



# Mystics and Scientists in the Twenty-First Century: Science and Spirituality Revisited

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## **Introduction**

*I am sorry I can't be with you at this unique anniversary conference, but I'm really happy to be able to share some thoughts with you in this way. What I'd like to share with you is my view of the relationship between science and spirituality, and how it has evolved over the last 50 years or so.*

I was trained as a physicist and spent twenty years, from 1965-85, doing research in theoretical high energy physics. From my early student years, I was fascinated by the dramatic changes of concepts and ideas that occurred in physics during the first three decades of the twentieth century. At the age of nineteen, I read about this revolutionary period in science for the first time in a book by Werner Heisenberg, one of the founders of quantum theory. The book, which has since become a classic, is called *Physics and Philosophy*. In it Heisenberg gives a vivid account of the experience of a small group of physicists — Niels Bohr, Erwin Schrödinger, Wolfgang Pauli, and others — who were the first to explore physical phenomena involving atoms and subatomic particles, which brought them in contact with a strange and unexpected world. In their struggle to grasp this new reality, those scientists became painfully aware that their basic concepts, their language, and their whole way of thinking were inadequate to describe atomic phenomena. Their problems were not merely intellectual, but amounted to an intense emotional and, one could say, even existential crisis. It took them a long time to overcome this crisis, and in the end they were rewarded with deep insights into the nature of matter and its relation to the human mind.

When read Heisenberg's book as a young student in Vienna, I understood probably less than half of it, but the book became my companion throughout my career as a physicist and had a profound impact on my thinking. It prepared the ground for my understanding of the

profound change of worldviews, or paradigms, that is now happening in all the sciences and throughout society — a change from the mechanistic worldview of Descartes and Newton to a holistic and ecological view.

I received my Ph.D. in theoretical physics from the University of Vienna in 1966, spent two years at the University of Paris, and then moved to the University of California. During the next two years, I experienced the so-called counterculture in California as a profound and radical personal transformation, which included a deep interest in Eastern spiritual traditions, the practice of meditation, and a strong sense of empowerment.

## **The Dance of Shiva**

During that time, I had a unique experience that set me on the road that led to the writing of my first and still best known book, *The Tao of Physics*. I was sitting by the ocean one late summer afternoon, watching the waves rolling in and feeling the rhythm of my breathing, when I suddenly became aware of my whole environment as being engaged in a gigantic cosmic dance. Being a physicist, I knew that the sand, rocks, water, and air around me were made of vibrating molecules and atoms, and that these consisted of particles which interacted with one another by creating and destroying other particles. I knew also that the Earth's atmosphere was continually bombarded by showers of so-called "cosmic rays" — particles of high energy undergoing multiple collisions as they penetrate the air.



All this was familiar to me from my research in high-energy physics, but until that moment I had only experienced it through graphs, diagrams, and mathematical theories. As I sat on that beach in meditation, my former experiences came to life. I “saw” cascades of energy coming down from outer space, in which particles were created and destroyed in rhythmic pulses. I “saw” the atoms of the elements and those of my body participating in this cosmic dance of energy. I felt its rhythm and I “heard” its sound; and that moment I *knew* that this was the Dance of Shiva, the Lord of Dancers worshipped in Hinduism.

At that time, I had already become very interested in Eastern mysticism and had begun to see some striking parallels to modern physics. I had been particularly attracted to the puzzling aspects of Zen Buddhism which reminded me of the puzzles in quantum theory, described so vividly in Heisenberg’s book. At first, however, relating physics and mysticism was a purely intellectual exercise. It took me several years to overcome the gap between rational, analytical thinking and meditative consciousness; to experience how the mind can flow freely; how spiritual insights come on their own, without any effort, emerging from the depth of consciousness.

The unforgettable experience of the Dance of Shiva was followed by many similar, though less powerful, experiences; and gradually I came to realise that modern physics leads us to a consistent view of the world that is harmonious with ancient Eastern wisdom. I took many notes over the years, wrote a few articles about the parallels I kept discovering, and finally I summarised my discoveries in *The Tao of Physics*, published first in London and Berkeley in 1975 and now available in over 40 editions and over 20 languages around the world.

## Science and religion

At first glance, it seems strange that one could draw parallels between science and mysticism, because scientists and spiritual teachers pursue very different goals. While the purpose of the former is to find explanations of natural phenomena, that of the latter is to change a person’s self and way of life. However, in their different pursuits, both are led to make statements about the nature of reality that can be compared.

Before I go into more detail, I need to say a few words about religion. The view of science and religion as a dichotomy has a long history, especially in the Christian tradition, and has recently been revived in several books written by scientists like Stephen Jay Gould, Richard Dawkins, and others. On the other hand, there are many scientists who see no intrinsic dichotomy between science and religion, or science and spirituality. At the very core of this confusing situation, in my opinion, lies the failure of many authors to distinguish clearly between spirituality and religion.

To understand the nature of spirituality, it is useful to begin with the root meaning of the word “spirit.” The Latin *spiritus* means “breath”; and interestingly this is also true for the related Latin word *anima*, the Greek *psyche*, and the Sanskrit *atman*. The common meaning of these key terms indicates that the original meaning of spirit, and of soul, in many ancient philosophical and religious traditions, in the West as well as in the East, is that of the breath of life. Spirit — the breath of life — is what we have in common with all living beings. It nourishes us and keeps us alive.

Spirituality is usually understood as a way of being that flows from a certain profound experience of reality, which is known as “mystical,” “religious,” or “spiritual” experience. There are numerous descriptions of this experience in the literature of the world’s religions, which tend to agree that it is a direct, non-intellectual experience of reality with some fundamental characteristics that are independent of cultural and historical contexts.

In accordance with the original meaning of spirit as the breath of life, spiritual experience can be described as a non-ordinary experience of reality during moments of heightened aliveness. Our spiritual moments are moments when we feel intensely alive. The aliveness felt during such a “peak experience,” as psychologist Abraham Maslow called it, involves not only the body but also the mind. Buddhists refer to this heightened mental alertness as “mindfulness,” and they emphasise that mindfulness is deeply rooted in the body. Spiritual experience is an experience of aliveness of mind and body as a unity.

Moreover, this experience of unity transcends not only the separation of mind and body, but also the separation of self and world. The central awareness in these spiritual moments is a profound sense of oneness with all, a sense of belonging to the universe as a whole. This sense of oneness with the natural world is fully borne out by modern physics, and in fact by modern science as a whole.

However, this is not necessarily true for religion, and here it becomes important to distinguish between the two. Spirituality is a way of being grounded in a certain experience of reality that is independent of cultural and historical contexts. Religion is the organised attempt to understand spiritual experience, to interpret it within a particular historical and cultural context, and to use this interpretation as the source of moral guidelines for the religious community.

In many spiritual traditions — for example, in the various schools of Buddhism — the mystical experience is always primary; its descriptions and interpretations are considered secondary and tentative, insufficient to fully describe the spiritual experience. In a way, these descriptions are not unlike the limited and approximate models in science, which are always subject to further modifications and improvements.

In the history of Christianity, by contrast, theological statements about the nature of the world, or about human nature, were often considered as literal truths, and any attempt to question or modify them was deemed heretical. This rigid position of the Church led to the well-known conflicts between science and fundamentalist Christianity, which have continued to the present day.

In fact, fundamentalist attitudes are not limited to religious leaders. Scientists, too, can be fundamentalists, forgetting that all their models and theories are limited and approximate, and ignoring the important role of metaphors — in religion as well as in science. When that happens, the debate between scientists and religious leaders soon turns into a *dialogue des sourds*, as the French call it, a “dialogue of the deaf.”

## My main thesis

Now let me summarise the main thesis of *The Tao of Physics*. My main thesis is that the approaches of physicists and mystics, even though they seem at first quite different, share some important characteristics. To begin with, their method is thoroughly empirical. Physicists derive their knowledge from experiments; mystics from meditative insights. Both are observations, and in both fields these observations are acknowledged as the only source of knowledge.

The objects of observation are of course very different in the two cases. Mystics look within and explore their consciousness at various levels, including the physical phenomena associated with the mind’s embodiment. Physicists, by contrast, begin their inquiry into the essential nature of things by studying the material world. Exploring ever deeper realms of matter, they become aware of the essential unity of all natural phenomena. More than that, they also realise that they themselves and their consciousness are an integral part of this unity. Thus the mystic and the physicist arrive at the same conclusion; one starting from the inner realm, the other from the outer world. The harmony

between their views confirms the ancient Indian wisdom that *brahman*, the ultimate reality without, is identical to *atman*, the reality within.

A further important similarity between the ways of the physicist and the mystic is the fact that their observations take place in realms that are inaccessible to the ordinary senses. In modern physics, these are the realms of the atomic and subatomic world; in mysticism, they are non-ordinary states of consciousness in which the everyday sensory world is transcended. In both cases, access to these non-ordinary levels of experience is possible only after long years of training within a rigorous discipline, and in both fields the “experts” assert that their observations often defy expressions in ordinary language.

### Impact of the book

Over the last forty years, *The Tao of Physics* has been received with an enthusiasm that went beyond my wildest expectations. This tremendous response has had a strong impact on my work and my life. I have traveled extensively, lecturing to professional and lay audiences in Europe, North and South America, and Asia; and discussing the implications of the so-called “new physics” with men and women from all walks of life. Since then, I have written several more books, but still today I encounter people all over the world who tell me: “I love your book” or “Your book has changed my life.” And I don’t need to ask which book they mean. They mean *The Tao of Physics*.

Again and again, I have witnessed how this book and my lectures about it generate a strong resonance in people, and I have come to understand this enthusiastic reception in terms of the broader cultural context of my work. Again and again, men and women would write to me, or would tell me after a lecture: “You have expressed something I have felt for a long time without being able to put it into words.” These were generally not scientists, nor were they mystics. They were ordinary people, and yet they were extraordinary: artists, grandmothers, businessmen, teachers, farmers, nurses; people of all ages, just as many over fifty as under. Quite a few have been old people, and the most moving letters were from women and men over eighty, and in two or three cases even over ninety!

What did *The Tao of Physics* touch off in all these people? What was it they had experienced themselves? I have come to realise that the recognition of the similarities between modern physics and Eastern mysticism is part of a much larger movement, of a fundamental change of worldviews, or paradigms, in science and society, which is now happening throughout the world and which amounts to a profound cultural transformation. This transformation, this profound change of consciousness, is what so many people have felt intuitively over the last four decades, and this is why *The Tao of Physics* has struck such a responsive chord.

### From physics to the life sciences

During my lectures and seminars, men and women from all walks of life often told me that a similar change of paradigms was now happening in their various fields. This led me to expand my focus, and in my subsequent books I explored the change of paradigms in various other fields — in biology, medicine, psychology, economics, management, and so on.

To connect the conceptual changes in science with the broader change of worldview and values in society, I had to go beyond physics and look for a broader conceptual framework. In doing so, I realised that our major social issues

— health, education, human rights, social justice, political power, protection of the environment, the management of business organisations, and so on — all have to do with living systems; with individual human beings, social systems, and ecosystems.

With this realisation, my research interest shifted from physics to the life sciences, and over the last thirty years I put together the broader conceptual framework I was looking for, using insights from the theory of living systems, complexity theory, and ecology. It is a framework that integrates four dimensions of life: the biological, the cognitive, the social, and the ecological dimension. I presented summaries of this framework, as it evolved, in several books. My final synthesis was published by Cambridge University Press in a multidisciplinary textbook, titled *The Systems View of Life: A Unifying Vision*, which I coauthored with Pier Luigi Luisi, professor of biochemistry in Rome.

### Extending the parallels

With my change of perspective from physics to the life sciences, I now see future elaborations of the thesis I presented in *The Tao of Physics* not so much in further elaborating the parallels between physics and mysticism, but rather in extending these parallels to other sciences. In fact, this is already being done.

After the publication of *The Tao of Physics* in 1975, numerous books appeared in which physicists and other scientists presented similar explorations of the parallels between physics and mysticism. Other authors extended their inquiries beyond physics, finding similarities between Eastern thought and certain ideas about free will; death and birth; and the nature of life, mind, consciousness, and evolution. Moreover, the same kinds of parallels have been drawn also to Western mystical traditions. Some of these explorations were initiated by Eastern spiritual teachers. The Dalai Lama, in particular, has held dialogues with Western scientists on numerous occasions.

The extensive explorations of the relationships between science and spirituality over the past three decades have made it evident that the sense of oneness, which is the key characteristic of spiritual experience, is fully confirmed by the understanding of reality in contemporary science. Hence, there are numerous similarities between the worldviews of mystics and spiritual teachers — both Eastern and Western — and the holistic, or systemic, conception of nature that is now being developed in several scientific disciplines.

The awareness of being connected with all of nature is particularly strong in ecology. Connectedness, relationship, and interdependence are fundamental concepts of ecology; and connectedness, relationship, and belonging are also the essence of spiritual experience. I believe therefore that ecology — and in particular the philosophical school of deep ecology, is an ideal bridge between science and spirituality.

When we look at the world around us, we find that we are not thrown into chaos and randomness but are part of a great order, a grand symphony of life. Every molecule in our body was once a part of previous bodies — living or nonliving — and will be a part of future bodies. In this sense, our body will not die but will live on, again and again, because life lives on. Moreover, we share not only life’s molecules, but also its basic principles of organisation with the rest of the living world. Indeed, we belong to the universe, and this experience of belonging can make our lives profoundly meaningful.

Thank you!

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# EMERGENT SPIRITUALITY

*T!M FREKE*

*based on his latest book 'soul story' pioneering philosopher T!M FREKE explores the essence of a new worldview he calls 'emergent spirituality', and suggests we need to make a radical shift in our understanding of both science and spirituality*

*to make his ideas as lucid as possible, in both the book and this article, he has adopted a radically minimalist form of presentation, without conventional paragraphs, full stops and capital letters at the beginning of sentences*

the intellectual mainstream in western culture has fallen under the spell of a depressingly bleak worldview

the great religious theologies that gave life meaning in the past have crumbled under sceptical scrutiny, so we've put our faith in science

and this has left us adrift in a cold cosmos that exists for no reason ... living lives with no real significance ... fearing the finality of death

from an early age i've experienced profound states of spiritual awakening, which have led to a heartfelt conviction that our lives are profoundly meaningful and that death is not the end

but, as a philosopher who values rational doubt, i'm forced to acknowledge that the astonishing discoveries of science seem to completely undermine such spiritual intuitions

it's hard to see our human lives as significant in a vast universe comprised of 100 billion galaxies

now we know that life arose through a process of evolution that entailed 180 million years of lumbering dinosaurs, the intuition that existence has a deep spiritual purpose seems absurd

if consciousness is just a by-product of the brain, then the idea of the immortal soul is just a wish-fulfilling fantasy

i experience my life as a meaningful *story*, with moments of extraordinary magic and astonishing synchronicities, in which my moral choices feel of huge importance

but most scientists claim the universe has evolved by chance ... the apparent magic of life can be explained through material causality ... and freedom of choice is an illusion, because everything is determined by physics

it can seem as if we face a choice between the bleak vision of existence offered to us by mainstream science and a rationally unsustainable spiritual understanding of life

in the face of this dilemma, i want to propose a new philosophy i call 'emergent spirituality', which reconciles our scientific knowledge with our spiritual intuitions, to reveal the purpose of the cosmos and the meaning of our individual lives

in my book *soul story* i present a comprehensive account of this worldview, which i'd like to introduce to you in this article by exploring some of its foundational ideas



## SOUL STORY

EVOLUTION AND  
THE PURPOSE  
OF LIFE

**T!M FREKE**

## EVERYTHING HAS EVOLVED

the greatest triumph of science is that it's given us a truly awe-inspiring cosmology

we now have a powerful explanatory narrative that tells the story of the evolution of the universe ... from the beginning of time through to the emergence of human beings, such as ourselves, contemplating the nature of existence

it seems to me that in the broadest terms this process of evolution has gone through three great stages

first the emergence of increasingly complex forms of matter ... followed by the emergence of the diversity of life ... and then *the emergence of psyche*

'psyche' is the ancient greek word for 'soul' ... and it refers to what we also call the 'mind' or the 'imagination'

the nature of the psyche or soul is obvious if you recognise that right now you are conscious of two distinctly different forms of experience

you're conscious of the world revealed by the senses ... and you're conscious of a non-physical dimension, populated by thoughts and images

at some point in the story of the universe, lifeforms became not only conscious of the material world, but also conscious of immaterial psyche or soul

soul is a whole new dimension of existence that has emerged through the evolutionary process

as you read this article you and i are connecting in both the material world and the non-physical soul-dimension

as bodies we're connecting through these marks on the page that i'm making and you're viewing

as souls we're connecting through the meaning of these words, which doesn't exist in the material world

so this is how i've come to see things ...

the scientific theory of evolution started with the idea that biological species have evolved through the process of natural selection

then physicists realized that the whole universe had evolved from the big bang ... so we came to understand there is a pre-biological phase of physical evolution

now I suggest we need to understand there is a post-biological phase of soul evolution

just as the emergence of life from inanimate matter marked a distinct new phase of evolution, so the emergence of soul from biological life marked a distinct new evolutionary phase, with its own unique characteristics

the physical phase of evolution saw the emergence of atoms and chemicals for the first time

the biological phase of evolution saw the emergence of plants and animals for the first time

i suggest that the soul phase of evolution has also seen the emergence of entirely new aspects of reality ... such as meaning, magic and immortality

so an essential idea at the heart of the philosophy of 'emergent spirituality' is this ...

*everything has evolved* ... including those qualities of existence we think of as 'spiritual'

## THE EVOLVING TIMESTREAM

it seems to me that to really understand the process of evolution, we need to take a fresh look at the nature of time

people sometimes say that 'time is an illusion', but experience would be impossible without time

when i examine reality as it presents itself to me in the moment, i find a stream of experiences that are changing over time ... which i call the 'timestream'

so i want to suggest that, in our immediate experience, reality is the constantly evolving timestream

usually we think of time as something that *passes*, but i want to suggest an alternative metaphor, because it seems to me that time *accumulates*

there is more past now than there was when you started reading this article

the timestream is the past accumulating as new possibilities are realized in each new moment

the present is arising from all that has already happened

the past hasn't passed away, because all that has previously occurred ... from the formation of the universe, through the evolution of life, to me writing this article ... is implicit in the present moment

what has happened in the past hasn't gone, because once something has occurred it's happened for all time and can't be changed

if this weren't true history and justice would be impossible

as would the simplest of things, such as arguing over who left the lid off the toothpaste

physics has constantly challenged us to see beyond our naïve, common-sense perception of a concrete material reality

in that spirit, i'm suggesting we need to understand that time is not something reality is in, because *time is what reality is made of*

the universe is made of the past, because it's the accumulation of all that's happened from the 'big bang' to this moment

it's hard to say what existed before the 'big bang', except that the source of all that exists must be the *potentiality* for everything that has ever been and ever will be

so it seems to me that the 'big bang' was when this primal potentiality began a process of realising itself as the evolving timestream

over the course of 13.8 billion years the potentiality has become realised on ever more emergent levels ... evolving from basic matter, through organic life, to the soul dimension

existence is the evolving timestream realising ever more emergent potentials, which don't exist on less emergent levels of existence

for example, at the physical level of emergence there's no life and death, which only emerge in the biological phase of evolution

in a comparable way, on the biological level of emergence there is no meaning, magic or immortality ... because these spiritual potentialities only become realised with the evolution of soul

## A NEW WORLDVIEW

i began this article by observing that science and spirituality seem incompatible, but the philosophy of 'emergent spirituality' shows they are actually complementary, because they're concerned with different levels of emergence

science deals with the physical and biological phases of evolution  
spirituality is concerned with the more emergent soul phase of evolution

this new worldview allows us to integrate our scientific knowledge with our spiritual wisdom to form one coherent account of the evolution of existence ... but it challenges both science and spirituality to think in new ways

it requires science to acknowledge that, after the physical and biological phases of the evolutionary process, there is a distinct soul phase of evolution ... which has seen the emergence of the non-material qualities of existence that give our human lives their deep meaning

it requires spirituality to accept that all forms of existence are emergent ... so that the soul-dimension is no longer seen as existing eternally outside time, but understood as emerging into existence through the magnificent process of cosmic evolution

**TIM FREKE** is the author of 35 books, translated into more than 15 languages, including '*the jesus mysteries*' on gnostic christianity, which was an amazon top 6 bestseller and a 'book of the year' in the daily telegraph