

Providing an enlightening snapshot of the historical relationship between science and spirituality, Peter Russell, author of *From Science to God: A Physicist's Journey into the Mystery of Consciousness*, leads us through such questions as: Is there a "God Spot" in the brain that is responsible for enlightened experiences? Will new scientific developments ultimately allow us to understand how to become liberated mentally and spiritually? Can science facilitate spiritual states of consciousness? Looking to the future, Russell asks us to consider science and spirituality working together hand in hand, leading us toward new possibilities.

Exploring Deep Mind

PETER RUSSELL

Science and spirituality have never made easy bedfellows. Their views on the nature of the cosmos have often clashed, and the more our scientific understanding of the world has grown, the deeper that clash has become.

Yet it has not always been this way. For centuries, the principal arbiter of truth was the Church; there was no separate science as we know it. The split began some 350 years ago with René Descartes. He divided the cosmos into two realms: the realm of things that could be physically measured—the world of time, space, and matter—and the realm of thought, the world of consciousness and spirit. Descartes wanted to avoid incurring the wrath of the Vatican—he had seen Galileo brought before the Inquisition for supporting Copernicus, and

Giordano Bruno burnt at the stake for similar heresies—so he declared that his “natural philosophy” would focus its attention on the world of matter. The world of the spirit he would leave to the Church.

And so it has been for 350 years. Western science has largely ignored the world of conscious experience—and with apparently good reasons. First, mind cannot be weighed, measured, or otherwise pinned down in the way that matter can. Second, scientists have sought to arrive at universal, objective truths, independent of an observer’s viewpoint or state of mind. To this end they have deliberately avoided subjective considerations. And third, there was no need to explore mind; the workings of the universe could be explained without having to consider the troublesome subject of consciousness.

So successful has this materialist science been, it appears to have triumphed over religion. Astronomers have looked out into deep space, to the edges of the known universe; cosmologists have looked back into “deep time,” to the beginning of creation; and physicists have looked down into the “deep structure” of matter, to the fundamental constituents of the cosmos. From quarks to quasars, they find no evidence of God. Nor do they find any need for God. The universe seems to work perfectly well without any divine assistance.

A SCIENCE OF MIND

In doing away with the notion of some almighty supernatural being, Western science would appear to have done away with religion, and hence with spirituality. Yet the real concern of spirituality is not with the realms of deep space, time, or matter, but with “deep mind,” the one realm that science has chosen not to investigate. Those who have investigated this realm are the mystics, yogis, rishis, roshis, lamas, shamans, and other spiritual adepts who have explored consciousness

firsthand—which, it could be argued, is the only way to explore consciousness. They have delved beneath the surface levels of the mind, observed the arising and passing of thought, and looked beyond, to the source of their experience and the essence of their own consciousness.

Such a subjective approach is not usually considered to be very scientific. It is hard to quantify or validate the knowledge so gained. Moreover, the worldviews this exploration engenders often appear to contradict the prevailing scientific worldview. Nevertheless, in terms of the underlying scientific process, this approach is not as unscientific as it might first appear.

The word “science” stems from the Latin *scire*, “to know.” In its most general sense science may be defined as a path to gaining reliable knowledge through careful observation and testing. To achieve this, a “scientific method” has emerged. A relevant example of this process in practice is the investigation into the electrical activity of the human brain during meditation. First you would seek to isolate the subject of study. So, you might put the person in an electromagnetically shielded room to reduce electrical noise (“noise” in the technical sense of unwanted information). Then, in order to get as much useful information as possible, you would ensure that the electrodes made good electrical contact with the scalp. You would then take measurements while the person was meditating, and also when they were not, in order to ensure that the data gathered were the effects of meditation. You might also record data from a “control” group who were just relaxing. Having performed your experiments, you would gather the results, draw conclusions, and publish them, not just to secure tenure, but so that others can study them and see if they agree. If the general consensus concurred with your findings, you could say you had established some reliable knowledge about brain activity during meditation.

Similar principles can be applied to the direct exploration of your own mind. First, you might seek to remove yourself from as much external noise as possible by choosing a quiet place where you are unlikely to be disturbed. Since you want to observe the mind clearly, you would probably adopt a posture that encouraged an alert wakefulness. Then, in order not to be distracted by external events, you could close your eyes.

As you turn your attention within and begin to observe your mind, one of the first things you notice is the almost incessant flow of thoughts and inner dialogue. You might be worrying about things you have not done, planning a future action, solving a problem, or going over a conversation. This internal noise continually distracts the attention from the subject of investigation—the mind itself. To reduce this internal chatter, you might employ some meditation practice—you could think of it as an experimental technique to quiet the mind. Then, as subtler aspects of the mind came into focus, you might gain new insights into the nature of consciousness.

This is essentially the process undertaken by countless people throughout human history as they have delved into the mysteries of the mind. And they, too, have published their conclusions—not in peer-reviewed academic journals, but in spiritual and mystical texts: *The Upanishads*, *The Tao Te Ching*, *The Tibetan Book of the Great Liberation*, *The Cloud of Unknowing*. Studying them, we find that beneath their different languages and cultures lies a remarkable consistency—what Aldous Huxley called the *Perennial Philosophy*, the wisdom that reappears time and again across the world. It would seem that the subjective approach does indeed lead to a consensus on the nature of mind.

BEYOND THOUGHT

What have these “inner scientists” discovered? One finding is obvious. As the self-talk that normally occupies much of our awareness subsides, there comes a growing sense of peace.

Reducing mental activity further leads to a state where all verbal thinking ceases. At this level of consciousness, people discover a much deeper, all-pervasive peace. Some call it bliss, others joy or serenity; but all agree that the pleasures of everyday life pale in comparison to this profound sense of inner well-being.

Another quality that is found in this inner quiet is love. This is not the love we know in our daily lives, a love that is usually focused on a particular person or circumstance. It is unconditional love, love that does not depend for its arising on any external conditions.

Some also report a profound shift in their sense of self. When all the thoughts, feelings, and memories by which we usually define ourselves have fallen away, the sense of a separate self dissolves. Instead there is an identity with the essence of being. What we hitherto called “I” turns out to be nothing but awareness itself.

In some cultures, this transcendent quality has been interpreted in terms of the Divine, and for seemingly good reason. Most of the qualities encountered at the core of one’s being—peace, love, omnipresence, truth, forgiveness, compassion, light—are qualities traditionally ascribed to God. If you believe in such a being, then these mystical states may well be experienced as contact, or even unity, with God.

Other cultures have different interpretations. In Buddhism, for example, which has no concept of God, these qualities are seen as part of one’s true nature. They are inherent qualities of the unconditioned mind—awareness that is unsullied by the agitation of everyday thoughts and concerns. This in no way diminishes the experience; it is just as magnificent, ineffable, and humbling—and equally transforming.

Western science may have done away with the idea of some almighty being presiding over the affairs of the universe, but it has, until now, had nothing to say about the realm of deep mind.

From this perspective, the apparent clash between science and spirituality dissolves. They are complementary views on reality, each exploring a different realm. Only when we mistakenly assume them to be referring to the same realm does a conflict arise.

ENTER PSYCHOLOGY

Over the last century, a new scientific discipline has emerged that begins to bridge these two realms. This is psychology, the study of the *psyche*, or mind. Like any science, it has branched into several disciplines, ranging from psychotherapy and psychiatry to social and experimental psychology. The latter, wishing to remain an objective science, has generally relied upon observations in the physical world, focusing its studies on brain or behavior.

In the fifties and sixties, experimental psychology made some early forays into the study of spiritual experiences when researchers in Asia and the United States investigated yogis and Zen monks during meditation. They looked mainly at metabolic changes and general shifts in electrical activity of the brain. What they found did indeed indicate a relaxed state of mind.

The field was given a boost in the late sixties and early seventies, when large numbers of people began taking an interest in Eastern teachings and meditation. One practice in particular—Transcendental Meditation, the technique taught by Maharishi Mahesh Yogi—gathered a lot of interest (aided by The Beatles' own interest in the subject). The benefits that TM meditators were claiming caught the attention of a number of researchers, and within a few years several dozen papers had been published on the subject. As before, they supported the claim that practitioners were experiencing a state of deep rest, both physically and mentally. Some of the TM studies broke new ground, showing an increased coherence between the

activity of the left and right sides of the brain. Others found various metabolic changes that suggested meditation was producing the opposite reaction to the stress response, leading one scientist to dub it “the relaxation response.” Such findings, particularly those showing the benefits to personal health, were undoubtedly a primary factor behind the rapid growth in popularity of TM during the seventies.

Over the years, the work has continued, and the interest grown. Many more people have been studied, and from a variety of traditions. Looking deeper into the physiological and neurological changes, researchers have employed more sensitive equipment and new technologies such as MRI and radioactive isotopes. Others have chosen to study more experienced practitioners—Buddhist monks and Christian nuns with many years of dedicated practice behind them. And it is here that some of the most interesting discoveries are being made.¹

GOD IN THE BRAIN?

Some of this research caught the popular imagination when researchers claimed to have discovered a “God spot” in the brain. Stimulation of this region, they said, could account for ecstatic experiences and the belief in God. But further research showed that things were not quite that simple, other regions of the brain being intimately involved in these states as well. Moreover, in years to come, as we gain more knowledge about the brain and its functioning, we shall undoubtedly find the situation to be much more complex than it appears today.

The conclusion that many draw from such studies is that spiritual experiences can now be explained in terms of brain function. Science would once again appear to have triumphed

1 *Editor's note:* Later chapters of this book discuss this work in detail, documenting the changes in particular areas of the brain associated with deep meditation or spiritual ecstasy.

over religion. But there is really nothing very surprising about these findings. It is a fundamental assumption of the neurosciences that there is a close correlation between brain activity and conscious experience. We should expect, therefore, that changes in consciousness as distinctive as the cessation of verbal thought, the dissolution of a separate sense of self, and a feeling of deep serenity would show corresponding changes in the brain. And it is fascinating to begin to discover what these changes might be. But this does not mean that these experiences can simply be reduced to brain activity—any more than love can. Falling in love can be a life-transforming experience, but few who are struck by love would dismiss it, relegating their feelings to neuronal activity in the limbic system, or an increase in the hormone oxytocin. When the rubber hits the road of life, it is our experience that moves us.

Mystical experiences can be equally profound and moving. For some it is the sense of liberation that comes from opening to one's true nature. For others, it may be the profound relief and ease in truly letting go. Or it can even be a falling in love: falling into the essence of love, or being in love with the whole of creation. Whatever form it takes, these states are sufficiently powerful to transform lives, turning sinners into saints, peasants into prophets. They have inspired great poetry, music, and painting, spawned new philosophies, and given birth to many of the world's spiritual teachings. Knowing there is an accompanying brain state does not diminish their value. It does not lower our appreciation of Wordsworth or Beethoven, or lessen the practical wisdom in the writings of Plato or the teachings of the Buddha.

The most significant aspect of the current scientific studies of meditation and spiritual experience is not that they can explain these experiences in terms of brain function, but that they are corroborating the claims of many spiritual teachings.

No longer can skeptics sit back and say it is all just wishful thinking, self-delusion, or an over-vivid imagination. These advanced practitioners are experiencing some profound shifts in consciousness. We may not yet fully appreciate the nature or significance of such shifts, but nevertheless, the changes seem mostly to be for the good.

SELF-LIBERATION

In most studies, the researchers themselves have not had the same depth of experience as the spiritual adepts they are studying, and this can lead to misleading interpretations. For example, to equate the dissolution of the self with a decrease in the brain processes that govern our orientation in space, hypothesizing that this leads to a corresponding loss of boundaries between the self and the rest of the world, misses the real nature of this state.

For experienced meditators, the dissolution of the self is something far more fundamental and significant than a loss of spatial boundaries. In these deep states, there is no longer a subject-object relationship to experience, no longer a separate “I” observing experience or thinking thoughts. Experience happens, just as before. Thoughts may still arise in the mind. But, paradoxical as it may sound, there is no one thinking them. The individual sense of self that is so familiar, a seeming part of every experience, is seen to be but a construct in consciousness, another experience arising in the mind.

To many people this sounds like a pretty weird state, and difficult to comprehend. Philosophers have argued at length as to whether it is even possible for there to be an experience without a separate observing self. However, when a person first drops into the state, there is often a sense of obviousness about it. There comes the realization that it has been this way all along; it was just not recognized before.

If this were as far as it went, the dissolution of the self would remain an intriguing curiosity. However, as just about everyone who has stepped out of the normal self-centered mode of consciousness can testify, it results in a profound shift in attitude toward others and the world. From the moment we are born we are conditioned to believe that we are a unique individual self. We derive a sense of identity from what we have or do in the world, our history and our circumstances, our education, job, social status, and beliefs. Any such derived identity is a conditional one—conditional upon events and circumstance. As such it is forever vulnerable. If our sense of who we are is threatened, we may find ourselves defending, reasserting, or otherwise bolstering our threatened sense of self.

When this sense of self is seen for what it is—awareness itself—the need to affirm the conditioned self disappears. In its place comes a profound liberation. The background mental tension that results from holding on to an identity dissolves—as when a muscle that you did not know was tense relaxes, resulting in unexpected and profound relief. There is more room for compassion, humility, wisdom, and the capacity to respond to a situation in terms of what the situation needs, rather than what the ever-vulnerable, artificial sense of self needs. (This is a much more profound and valuable shift in consciousness than simply losing one’s spatial boundaries.)

TRANSPERSONAL PSYCHOLOGY

Another school of psychology, which has studied the benefits of spiritual experiences from a different angle, is humanistic psychology. Founded in the 1950s by pioneers such as Abraham Maslow, Carl Rogers, and Rollo May, humanistic psychology sought to understand what it means to be fully human. They were interested not so much in mental illness, but in what made for exceptional mental health.

One factor that Maslow himself became fascinated by was what he called “peak experiences.” These he described as especially joyous moments, involving feelings of intense well-being, wonder, and awe, and sometimes a transcendence of self. Clearly he is describing spiritual experiences, if in somewhat neutral language. Maslow describes how the experience can leave a permanent mark on the person, changing them for the better. They may discover greater enthusiasm and creativity, a deeper meaning in life and renewed sense of purpose. Such people also tend to become more empathetic and compassionate.

These are values that the world today badly needs. It is becoming increasingly apparent that humanity is in crisis. When we look for the underlying causes we find, time and again, the human factor—human decisions based on human desires, needs, and priorities, often driven by human fear, greed, and self-centeredness. It is clear that the crisis is, at its root, a crisis of consciousness.

If we are to navigate our way safely through these challenging times, we need to make some significant shifts in attitudes and values. We need to recognize that inner peace does not depend on what we own, our social status, the roles we play, or how wealthy we are. We need to be free from the dictates of a conditioned sense of self that is at the mercy of external circumstances, needing continual defense and affirmation. We need to develop a love and compassion that reaches beyond our immediate circle of family and friends, a care that embraces strangers and people of different races and backgrounds—and also the many other species with whom we share this planet. We need to know in our hearts that their well-being is our well-being.

SPIRITUAL TECHNOLOGIES

What is the most effective way of promoting such shifts in consciousness? The evidence points to spiritual experience. Rather

than distracting us from the course of scientific progress, spirituality could be our saving grace.

Our burgeoning scientific knowledge has led to a plethora of technologies that have enabled us to control and manipulate our world. The underlying goal has been to free ourselves from unnecessary suffering and increase our well-being. Successful as it has been in many ways, this material approach has not achieved all that was hoped for. Despite our abundant luxuries and freedoms, there is little evidence that people today are any happier than they were fifty years ago. Moreover, our incessant chasing of worldly satisfactions has brought us to the brink of global catastrophe.

Spiritual teachings have likewise sought to liberate people from suffering and promote well-being, but their path has been inward. They have sought to understand how our minds become trapped in dysfunctional patterns and have developed various techniques and practices—we might call them spiritual technologies—that free us from the inner causes of suffering and bring the deep relief and ease we all long for.

Thus the most important question to come from the growing research into spirituality is: Can science help facilitate these states of consciousness? This does not mean, as some would suggest, that if we give people the right sort of stimulation in the right area of the brain, we could trigger a spiritual experience. A sense of well-being, yes. The feeling of awe or joy, perhaps. But the realization that we are not who we thought we were, but something far more magnificent? I doubt it. We are a long way from that.

Nevertheless, synergies may be possible. Just about every spiritual tradition in the world has made recommendations as to lifestyles, diets, attitudes, and practices that would promote one's spiritual awakening. The more we come to understand these states, the more we may discover new ways to facilitate them.

Just what these might be we can only guess. The very nature of discovery and innovation makes the future unpredictable—and to some degree unimaginable. What is important is that we recover our respect for spirituality, acknowledge its critical value for the world today, and seek as full an understanding of deep mind as we now have of deep space, time, and matter.