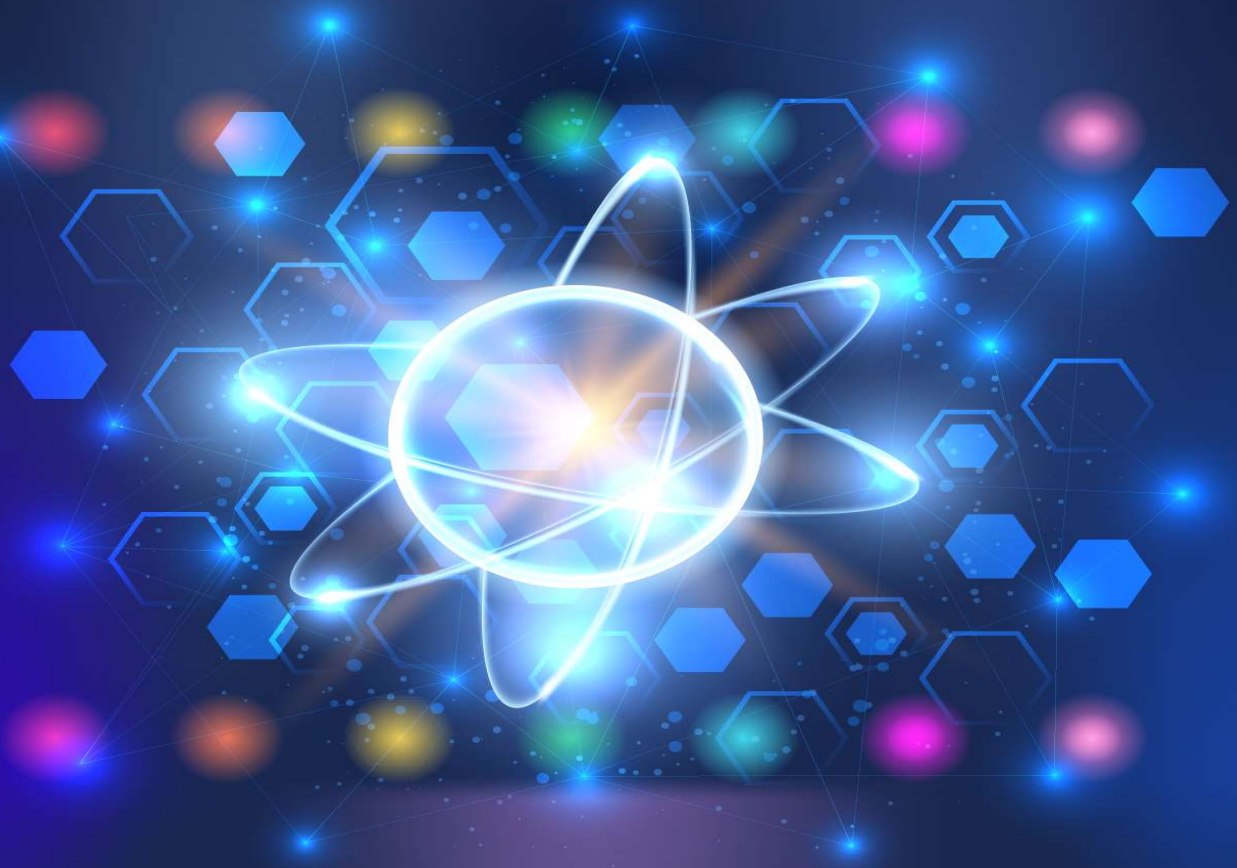
SUMMARY

BY ALYSSA BURNETTE

THE TAO OF PHYSICS

By Fritjof Capra



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Summary of The Tao of Physics by Fritjof Capra

Written by Alyssa Burnette

Learn what physics and mysticism have in common.

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Introduction

When you think of mysticism, what comes to mind? Do you think about "auras" and "healing chakras," weird chants and contortionist yoga poses? If these are the things that come to your mind, it's understandable that you might view mysticism and modern science as being completely separate entities. For example, we think of science as being grounded in facts, logic, and rationality. By contrast, Eastern religions such as Buddhism place heavy emphasis on intuition and spirituality-- things that cannot be measured through scientific tests or condensed into a data point. As a result, one could easily assume that mysticism has no place in the laboratory; you've never heard of a scientist saying that they believe in a theory because they "just have a feeling" that it's true. No physicist has ever won a Nobel prize for "finding inner peace" with her theory.

But as the author demonstrates, these two schools of thought have more in common than you'd think. And it starts with the fact that both mysticism and science are predicated on rationality and critical thinking.

What Science and Mysticism Have in Common

Before we begin to unpack this complex and seemingly contradictory concept, it might first be helpful to identify some of the terms involved. Mysticism, for example, is defined by the dictionary as the "belief that union with or absorption into the Deity or the absolute, or the spiritual apprehension of knowledge inaccessible to the intellect, may be attained through contemplation and self-surrender." By contrast, the scientific method is defined as "a method of procedure that has characterized natural science since the 17th century, consisting of systematic observation, measurement, and experiment, and the formulation, testing, and modification of hypotheses." At first glance, neither of these things sound similar in the slightest! But the author argues that their core similarity is found in their mutual preoccupation with the concept of knowledge.

Both domains manifest their search for knowledge in different ways. Physics, for example, studies truths about the universe through tests, theories, and experiments. Mysticism pursues spiritual knowledge by using meditation to access a higher plane of consciousness. So, even though practitioners of each method seek different forms of knowledge, the author observes that they can find commonality in their pursuit of truth. Their modus operandi also shares some common ground. Although it's easy to classify physics as being purely "rational" and mysticism as being purely "intuitive" or "spiritual," the author argues that each domain shares some similarities in these categories as well. We might think of physicists as being nerds who are only concerned with facts and theories, but the truth is that scientists are actually very creative!

You have to be creative if you want to explore unknown truths about the universe. And you must possess a certain degree of whimsy and intuition if you want to test unproven theories and ask wild questions about the world. Remember that the very first step of the scientific method is asking questions. And curiosity and intuition are essential components of any question! Forming observations is also of critical importance to the scientific method and this is another area in which physics can find common ground with mysticism. Observations about the human condition and about our

spiritual needs is one of the core tenets of mysticism. The only difference is that scientists derive observations from looking at the world around them while practitioners of Eastern religions observe their own inner emotional and spiritual landscapes.

Eastern religions such as Buddhism are also deeply concerned with the study of paradoxes. In Buddhism, this is represented by a “koan,” a paradoxical anecdote or riddle that is used to demonstrate the inadequacy of logical reasoning and to provoke enlightenment. For example, one traditional koan asks, “What is your original face before you were born?” Another poses the question, “When the many are reduced to one, to what is the one reduced?” These brain-benders could certainly leave you tangled up in knots if you attempted to answer them using logic alone! And that’s exactly the point: practitioners of Zen Buddhism designed these questions specifically to quiet our reliance on intellectualism and cultivate our pursuit of enlightenment. Their aim is to show us that reason is not the only skill we need in life; we must also develop our sense of intuition and cultivate a higher thought.

But even though this exercise aims to suspend the use of rational thought, it still bears a striking similarity to many philosophical and scientific exercises. One notable example that comes to mind is the problem of Schrodinger’s cat. A physicist named Adam Mann attempted to provide a simple explanation of this notoriously complicated thought problem by explaining it in the following manner: this experiment asks what would happen if one builds a strange contraption. The apparatus consists of a box with a sealed vial of cyanide, above which is suspended a hammer attached to a Geiger counter aimed at a small lump of mildly radioactive uranium. Inside the box, there's also a kitty (and remember, this is a thought experiment that's never actually been carried out). The box is sealed, and the experiment is left to run for some set amount of time, perhaps an hour. In that hour, the uranium, whose particles obey the laws of quantum mechanics, has some chance of emitting radiation that will then be picked up by the Geiger counter, which will, in turn, release the hammer and smash the vial, killing the cat by cyanide poisoning. According to folks like Bohr, until the box is opened and the cat's

status is "measured," it will remain in a superposition of both living and deceased."

Can something be alive and dead at the same time? Most people would say no, of course. After all, no one has ever met a cat who was both alive and dead. Rather, our history of observing cats has proven that a cat is either dead or alive, but never both at the same time. But although it might seem nonsensical, this thought experiment was created to highlight the illogical nature of the explanations that many physicists were providing for quantum mechanics. Thus, from this example, we can see that both physicists and mystics use seemingly nonsensical thought experiments to help practitioners access higher truths.

The Principle of Unity

Are you the same as a chair? Are you the same as a beetle? Undoubtedly, you would assert that you are not, and you would probably support this assertion with some evidence. For example, a chair is made of wood and is not alive. It is an inanimate piece of furniture that was carved by a craftsman. A chair was not born. It cannot think. It cannot speak. By contrast, you are a human being who lives, thinks, speaks, and breathes. You are not furniture and you were not made to sit in. We naturally make these distinctions between inanimate objects or animals in the same way that we distinguish ourselves from other people. For example, if you have a friend named Anna, you might say with certainty that you and Anna are not the same person. Anna has a body of her own and possesses thoughts, experiences, and physical characteristics that are not the same as yours. You are a person and Anna is a person and neither of you are the same.

But mysticism refutes these distinctions. A practitioner of Buddhism, Hinduism, or Taoism might argue that you and Anna are indeed the same, just as you and the chair or you and the beetle are also the same. That's because many Eastern religions believe that the Western concept of the "self" is an unnecessary complication. In fact, Eastern religions such as those named above do not believe in the sort of autopilot sense of self we believe to be located in our brains. Where Western people might believe that our "self" simply is and that it exists in our own minds, Buddhism believes that that concept of "self" isn't really up there. And although it might sound pretty freaky, neuroscience actually confirms this! Because scientists have mapped every part of our brains. They've identified our language center and our zones for processing compassion, love, facial recognition, and every other function that makes us a human being. But when you look for that little "self" control chamber we all imagine is up there, it simply can't be found; there is no "self" component of our brain.

So, Eastern religions conclude that the concept of "self" is an unnecessarily divisive illusion. To break down that illusion, they attempt to replace the divisive concept of "self" with a picture of holistic unity. By believing that all

things are connected, practitioners of mysticism argue that you can tap into the divine connection that unites all things. And although you might assume that this concept could not be farther from the tenets of modern physics, you'd be surprised! Physicists also know that our perception of reality is not quite as solid or as certain as we believe it is. The problem of Schrodinger's cat illustrates how objects can occupy seemingly contradictory planes of existence and this is truth is commonly accepted by physicists. They understand that reality can often appear to be contradictory while being completely real. They also understand that the human inability to perceive a concept does not mean that that concept doesn't exist. So, in this respect, physicists and mystics are alike because they are comfortable with accepting seemingly contradictory truths. Similarly, they both believe in the unity of all things and they both understand that reality often exists on a higher plane than the human mind can conceive.

This is aptly illustrated by Einstein's theory of relativity. Einstein's theory of relativity revolutionized the world and the entire scientific community because it laid the groundwork for our understanding of the universe's structure. It is most often represented by the formula "E = mc2" and this equation is so widely known that it is commonly incorporated in Halloween costumes, popular jokes, and cartoons. But when he introduced his theory in 1907, it completely rocked the scientific world. That's because Einstein's theory made all previously established theories completely obsolete. When Einstein proved what he knew to be true, his colleagues were forced to realize that the scientific truths they clung to were, in fact, totally inaccurate.

For example, Einstein's theory challenged the perception that the speed of light was relative. Because all previous calculations hinged on the question of relativity, it was believed that you had to know the speed of something else in order to calculate the speed of any other thing. For example, if you were asked to calculate the speed of a thrown baseball, you would first need to ask, "Its speed relative to what?" As a result, scientists assumed that the speed of light could only be calculated in relation to other things. But Einstein proved that the speed of light was a constant; it did not change in relation to other things that passed through it. And last but not least, he also revolutionized

the conceptualization of gravity. Rather than representing gravity as an immovable force, Einstein demonstrated that gravity existed on a four-dimensional plane in relation to space and time. His radical new equation formed the basis for our entire understanding of gravity and the way the world works! Put simply, Einstein posited that energy and mass are actually the same and that they should be studied together.

His discovery was radical because it proved to the scientific community that the world is always changing. Although we may want to assume that certain things are universally true and constant, Einstein's discovery demonstrated that we have an infinite capacity to discover new truths about the universe. And because of those infinite possibilities, it stands to reason that some discoveries will supplant the things we once held to be true. We also know that the universe is in perpetual motion and that it is always evolving and growing bigger. That means that change is the only constant we can expect from our reality. Accepting that truth is a pretty tall order! But it's one that mystics and physicists alike are happy to embrace.

Final Summary

We tend to assume that science and spirituality occupy two very different planes. We also assume that the thought processes which enable us to put faith in a higher power or pursue a spiritual experience differ greatly from those which allow us to pursue fundamental truths about the universe. But as the author's comparison of physicists and mystics illustrates, this is not necessarily true. Practitioners of Eastern religions may differ from their scientific counterparts in the truths that they pursue and the processes they employ, but they also share some fundamental similarities. At the core, they both believe in the unity of all things and the ever-changing nature of the universe.