

Fritjof Capra
The Spiritual Dimension of Life

Fritjof Capra (www.fritjofcapra.net), physicist and systems theorist, is a founding director of the Center for Ecoliteracy in Berkeley (www.ecoliteracy.org). He is the author of several international bestsellers, including *The Tao of Physics*, *The Web of Life*, and *The Hidden Connections*.

www.fritjofcapra.net

I shall speak about science, and in particular about the life sciences. Over the past two decades, a new scientific conception of life has emerged. It is based on the theory of living systems and has recently led to important discoveries through the application of complexity theory, a new mathematics, technically known as nonlinear dynamics. I would like to discuss the spiritual dimension of life from this new scientific perspective.

The scenario of the origin and evolution of life that is now being developed at the forefront of science begins with the formation of tiny oily droplets – bubbles bounded by an oily membrane – in the primeval oceans. These tiny droplets formed spontaneously in a mixture of oil and water, following the basic laws of physics and chemistry.

Once they had formed, a complex network chemistry gradually unfolded in the spaces they enclosed, which provided the bubbles with the potential to grow and "evolve" (so to speak) into complex, self-replicating structures. We are talking here about a pre-biotic form of evolution, also known as "molecular evolution." When catalysts entered the system, molecular complexity increased rapidly, and eventually life emerged from these bubbles, or protocells, with the evolution of proteins, nucleic acids, and the genetic code.

This marked the emergence of a universal ancestor – the first bacterial cell – from which all subsequent life on Earth descended. The descendants of the first living cells took over the Earth by weaving a planetary bacterial web and gradually occupying all the ecological niches. Driven by the creativity inherent in all living systems, the planetary web of life expanded through a combination of three different mechanisms of evolution: mutations, but also gene trading, and symbiogenesis – the creation of new life forms through the symbiotic merging of species. These three avenues of evolution produced forms of life of ever-increasing complexity and diversity.

In this majestic unfolding of life, all living organisms continually responded to environmental influences, and they did so autonomously, according to their own natures. From the beginning of life, their interactions with one another and with the nonliving environment were cognitive interactions (in the sense that we have come to

understand cognition, the process of knowledge). As their structures increased in complexity, so did their cognitive processes, eventually bringing forth conscious awareness, language, and conceptual thought.

When we look at this scenario – from the formation of oily droplets to the emergence of consciousness – it may seem that all there is to life is molecules, and the question naturally arises: Is there any room in this new vision for the human spirit? The view that life, ultimately, is all about molecules is, indeed, one that is often advanced by molecular biologists. It is important to realize, in my opinion, that this is a dangerously reductionist view. The new understanding of life that is now emerging is a systemic understanding, which means that it is based not only on the analysis of molecular structures, but also on the analysis of patterns of relationships among these structures and of the specific processes underlying their formation. The defining characteristic of a living system is not the presence of certain molecules, but the presence of a self-generating network of metabolic processes.

Life, then, is not all about molecules. It is much more about patterns of relationships among specific processes. These processes of life include, most importantly, the spontaneous emergence of new order, which is the basis of life's inherent creativity. Moreover, the life processes are associated with the cognitive dimension of life, and the emergence of new order includes the emergence of language and consciousness.

Where does the human spirit come into this picture? To answer this question, it will be useful to remember the original meaning of "spirit." The Latin *spiritus* means "breath," which is also true for the related Latin word *anima*, the Greek *psyche*, the Sanskrit *atman*, and the Hebrew *ruah*. The common meaning of these key terms indicates that the original meaning of spirit in many ancient philosophical and religious traditions, in the West as well as in the East, is that of the breath of life.

Since respiration is indeed a central aspect of the metabolism of all but the simplest forms of life, the breath of life seems to be a perfect metaphor for the network of metabolic processes that is the defining characteristic of all living systems. Spirit –

the breath of life — is what we have in common with all living beings. It nourishes us and keeps us alive.

Spirituality, or the spiritual life, 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. One of the most beautiful contemporary descriptions has been offered by the Benedictine monk, psychologist, and author David Steindl-Rast.

In accordance with the original meaning of spirit as the breath of life, Brother David characterizes spiritual experience as moments of heightened aliveness. Our spiritual moments, he says, are those moments when we feel most 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 emphasize, interestingly, that mindfulness is deeply rooted in the body. Spirituality, then, is always embodied. We experience our spirit, in the words of Brother David, as "the fullness of mind and body."

It is evident that this notion of spirituality is very consistent with the notion of the embodied mind that is now being developed in cognitive science by George Lakoff and his colleagues. 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 a whole.

This sense of oneness with the natural world is fully borne out by the new scientific conception of life. As we understand how the roots of life reach deep into basic physics and chemistry, how the unfolding of complexity began long before the formation of the first living cells, and how life has evolved for billions of years by using again and again the same basic patterns and processes, we realize how tightly we are connected with the entire fabric of life.

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 organization with the rest of the living world. And since our mind, too, is embodied, our concepts and metaphors are embedded in the web of life together with our bodies and brains . Indeed, we belong to the universe, we are at home in it, and this experience of belonging can make our lives profoundly meaningful.