and that we were satisfied, for the time being at least, by the perpetual answer, 'We'll get that information to you later.'" Page 127.

"So NASA had developed a peculiar kind of attitude: if one of the seals leaks a little and the flight is successful, the problem isn't so serious. Try playing Russian roulette that

way: you pull the trigger and the gun doesn't go off, so it must be safe to pull the trigger again. . . " Page 138.

"I took the rubber from the model and put it in a clamp in ice water for a while. I take the clamp out, hold it up in the air, and loosen it as I talk: 'I discovered that when you undo the clamp, the rubber doesn't spring back. In other words, for more than a few seconds, there is no resilience in this particular material when it is at a temperature of 32 degrees.'" Page 151.

"We could see four or five puffs of black smoke coming from a field joint. This smoke was not burning material; it was simply carbon and mucky stuff that was pushed out because of pressure inside the rockets. The puffs of smoke were about six feet long, and a few feet thick." Page 159.

"It was the President's idea to put a teacher in space, as a symbol of the nation's commitment to education. He had proposed the idea a year before, in his State of the Union address. Now, one year later, the State of the Union speech was coming up again. It would be perfect to have the teacher in space, talking to the President and the Congress." Page 216.

"If you have a theory, you must try to explain what's good and what's bad about it equally. In science, you learn a kind of standard integrity and honesty." Page 218.

Topics for Discussion

Describe different ways in which Richard's father taught him to learn. What specific method did he use to create a basis for the baby Richard to learn math? How did Richard's father develop a natural curiosity in his son?

What was Richard's mother's legacy to her son? In what ways does his mother's influence contribute to Richard's life and career?

Richard is born and raised in the Jewish religion. What specifically does he begin to question about his religion? Where does his curiosity about his faith lead him?

When Richard's first wife, Arlene, falls ill, what is the first diagnosis given to her by the doctors? Not believing that diagnosis, Richard does additional research. What disease does Richard feel Arlene actually has? Was he correct? If not, what was her true condition?

What famous people serve on the Presidential Commission on the Challenger Disaster with Richard? What connection does the head of NASA have to Richard?

What environmental condition does Richard focus on when investigating the function of the O-Ring seals in the Challenger accident? How does he illustrate this to the Commission?

Discuss the political pressure that the Presidential Commission on the Challenger Disaster must contend with during its investigation. Specifically where do these sources of pressure originate from?