

The Universe in a Single Atom: The Convergence of Science and Spirituality Study Guide

The Universe in a Single Atom: The Convergence of Science and Spirituality by Dalai Lama

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Plot Summary

"The Universe in a Single Atom" by the Dalai Lama is an exploration of the connection between science and spirituality. The book is based on 40 years of study with great scientific minds, according to the Dalai Lama. In this book, the Dalai Lama addresses the importance of embracing science, understanding that it does not take away from religion.

When the Dalai Lama began his education at the age of six, he studied everything related to Buddhism, but he never had an introduction to the sciences or math. As he explored through the rooms in his winter palace, he came across some items of technology left by the Thirteenth Dalai Lama. These items intrigued him, and he learned how to use them. As he took apart mechanical objects and put them back together, he opened his mind to scientific ideas. In his late teens, he began to travel. During these travels, he met scientists who introduced him to different ways of interpreting the physical world.

Instead of turning him away from religion, he found parallels between scientific methods and religious practices. He realized that both science and religion, when used properly, could help make the world a better place and help people care for each other.

The Dalai Lama was exposed ancient Indian philosophy when he was very young. He had tutors who helped him learn different schools of Buddhist thought. Still, he was more interested in dismantling and reassembling cars and watches than he was in philosophical discussions. This changed when he turned 16 and became the leader of the country. He dedicated himself to his studies at that point.

During his time in exile, the Dalai Lama learned about quantum mechanics. He found the resonance between new physics and the notion of emptiness found in Buddhist studies. Traveling around the world, the man talked with other scientists who had different theories about the beginning of the universe. He compared the Buddhist perspective to other theories. After looking at similarities and differences, he realized the question wasn't really where life came from. Really, it was the origin of sentience that was in question.

Scientists tried to figure out the origins of life and attempted to figure out the concept of consciousness. The Dalai Lama noted that this was a difficult concept because it's based on first person observations, and science used a third-person analysis. He felt that science would benefit from contemplative traditions such as Buddhism. Even though Buddhists weren't necessarily aware of chemical reactions in the brain, the tradition of meditation has shown Buddhists that the mind has a great capacity for transformation and adaptation.

One area of great interest to the Dalai Lama was the role of ethics in genetics. With scientific advancement in genetic engineering of people, animals, and food, making decisions on what is right and what is not right is of critical importance. He felt that it

was critical to consider long-term effects of genetic engineering. He also emphasized that science must factor in what's best for mankind and the planet.



Prologue - Chapter 2

Prologue - Chapter 2 Summary and Analysis

"The Universe in a Single Atom" by the Dalai Lama is an exploration of the connection between science and spirituality. The book is based on 40 years of study with great scientific minds, according to the Dalai Lama. In this book, the Dalai Lama addresses the importance of embracing science, understanding that it does not take away from religion.

As the book opens, the Dalai Lama points out that he never trained in science personally. His knowledge of science came from reading news coverages and meeting with scientists. Over time, as he listened to thoughts on theories and new discoveries, he attempted to grasp underlying methods and models of scientific thought. Of key importance to him was an understanding of how science influenced human values and ethics.

The Dalai Lama's explorations of science included studies in cosmology, subatomic physics, neuroscience, and psychology. He considered the connection between major scientific ideas and Buddhist concepts. The Dalai Lama remembered a disturbing conversation he had with an American woman who was married to a Tibetan. She warned him that history proved that science kills religion, encouraging him not to pursue his scientific studies. The Dalai Lama felt that there was a connection between Buddhism and science since both understand that the nature of reality is pursued by critical investigation. Looking at the way scientists shared information, the Dalai Lama recognized the spirit of oneness in science was also found in his Buddhist beliefs.

Although he was interested in science on a personal level, it was also more than that. He felt that one of the underlying causes for Tibet's political tragedy was its lack of modernization. Modern education included science and technology. Therefore, he encouraged schools to take on science in their curriculum, even classical Buddhist schools.

The Dalai Lama pointed out that this book was not an attempt to unite religion and science. However, it was an effort to look at both science and religion in order to develop an integrated, holistic way of understanding the world. They are two separate entities that have a similar goal-seeking the truth. The Dalai Lama encouraged Buddhists worldwide to take science seriously and accept some of the scientific discoveries as part of their worldview.

As the Dalai Lama looked back on his own life, he realized the impact of science and technology on humanity. His own interest in science began as a curiosity regarding the world—a world governed by technology. After he came into exile in 1959, he began to realize the full impact of science on humanity. Virtually every area of human life today has been touched by technology and science. Still, this didn't mean that people



understood science. That was something that was of great importance because the direction science might go should be guided by compassion, bringing benefit to the world, and conscious ethical motivation. It had great potential for harm if misused. These thoughts turned the Dolly Lama's interest in science into urgent engagement.

He wanted to understand science and figured out how to take scientific developments and turn them into something that offered compassionate service and optimistic service for humanity. Since science could be used for good or bad, ethics came into play. Scientific discoveries affect not only the way we understand our world, but also identifies our place in the world. It was critical for science to be merged with basic human feeling and empathy.

Technology and science were tools that must be used properly. In his studies, the Dalai Lama noticed that many people assumed that the scientific view of the world was the basis of all knowledge. He pointed out that thoughts like that were limiting. For example, if humans saw themselves as random biological creatures, then the full dimension of what it means to be human was destroyed. There was no place in that scientific thought for concepts such as spirituality, beauty, art, goodness, ethics, and consciousness. It left humans as biological machines with no purpose other than reproduction.

Focusing only on science minimized human existence. However, it was also important for spiritual practitioners to factor in scientific discoveries. It was for this reason that the Dalai Lama encouraged Buddhist colleagues to study science so that its insights might be integrated into the Buddhist worldview.

The Dalai Lama was born into a family of simple farmers. His only experience with technology was exposure to the rifles that local warrior nomads had. When he was six he was enthroned as the 14th Dalai Lama in the Tibetan capital, Lhasa. This was where he began his education on Buddhism. He had personal tutors and philosophical assistants who engaged him in debate regarding issues of Buddhist thought. However, he was not educated in any sort of science or math. He didn't even know they existed.

In the winter, the Dalai Lama stayed at the Potala Palace. It was a humongous place, and he enjoyed exploring the chambers in the palace. It was here that he found mechanical objects which belonged to the Thirteenth Dalai Lama, who also spent time in exile. These objects included a collapsible telescope, a hand wound mechanical timepiece, and a set of illustrated books telling the story of the First World War. During his time in exile, the Thirteenth Dalai Lama recognized the need for major political and social change in Tibet. When he returned to Lhasa, he introduced a postal service, the telegraph, and generating plants for Tibet's first electric lights. He also established a mint for national coinage and the printing of paper currency. On his deathbed, the Thirteenth Dalai Lama predicted political tragedy if the government didn't understand the need for modern, secular education.

Other items from the Thirteenth Dalai Lama that intrigued the current Dalai Lama included a pocket watch, two film projectors, and three motorcars. These cars were disassembled in India and carried across the mountains before they were put back



together for the Thirteenth Dalai Lama. The Dalai Lama knew how to use the telescope, and he enjoyed using it to observe life in town. He was intrigued by how the pocket watch worked, and he dismantled it then reassembled it. This became a hobby for him. He had a more difficult time understanding how to use the film projectors, but he made some friends who would help him with it. Technology was his introduction to the world of science. Soon, after learning about the automobile, he expanded his knowledge into world geography.

At the end of his teenage years, he took his first trip abroad. This is when he first met real scientists. In 1956, the Dalai Lama went to India to take part at the 2,500th anniversary of the Buddha's death. During this trip he encountered spiritual teachers who were trying to integrate science and spirituality. Even before these trips, he recognized that technology was an expression for understanding the world. Science itself was a specific form of inquiry that offered understanding of the world.

As the Dalai Lama talked with people about science, he noticed certain similarities between Buddhist thought and the spirit of inquiry in science. When the Dalai Lama went into exile in 1959, he began to set up schools for Tibetan refugees. In the 1960s, he began international travels during which he met with distinguished scientists and discussed topics of scientific interests. The scientists helped him develop his knowledge and delve deeper into science. One of his first teachers was the German physicist and philosopher, Carl von Weizsäcker, who was also the brother of the West German president. Weizsäcker gave him an intensive tutorial on quantum physics and its philosophical implications. During a retreat he highlighted the importance of empiricism in science.

The Dalai Lama also learned a great deal from David Bohm, a physicist. Like the Dalai Lama, the physicist had also been in exile. He taught the Dalai Lama several aspects of scientific thought, particularly in physics. Bohm believed in conducting a scientific inquiry by means of thought experiments. The Dalai Lama felt this method of analysis paralleled Buddhist philosophical thinking.

In 1973, the Dalai Lama met with the philosopher Sir Karl Popper. This man clarified roles of inductive and deductive reasoning in the population and proof of scientific hypothesis. By the mid-1980s, the Dalai Lama had met many philosophers and scientists and had conversed with them. In 1987, he held the first Mind and Life conference at his residence in Dharamsala. At this gathering, scientists from various disciplines engaged in open ended, informal private discussion for a week. It was during this week that the Dalai Lama became interested in the idea of paradigm shifts.



Chapters 3-5

Chapters 3-5 Summary and Analysis

One of the most inspiring and exciting things about science is the way it changes the human understanding of the world. Physicists struggled with implications of the paradigm shift that resulted in the rise of relativity and quantum mechanics at the turn of the 20th century.

The Dalai Lama was exposed to ancient Indian philosophy when he was very young. He had two teachers, Tadrak Rinpiche and Ling Rinpoche. He also had several philosophical assistants who helped him debate. These men were Trijang Rinpoche and Ngodrup Tsoknyi. After Tadrak Rinpoche died, Ling became the senior tutor to the Dalai Lama, while Trijang was promoted to becoming his junior tutor.

These tutors remained with him all through his formal education. Both became good friends to him, although they were very different from each other. The Dalai Lama felt closer to Ling than any of his other tutors. He stated that the man had been the greatest influence on his life.

When he began to learn about ancient Indian schools, he couldn't relate to them personally. He had to learn the intricate differences of various schools within Buddhism, even though many of the concepts were esoteric to a teenage boy. He preferred to spend his time dismantling and reassembling cars and watches. When he turned 16, things changed for the Dalai Lama.

The Chinese army reached Tibet in the summer of 1950, and the Dalai Lama assumed full-time leadership of the country. With this new position, the Dalai Lama dedicated himself to his studies, delving deeply into reflection, study, and meditative contemplation of Buddhist thought and practice. By the time he sat down for his Geshe examination, he was ready. Even though he considered Tibet his homeland, the crisis in central Tibet forced him to escape to India. He considered himself to be a citizen of the world.

One of the most important philosophical insights in Buddhism comes from the theory of emptiness. According to this theory, any belief in objective reality grounded in the assumption of intrinsic, independent existence is untenable. In theory, this meant that nothing could interact with or influence other phenomena. However, the Dalai Lama knew this was not so from his experimentations with engines. In the 1960s, during his time in exile in India, the Dalai Lama spent a lot of time exploring the philosophy of emptiness.

He found that an exciting aspect of modern physics was the way quantum mechanics challenged common sense understanding. He found a resonance between new physics and the notion of emptiness. Modern physicists benefited over those in the past due to modern discoveries such as electron microscopes. He studied Einstein's theory of



relativity and was amazed at the revelation. It tied in with the Buddhist philosophical concept of time and its relativity. The Dalai Lama admitted that he wasn't very good at grasping the concepts behind the quantum theory, although he tried.

As the chapter opened, the Dalai Lama wondered who had ever looked at a starry night without questioning what was behind it all. He remembered his first trip to a planetarium in 1973. He also remembered a conference where he viewed a computer simulation depicting how astronomers envision cosmic events unfolding as galaxies collided. He tried to understand the concept of the expanding universe. As the Dalai Lama considered the theory of general relativity, he compared it with the thoughts of ancient Buddhist cosmologists who found that universal systems went through stages of formation, expansion, and destruction.

Evidence from the scientists pointed to a truth in the Big Bang theory. He thought about the myths of creation from Tibet. He wrote out the list of 14 "unanswered" questions regarding the universe and its beginning. Buddhism had two main traditions of cosmology. One was the Abhidharma system and the other was the Kalachakra. Both of these systems recognized our world as one of countless worlds systems. They felt we were part of a universe with no beginning and no end. Both systems showed the belief that our world system was in a constant state of change.

Science questioned whether the Big Bang was the beginning of everything. The Dalai Lama pointed out that from the Buddhist perspective, it's highly problematic to think that there was a single definite beginning. This would mean that the earth was outside the laws of cause and effect or that we came into being from no cause at all. Buddhism rejected both of these options. It begged questioning on whether or not the universe was created by a prior intelligence. The problem with this deistic theory was that it was based on an absolute that couldn't be tested.

Some scientists have suggested that the Big Bang was an example of thermodynamic instability. In other words, it might not have been the beginning of everything. Buddhist cosmology highlights five elements of which the world is constructed. These elements are space, earth, water, fire, and air. Space was the basis for particular changes within the other four elements.

The Dalai Lama pointed out that up to this point, they had been speaking of the origin of the universe as if it consisted only of energy and inanimate matter. However, according to Buddhist perspective, there was another element. There was also the law of karma, which was coming in at two different points. The Dalai Lama was not satisfied with the idea of the Big Bang being the origin of the universe. Yet he had many questions about what might have happened before it.

Chapter 5 - Evolution, Karma, and the World of Sentience

Questioning what life is has been a challenge for intellectuals over time. Buddhism held the promise that there was no qualitative difference in the material basis of the body of a sentient being been that of a rock. The next question is what makes a being different so



it can support consciousness and life. Modern biology answered this by saying that an increasingly complex aggregation of atoms formed into genetic and molecular structures from which life emerged. The Dalai Lama mentioned the theory of Darwinian evolution, which stressed interconnectedness between the living things in the world.

The Dalai Lama first heard about that theory of evolution during his first trip to India in 1956. Later, a scientist gave him more insight on the topic. He found that the Darwinian theory had never been disproved. It applied to the molecular level as well as macrocosmic levels in a large organism. According to Darwin's theory, organisms had to be self-sustaining and had to possess mechanisms for reproduction. It is also focused on natural selection and survival of the fittest. Modern studies in genetic sequencing offer more insight Darwin's theories.

Research has shown that genetic mutations, even natural ones, are random. However, it was how these mutations survived that showed the accuracy of Darwin's theory. Buddhism differed from modern science in that it viewed the critical divide between non-sentient matter and the emergence of sentient beings. Modern science highlighted the divide between inanimate matter and the origin of living organisms. While scientists wanted to go out and prove that life could be created in the laboratory, the Buddhists saw things differently. In Buddhism, the focus was more on alleviating suffering and pursuing a quest for happiness.

The Dalai Lama referred to the history of the creation of the world according to Buddhist tradition. According to the Abhidharma theory, there were four types of birth. Karma came into play, referring to the intentional acts of sentient beings. The scientific view defines karma as a metaphysical assumption.

Other myths and stories of creation of the Tibetan people told different tales. The Dalai Lama felt that the Darwinian theory offered a fairly coherent account of the way humans evolved on earth. However, he also believed that karma had a central role in sentience. He doesn't feel as if it answered the original question, "Where did life come from?" He pointed out that from a Buddhist perspective, the idea that mutations were random events was deeply unsatisfying. The Dalai Lama particularly felt that the most important drawback of Darwinian evolutionary theory was its unwillingness to engage the question of altruism. The Dalai Lama felt that the origin of sentience with the real question to address.



Chapters 6-8

Chapters 6-8 Summary and Analysis

There was a reality in experiences of consciousness that could not be defined since they were so subjective. Defining consciousness was a difficult matter, especially for scientists who used a third person method for understanding things. Still, scientific investigation was beginning to recognize that the study of consciousness was an area worth pursuing. One method of going about this was to study behaviorism. This attempted to define consciousness in terms of language of external behavior.

The definition of consciousness and everything it entailed had been a big part of Buddhist philosophical thinking for a long time. It was very important since it was thought to be a defining characteristic of sentience. In fact, the Buddha wrote in scripture that consciousness played a key role in determining the course of human suffering and happiness. Part of the problem in defining consciousness was language. Language was limited to historical, cultural, and linguistic backgrounds that differed from person to person. These backgrounds represented different cognitive frameworks.

When describing the subjective experience, scientists had to realize that they were also risking objectivising internal experiences while excluding the presence of the experiencer. Consciousness was made up of a variety of mental states. There were cognitive states such as recognition, beliefs, memory, and attention. There were affective states such as emotions, and there were mental states that functioned as causal factors. These factors were motivated into actions such as desire, anger, and fear.

In Buddhist philosophy, there were various typologies of mental phenomena and characteristics. These included the following six: experiences of taste, sight, smell, touch, hearing, and mental states. Different schools of Buddhist thought had different definitions for it. One division of the Yogacara added two additions to the typology. These were foundational consciousness and instinctual thought. The Middle Way school, the one that the Dalai Lama followed, believed in the sixfold typology.

According to Buddhist philosophy, there are three fundamentally distinct aspects of the world of conditioned things. These were matter, mind, and abstract composites. Even though these go back to the earliest phases of the philosophical tradition of Buddhism, they were almost identical to what Karl Popper proposed. This was fascinating to the Dalai Lama since he knew that Popper had no background in Buddhist thought.

Philosophers and science tried to understand consciousness in terms of the brain's function. Modern neuroscience questioned whether chemical reactions also factored in. In 2002, the Dalai Lama met with a group of scientists to discuss the unconscious mind. They discussed the quantum theory of consciousness. It seemed that the scientists agreed that consciousness could be explained in terms of neurobiological processes.



Still, the Dalai Lama did not believe that current neuroscience had any explanation for consciousness itself. While the activity in the brain could be observed, it still left a question as to why the activity happened. He felt it was critical to understand the theory of causation. Buddhism proposed two principal categories of cause-substantial cause and complementary cause.

Overall, the Dalai Lama felt that studying consciousness was problematic due to the limitations of the third-party method of inquiry. He felt that the only way to study consciousness was to embrace both first-person and third-person methods. For this, there would have to have been a collaboration between modern science and contemplative traditions such as Buddhism.

Chapter 7-Toward a Science of Consciousness

In order to have a complete study of consciousness, methodology would have to include biochemical levels, neurological levels, and subjective experience. Contemplative traditions emphasized subjective, first-person investigation of consciousness by training the mind to focus in a particular way. In this type of analysis, an object, an observer, and a means of investigation become one. In Buddhism, it was called meditation.

While people often defined meditation as an emptying of the mind or a relaxation practice, the Dalai Lama was talking more about a state that might arise as a result of a process. Scientifically, this would be compared to a rigorous empirical observation. Once again, the Dalai Lama pointed out the benefits of merging third-person scientific investigation with first-person Buddhist introspective methods.

He remembered visiting a lab in 2001. He saw the results of an experiment that involved an experienced meditator. The results were fascinating. Scientific experimentation on human subjects raised a series of ethical issues problematic to the scientific community. For example, doing experiments with hermits who had chosen a life of solitude might interfere with their lives and spiritual practices. Still, the Dalai Lama felt that the hermits should undergo the experiments out of altruism.

While those who studied Buddhism weren't necessarily aware of chemical reactions in the brain, the tradition of meditation has shown Buddhists that the mind has a great capacity for transformation and adaptation. In 2004, the Mind and Life conference focused on brain plasticity. At this conference, the Dalai Lama determined that traits that he assumed were fixed, such as disposition and personality, were not necessarily permanent. Mental exercises and changes in the environment could affect the traits.

Scientific research has shown that meditators with experience had more activity in the left frontal lobe of their brain. This area was associated with joy, happiness, and contentment. The results of the experiments implied that happiness could be cultivated through mental training. The Buddha argued that if one wished to avoid certain results, one must change conditions that give rise to them.

Studies on virtuosos such as chess players, musicians, and athletes paralleled studies on unskilled meditators. It appeared as if regular, prolonged practice became second



nature. The Dalai Lama talked about mental trainings such as the cultivation of mindfulness. This training included the development and application of attention. This in turn helped individuals control mental processes.

Chapter 8-The Spectrum of Consciousness

While Buddhism and cognitive science could benefit each other, they took different approaches. Cognitive science used neurobiological structures and biochemical functions of the brain and study points. Buddhists used a first-person perspective in study. Buddhist psychology involved meditative contemplation, empirical observation, and critical philosophical analysis. In Buddhism, the primary focus was overcoming suffering. Three separate disciplines studied consciousness in classical Buddhist sources. These included psychology, analyzation, and visualization.

The Dalai Lama began to learn about various aspects of the mind as part of his introduction to intelligence and awareness. He remembered studying distinctions between mental and sensory experiences. The mental experience was a lack of a physical sense organ. A sensory experience was immediate and all enveloping. It was intriguing to him to discover that modern Western psychology had no developed notion of non-sensory mental faculty. While a "sixth sense" was defined as some sort of paranormal psychic ability for the Westerners, in Buddhism it referred to the mental realm.

The concept of how perceptions arise in the relationship between perceptual events and objects were of great interest to the Tibetan and Indian philosophers. After debates, there were three principal standpoints that emerged. One was that there was a multiplicity of perceptions in the visual experience. The second position was compared to splitting a hard-boiled egg. When senses came into contact with objects, one single perceptual event split into a subjective half and an objective past. The third position found that the actual perceptual experience was one unitary event.

Buddhist epistemology discussed the analysis of false and true perceptions. Buddhist psychology also factored in mental events. The Dalai Lama pointed out that it was important to be sensitive to differing contexts in Western psychology and the way Buddhists treated emotions.



Chapter 9-Conclusion

Chapter 9-Conclusion Summary and Analysis

There has been a public debate regarding the increasing developments in new genetics. Conflict has arisen in relation to everything from cloning to genetic engineering of food. Wonderful things have emerged out of genetic engineering. However, scientists have been changing genetic makeup when no one really actually knows the long-term impact upon the soil, plants, and the environment.

While genetic changes have been occurring for for millions of years, manipulating genes are forcing them to change unnaturally. One must have a balance between the power of knowledge and responsibility.

In the past, moral reasoning kept pace with the capacities and developments in human knowledge. In the biogenetic science, there was a gap between technological capacities and moral reasoning. One had to consider how to use new knowledge in an ethically responsible manner.

One area impacted by genetic science was medicine. The ability of genetics to tell individuals they might die young might change the way people defined health and illness. If someone were predisposed to illness, how would this affect compassion? How would it affect relationships?

To further confuse things, genetic forecasting might not be accurate. The newly emerging discipline, bioethics, grappled with specifics related to genetic engineering. While the Dalai Lama didn't know much in that area, he did recommend that everyone focus on some general principles in regards to these ethical challenges.

In regards to cloning, there were two different types. One was therapeutic, and the other was reproductive. In principle, he had no objection to cloning when it was used as a technological instrument for therapeutic and medical purposes. However, he didn't believe in cloning when it was used as a breeding for spare parts. The Dalai Lama felt that we had to bear in mind the long-term impact of genetic engineering especially when it came to limiting the diversity of humanity and tolerance that went with it.

He found it particularly worrying that genetic manipulation for the creation of individuals with enhanced characteristics might increase inequalities between individuals in relationship with their circumstances. Most likely only the most wealthy would be able to afford genetic manipulation for the creation of children. This would perpetuate disparities and breed a ruling elite. If humans could manipulate genetics, it might go hand-in-hand with a lessening in appreciation of humanity itself.

The Dalai Lama found that one of the most striking and heartening effects of the knowledge of the genome was the finding that differences in genomes between ethnic groups around the world were so negligible, they seemed insignificant. He had always



argued that differences in ethnicity, color, religion, and language held no substance in the basic sameness of humanity. Sequencing the human genome had proven this. He found it also helped reinforce a sense of kinship with animals who shared a large percent of the human genome. In this manner, genetic knowledge could help foster unity and affinity with life as a whole.

When it came to the genetic manipulation of food, he believed that it could be used for good purposes when it came to helping feed the world's growing population. This, too, could be abused when genetic engineering was used to prolong shelf life rather than provide nutritional value. Once again, long-term consequences came into play.

His Holiness felt as if the time was right for the genetic revolution to engage in global ethics that transcended religion and politics. We had to have an awareness of what we were creating and why. One way to do this was to make sure that the general public understood what is going on. Education was imperative.

According to the Dalai Lama, human ethical response to genetic engineering had to include several key factors. We had to check motivation to ensure that it was founded in compassion, we had to look at the widest possible perspective for any problem in front of us. We had to remain honest, unbiased, and self aware when addressing a problem. We had to remain humble when facing any real ethical challenge, understanding that our knowledge was limited and we were vulnerable. Finally, we had to keep in mind the primary goal of the well-being of humanity as a whole and the planet in which humanity lives.

Conclusion-Science, Spirituality, and Humanity

Looking over the past 70 years of his life, the Dalai Lama realized that his encounters with science began at a stage where technological objects seemed miraculous. That was the beginning of his journey in science, and it led to much more complex issues and discoveries. Still, the wonder and beauty of science never left him. Science had enriched his own Buddhist worldview. He found that there was an intimate connection between an understanding of the world, a vision of the potential of human existence, and ethical values guiding an individual's behavior. He wanted to merge spirituality and science to better humanity.



Characters

The Dalai Lama

From a very early age, the Dalai Lama found himself interested in taking things apart and putting them back together. Although he was trained with personal tutors, he was never formally taught science or math when he was a child. He became the leader of Tibet when he was 16. Realizing the importance of modern education, including science and math, he made it his mission to bring science into Buddhist schools after he went into exile. He became a citizen of the world, and in his travels, he met with numerous scientists around the world. As he talked with leaders in the field of physics, psychology, neuroscience among others, he saw ways science and religion could benefit each other when kept in balance. Both of them shared a similar goal of minimizing suffering in the world and reaching out in compassion to others.

Ling Rinpoche

This man was a gentle, soft spoken man who is deeply learned. He did not speak much when the Dalai Lama was a child, and the Dalai Lama was terrified in his presence. Eventually he became the Dalai Lama's senior tutor, and he retained this role throughout the Dalai Lama's formal education. He was a bald, stocky man whose entire body would shake when he laughed. The man had a sharp, logical mind and an incredible memory. He was an acute philosopher. The Dalai Lama commented that it was fair to say that this man had the greatest influence on his life. He was very good at meditation, and remained in the clear light of death for 13 days. Clinically, he had stopped breathing and was dead. Still, he stayed in the meditation posture, and his body showed no sign of decomposition.

Charles Bell

This man hosted the Thirteenth Dalai Lama in British India in 1910.

Gendün Chöphel

This is a Tibetan scholar who wrote a letter articulating fruitful dialogue between modern science and Buddhism.

Thirteenth Dalai Lama

This man realized there was a major need for social and political reform in Tibet after his stay in British India. He set up a telegraph, a postal service, a mint for coinage and paper currency, and a small generating plant for Tibet's first electric lights.



Heinrich Harrer

This man became a friend of the Dalai Lama. He was an Austrian who escaped over the Himalayas from a British POW camp in northern India. He would help the Dalai Lama fix the projector.

Lhakpa Tsering

This was the man who was in charge of driving and looking after the cars. He had a very bad temper. This man taught the Dalai Lama how to drive.

Chairman Mao

This man was a leader of the regime. The Dalai Lama met him in Beijing while he was in his late teens.

Jawaharlal Nehru

This was the Indian Prime Minister who became a counselor and friend to the Dalai Lama while he was in exile. He was scientifically minded.

Rajendra Prasad

This was the president of India during the Dalai Lama's first years of exile.

Carl von Weizsäcker

This was the brother of the West German president. He was one of the first teachers of science to the Dalai Lama and constantly worried about the political and ethical consequences of science.

David Bohm

This scientist taught the Dalai Lama about physics, fueling the Dalai Lama's thinking about ways Buddhist methods of inquiry might relate to the ones used in modern science.

Trijang Rinpoche

This tall, thin man was the Dalai Lama's junior tutor. He was an acute philosopher with a sharp logical mind, and he had a phenomenal memory.



Objects/Places

India

This is where the Dalai Lama lived in exile.

Amdo

This is the province where the Dalai Lama came from.

Tibet

This is where the Dalai Lama was from. It was where he lived before he escaped into exile.

Potala Palace

This was the Dalai Lama's winter residence when he was a boy.

British India

This is where the Thirteenth Dalai Lama stayed in 1910. It was also where he realized there was a need for major political and social reforms in Tibet.

Lhasa

This was where the Thirteenth Dalai Lama set up a telegraph, a postal service, a mint for coinage and paper currency, and a small generating plant for Tibet's first electric lights.

Beijing

This was where the Dalai Lama met Chairman Mao and other leaders of the regime. It was the first modern city that he ever visited.

Dehli

This was where the Dalai Lama went to take part in the 2500th anniversary of the Buddha's death.



Dharamsala

This is the Dalai Lama's residence in north India. It was the location where the first Mind and Life conference was held.

Niehs Bohr Institute

This is where the Dalai Lama went to participate in an informal dialogue on physics and Buddhist philosophy.



Themes

Education and Modernization

In the opinion of the Dalai Lama, one of the major causes of Tibet's political tragedy was the fact that it failed to consider the concept of modernization. Its people lacked education, particularly in the field of science.

When he was a young child, he had personal tutors as well as others who helped teach him to debate. In spite of all his formal training, he was never formally taught math or science. The Dalai Lama found some technological items in his winter residence and developed a love for taking things apart and putting them back together. This was his introduction to the world of science. When he went into exile, he met more scientists who taught him. This was when he realized how important modern education was.

When the Dalai Lama arrived in India, one of the first things he did was to set up Tibetan schools for refugee children. This included a modern curriculum, and science was taught for the first time.

Embracing modern education and science became a priority for the Dalai Lama. He encouraged monastic colleges whose primary role was teaching classical Buddhist thought, to add science in their curriculum.

The Dalai Lama did not think that science should take place of religion in education. Rather, he thought they should be studied as complementary entities that had the same goal: seeking the truth.

The Connection Between Spirituality and Science

When the Dalai Lama was talking with others about science and religion, he was warned not to pursue his interest in science. Many fear that science overtakes religion. The Dalai Lama felt differently. According to his observances, science and other education helped the body, putting an emphasis on alleviating suffering. Spirituality addressed suffering in the mind. Put together, religion and science could help each other achieve the same goals of reducing suffering and helping humanity.

As he pursued scientific knowledge, the Dalai Lama realized that religious practices came to similar conclusions as scientific discoveries. The Dalai Lama used the example of Buddhist traditions regarding the beginning of Earth and compared theories with scientific thought on the same topic. They both focused on a state of continuous change. He also showed how the practice of meditation helped the mind in a way that could be beneficial to those in the field of neuroscience.



Scientific experimentation relies heavily on third-person observations. Those who practice contemplation observe from a first-person vantage. The Dalai Lama felt that combining first person and third person analysis would lead to greater understanding.

Ethics and Science

There was a heavy emphasis on the importance of ethics in science throughout this book. At the very beginning of the book, the Dalai Lama pointed out that science could be used for bad or for good. It was really a state of the mind of the person who held the instrument who determined whether experimentation would have a good or bad result. Secondly, he pointed out, scientific discoveries affected how individuals understand the world and their place in it. This has consequences on behavior. One way to keep a good sense of ethics and science is to make sure that science is never divorced from empathy for fellow human beings.

He addressed the ethics involved with the concept of experimentation. For example, the Dalai Lama felt that it would benefit neuroscience if they would be able to do tests on the brains of those who excelled in meditation. Some of the individuals he encouraged to join in the experimentation were hermits. This brought about an ethical question of whether or not it was right to use them when it interrupted their lives and their religious practices. He determined that it was fine because the studies would benefit the human race.

At the end of the book, the Dalai Lama discussed the ethical quandary associated with genetic engineering in humans, animals, and in food. He talked about long-term results of genetic engineering, showing how it affected the world in social and political arenas.

Style

Perspective

"The Universe in a Single Atom" by his Holiness the Dalai Lama is an exploration and comparison of the similarities and differences in the world of science and Buddhism. The Dalai Lama spent over 40 years studying with great scientific minds and he was trained in meditative, spiritual, and philosophical study of Buddhism.

In this book, using a first-person perspective, he addressed why it was important to pursue studies in spiritual realms as well as scientific realms in order to try to arrive at a complete picture of the truth. He felt that both science and religion had points in which they could help each other as long as each was kept in balance. The Dalai Lama cited parallels between scientific and contemplative examinations of reality.

The book delves into scientific questioning and religious observances. It proposed theories, highlighted new understandings, and depicted his personal journey in human understanding and a pursuit of knowledge.

Tone

The tone of this book is very subjective, giving a reader insight into areas the Dalai Lama found interesting and important. The author brought up good points of science as well as negatives. He did the same with various religious methodologies. The book clearly demonstrates how a balance of science and religion can help humans move toward a goal of understanding that might lead to a reduction in world suffering and an increase in ways to help others.

The way it is written helps a reader connect not only with science and religion, but with the history of religious beliefs and scientific discoveries. The book is very academic in tone, using scientific and religious terms freely. However, important points are illustrated with anecdotes, and every question asked is addressed in detail.

Structure

"The Universe in a Single Atom" by his Holiness the Dalai Lama begins with a prologue. This is followed by nine chapters, a conclusion, and an index. Each of the chapters is named according to the main theme of the chapter. The prologue and conclusion seem like chapters in themselves. Each chapter averages 20-30 pages. Most chapters end with a few paragraphs explaining how the religious and scientific concepts blend to further human understanding.



Quotes

"Therefore, from the perspective of human well-being, science and spirituality are not unrelated. We need both, since the alleviation of suffering must take place at both the physical and the psychological levels" Prologue, *The Universe in a Single Atom* p. 4).

"This last point is critical because unless the direction of science is guided by a consciously ethical motivation, especially compassion, its effects may fail to bring benefit. They may indeed cause great harm" (Chapter 1, *The Universe in a Single Atom* p. 9).

"So one fundamental attitude shared by Buddhism and science is the commitment to keep searching for reality by empirical means and to be willing to discard accepted or long-held positions if our search finds that the truth is different" (Chapter 2, *The Universe in a Single Atom* p. 25).

"One of the most inspiring things about science is the change our understanding of the world undergoes in the light of new findings" (Chapter 3, *The Universe in a Single Atom* p. 43).

"If on the quantum level, matter is revealed to be less solid and definable than it appears, then it seems to me that science is coming closer to the Buddhist contemplative insights of emptiness and interdependence" (Chapter 3, *The Universe in a Single Atom* p. 50).

"If twentieth-century history-with its widespread belief in social Darwinism and the many terrible effects of trying to apply eugenics that resulted from it - has anything to teach us, it is that we humans have a dangerous tendency to turn the visions we construct of ourselves into self-fulfilling prophecies" (Chapter 5, *The Universe in a Single Atom* p. 115).

"Despite the universality of the experience of consciousness, the languages in which we articulate our subjective experiences have their roots in disparate cultural, historical, and linguistic backgrounds" (Chapter 6, *The Universe in a Single Atom* p. 121).

"It may well be that the question of whether consciousness can ultimately be reduced to physical processes, or whether our subjective experiences are non-material features of the world, will remain a matter of philosophical choice" (Chapter 6, *The Universe in a Single Atom* p. 136).

"My own teacher Ling Rinpoche remained in the clear light of death for 13 days; although he was clinically dead and had stopped breathing, he stayed in the meditation posture and his body showed no sign of decomposition" (Chapter 7, *The Universe in a Single Atom* p. 157).



"Consciousness is a very elusive object, and in this sense it is quite unlike the focus on the material objects, such as biochemical processes. Yet its elusiveness may be compared with that of some objects of physics and biology, like subatomic particles or genes" (Chapter 7, *The Universe in a Single Atom* p. 159).

"So far as the brain is concerned, it seems as if it makes no difference whether one is seeing something with one's physical eyes or with the "mind's eye." From the Buddhist point of view, the problem is that this neurobiological account leaves out the most significant ingredient of these mental events—subjective experience" (Chapter 8, *The Universe in a Single Atom* p. 170).

"To ground our appreciation of the value of a human being on genetic makeup is bound to impoverish humanity, because there is so much more to human beings than their genomes" (Chapter 9, *The Universe in a Single Atom* p. 195).

"The fact that, despite our living for more than half a century in the nuclear age, we have not yet annihilated ourselves is what gives me great hope" (Chapter 9, *The Universe in a Single Atom* p. 199).



Topics for Discussion

Describe the schooling the Dalai Lama had when he was young.

How did the Dalai Lama become interested in science?

What was the purpose of the Mind and Life conference?

How did the Dalai Lama feel about mixing science and religion?

How did the Dalai Lama feel about the role of ethics in science?

What does the Dalai Lama feel about genetic studies?

Who were some of the people who most influenced the Dalai Lama, and how did they influence him?