Chapter 1

IS THERE ANYTHING REALLY NEW?

"Every man should know and believe, that there is a first, primordial and eternal being, and it was He who invented and invents anything in reality, and He is God, praise unto Him."

—RABBI HAIM LUZZATTO, The Way of God

"There is no new thing under the sun" (Ecclesiastes 1:9). What a deep and mysterious claim! Understood simply, this phrase seems to indicate the complete negation of any chance of renewal. Indeed, there are many examples from nature to prove this point. Thousands of years before the invention of paper, wasps were building their nests according to the same principles by which paper is made in modern industry (fig. 1). Nor can human beings claim credit for first inventing the wheel as an efficient means of transportation. A certain species of beetle (Scatabaeus Sacer, fig. 2) packs food into giant balls in order to move them from one place to another. Or, in the case of our body, if we observe the inner structure of the $elbow^1$ (fig. 3), we find in the history of architecture that reinforced concrete structures (fig. 4) used in the beginning of the twentieth century have only begun to approximate the skeleton's constructive efficiency.² In the construction of buildings



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¹ This is the sinovial joint connecting the arm and forearm.

² Constructive efficiency is determined by the ratio between the quantity of matter and the desired constructive result. In the structure shown in fig. 4, the constructive result is the size of span that the structure can bear without using additional pillars. Instead of spreading the effort all over the ceiling (fig. 5), it was concentrated on the ribs only, and the superfluous mass was removed. This created a lighter ceiling over a larger span. In the bone's inner structure, force is concentrated on inner ribs, while the bone's inner space remains void. This allows for lighter bones, while maintaining their strength and ability to support the body.

WHERE DO IDEAS COME FROM?









this is accomplished using reinforcement ribs made of pre-stressed concrete so that a larger span can be created using a minimum of material.

Further examples of the point made in Ecclesiastes that there is nothing new under the sun point to inventors like Samuel Brown, the engineer who first developed the principle of a bridge hanging on steel cables. He was reportedly inspired after watching a spider spin its web³ in the corner of his room. Leonardo da Vinci is said to have borrowed the idea for tanks from observing the defensive nature of turtle shells.

Our most complex cameras still utilize the principle of *camera obscura* (fig. 7), borrowed from the mechanics of the human eye (fig. 8). Halfway through the twentieth century, jet engines (fig. 9) have only recently replaced the older propellers in fighter plane, while squid (fig. 10) have long propelled themselves through water using exactly the same principle, ejecting strong jets of water to their rear. And what about radar? Bats and dolphins have always used sound to identify external objects with great accuracy.

In addition to engineering principles, nature's wisdom exceeds that of human beings in the field of medicine as well. Animals, for example, use antiseptics in original ways. Starlings have a habit of searching for anthills and then brushing the ants between their feathers. These ants are in fact miniature laboratories of formic acid, which has antiseptic and pain-subduing qualities. The starlings use this in reaction to the ticks that reside in their feathers.

Not only starlings use antiseptics. A phenomenon observed among capuchin monkeys is that

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³ The cobwebs of spiders are incredibly strong (fig. 6). Though made of organic materials, they are stronger than steel cables of the same diameter. Recently, a fabric manufactured from cobwebs showed exceptional strength. This unusual fact remains unexplained.

they pick branches and whip themselves like ascetics. Although monkeys are known to be imitators, it is highly improbable that they learned this habit from observing some human martyr monks. Furthermore, they are particular about the plants they use. Peppers are their favorites because of the concentrated juices they release when thrashed.

Among indigenous people, the Navajo have a custom of inhaling the vapors of the Usha plant to cure inflammations and diseases. When asked where they received this knowledge, they said they learned it from the bears that, when injured, pick Usha leaves and rub them against their wounds.

Monkeys also preceded humans in the use of antiseptics. In the Amazon rain forest, monkeys are often infected with parasites that cause diarrhea and vomiting. They have been observed swallowing as many as a hundred leaves at a time, folding each three or four times. Their stomach cannot handle the condensed mass and the hairy clump of leaves is pushed like a piston along their guts, pulling with it the parasites caught in the hairs.

Given all these examples, is it possible that humanity has exhausted the pool of ideas offered by nature? With the most recent developments in modern technology, partially based on ideas borrowed from the animal and plant kingdoms, it would seem that the answer is "no." For example, when bees or ants swarm, self-interest disappears while the whole community's interest takes precedence; a single ant may sacrifice its life to save the swarm, and when it can no longer fulfill that function, another ant takes its place, keeping the system whole. Military strategists today are already developing such a technique, called "ant-swarm technology," for the battlefield of the future. This technology is based on an array of small robots that, communicating by radio, can carry out missions that a single unit could not normally accomplish. Flying vessels less than two inches long



are also being developed to carry out assault or surveillance missions behind enemy lines, not unlike a swarm of bees. The world of insects has a constant appeal to designers, inspiring countless inventions of which, unfortunately, only a small part are used to good ends. Either way, we are again confronted with this question as we begin: Is there anything new under the sun? Is our creative force limited to more sophisticated uses of principles already found in nature, or do we have the ability to bring something truly new to light? Before we can discuss this question thoroughly, we will examine the very nature of the way human beings think. We will examine the creative forces that abound in the world of concepts and observe some aspects of their usefulness and limitations. Later, I will present some practical examples that will demonstrate what is described theoretically in this section.

CHAPTER 2

CREATIVE THINKING

"An opening into this higher mind is usually accompanied by silence of the ordinary mental thought. Our thoughts are not really created within ourselves independently in the small narrow thinking machine we call our mind; in fact, they come to us from a vast mental space or ether, as mind-waves or waves of mind-force that carry a significance which takes shape in our personal mind or as thought-formations ready-made, which we adopt and call ours. Our outer mind is blind to this Nature; but by the awakening of the inner mind we can become aware of it."

-SRI AUROBINDO, The Synthesis of Yoga

What a complex world is constituted by human thinking activity! It includes simple associative activity; the ability to make analyses within the world of concepts; to gather several concepts into a new whole; or to construct a logical structure of deductions or to reach insights. And while some of those insights derive from our synthesis of the concepts we know, there are some that surprisingly draw only to a limited degree upon this structure of deductions.

Human intelligence is a riddle whose limits grow broader and deeper with the growth of human civilization. The boundaries of scientific thought, which we once believed to be clear and well defined, now seem to have been shaken. For example, scientists at the forefront of scientific research are beginning to recognize the limitations of human thought and our inability to completely penetrate the riddle of our existence, the puzzle of the boundaries of knowledge, or the very secret of life itself. Research into thought itself cannot deduce the origin of thought or its connection with the laws it observes in nature, with the principles of mathematics, or even with the world of art. The best example of this concept is to consider the difference between the functions of a computer and the way in which thinking human beings operate. The creative element of thought is still a mystery. If the process of our thinking is merely a logical process wherein facts are gathered and conclusions reached, the process of creativity would be simple, and, in fact, we would not be able to point out any significant difference between human thought and the output of a computer. But things are not that simple. Unlike computers, we can create results that do not derive directly from the database of any given problem. The fact that we can recognize and define a problem reflects an intelligence that is not limited to the mechanical level. Our mental considerations can include shades of will and emotion, aspects of our thinking that are not mechanical, and it is not always possible for us to tell where thought ends and emotional intelligence begins. No computer is able to use will and emotion, no matter the level and degree of sophistication of its calculating power.

The truth is that human thinking activity does not rely solely on the computation ability of neurons, as some believe, but rather on multidimensional planes in which our emotional life and our will have an organic role. Furthermore, our intelligence could not exist as it does now without the power of imagination, which is a unique component of our being. Imagination has an important role in many functions of our intellect—in creating concepts and mental images; in creating analogies intertwined in the world of phenomena; in inspiring technological and artistic creation; and in higher revelations, such as the prophetic visions found in the holy scriptures. Our reasoning world is complex and bountiful in colors and dimensions; it seems we will never be able to understand it fully.

The complexity of human wisdom and the mystery that so inspires our awe should not lead us to let the mystery slide beyond our grasp. In conjunction with the mystery of human consciousness, there is an inner impulse that calls on us to observe the patterns of thought —its many different hues and shades, the laws it follows—and to pursue the subject of our present discussion, creative thinking.

How can we investigate the nature of thought if thought itself is the instrument of our investigation? Is it possible to lift our mind out of its own thought activity, as though pulling ourselves along by the top of our own head? This would be impossible if our mental capacity were limited simply to the brain's activity, as some researchers in the natural sciences seem to believe. Thinking activity, as observation reveals, is not limited to the physical apparatus inside one's skull. Indeed, even a superficial examination shows that thinking activity transcends the physical.

How can we believe that thinking is limited to the brain's activity when we consider the moments of inspiration described by talented artists? What

are those flashes of enlightenment that strike great inventors and scientists, making them aware of something they had not seen before? Did this intelligent process take place inside their skulls? We are, indeed, inclined to frown and knot our brows when trying to solve an urgent problem, sensing that the effort has something to do with the head area. Yet in moments of inspiration, we are surprised to discover that this understanding finds its way to our mind with no effort at all, coming not from our head but from some mysterious reality that is not limited to the physical body.

In this example, direct experience of intuition already points to an area of thinking activity that does not necessarily have to do with the brain. We can add another experience to this example—the special moments we experience in the deep peace of nature or, more surprising, amid social turmoil as we suddenly become aware of our presence in the moment, feeling a sensation of quiet, searching alertness and self-awareness. Such moments bring about deep, penetrating soul-searching. When these moments occur, we sometimes see a broad panorama of our past life and, at other times, a clear, unprejudiced awareness of the present situation. This new vision is directed by its own volition and without need for our consent, obeying a law we do not understand, as if it abides by a different set of rules.

Through such experiences, we become aware of a unique quality of our intelligence—the ability of our own activity to divide itself into two distinct parts: routine, constant thinking that organizes and executes, and, beside it, an observing or witnessing activity, broader than the first. This latter activity envelops and contains the first one within a greater field of consciousness. It is this special ability of our intelligence to witness that allows us to research the patterns of thought, their various aspects, and the fields in which they operate. At the same time, it is this ability that allows us to discover a new, deeper mystery that we did not have access to before. We may therefore turn to the field of our thinking world and take a closer look at every aspect of it without destroying the sense of the greater mystery that vibrates within us.

The area of activity that we can immediately observe is associative thinking, which runs on ceaselessly, beyond our control, with no intention or aim. It is a stream of mental activity giving rise to emotional reactions that create further associations, and so on. Can this activity even be called thinking? The chain of automatic activity seems to be set in patterns that are associatively connected to each other through links that have been embedded in us over the years. As soon as we encounter a new stimulus, a conditioned response arises, at times a memory, at times a tendency to connect the stimulus with similar experiences. An urge to act may arise, or a desire for more stimuli. This process goes on and on throughout our waking life. In this case, it is hard to discern the touch of awareness or a guiding hand as part of our thinking process. The word *thinking* seems insufficient to describe this activity in our life, and if we spend the majority of our time in this type of thinking we must accept the proposition that most of our waking life is occupied more by daydreaming than by active initiative.

Nonetheless, reason arises at once from its reverie when presented with a problem or task. Confronting a problem—not necessarily a complicated "Sherlock Holmes" kind of problem, but even a simple situation that requires more than inattentive daydreaming—we immediately find the power to focus our thought more intensely. In other words, we perceive the structure that arises from the problem's data and deduce the required course of action. Analytic and deductive thought cannot happen in a completely mechanical fashion; they require active involvement by a thinking subject who recruits them to carry out the task. Yet, not even this would be possible were it not for the cohesive world of concepts—the paradigms we operate from that are based on solid inner laws.

We shall discuss this world of concepts in more depth later. However, for now we can say that this conceptual world, the world of our paradigms, appears whole and unified in us as adults. The process of its crystallization was completed in our childhood, and by the time we are adults our inner world contains a complex pattern of "finished" concepts. Since this part of our childhood is no longer as vivid in our consciousness as it once was, it is difficult for us to examine, years later, how this finished world of concepts developed and became a basis of our thought world. Because of this "finished" quality of mental concepts, we tend to associate them with the brain's activity, sometimes called the human mind. In other words, we do not actively think about it consciously.

We shall now consider those flashes of inspiration that seem to come from another world and last but a fraction of a second, yet provide fresh insights and dramatically affect our lives. Such flashes come with no warning, and they are so brief that we regard them at times with awe and at other times with disbelief. We perceive them as something less personal than the usual course of our associative thoughts. Are we right to be surprised by this gift from a reality unknown to our normal consciousness? Experts in the field of inventive thinking, such as Peretz Manor, regard these flashes as "an unreliable phenomenon, upon which no solid conclusions may be based."¹

¹ See, for example, an overview of Systematic Inventive Thinking (SIT) on the Internet at www.sitsite.com. SIT is based on the work of Genrich Altschuller.

We shall return to this subject later when discussing different approaches to the world of creative thinking, comparing the approach common in the natural sciences with that found in the sources of esoteric knowledge.

I have used the word *gift* to describe these flashes of thinking, since they truly radiate from a source of intelligence not at our command—that is, not from the persona we know in our daily lives as the thinking subject, the one who dictates what and when to think. The reality from which these flashes of thinking come is not limited to the narrow area of our external being; instead it coincides with a plane of wisdom that is truly universal.

Essential understandings do not always reveal themselves through flashes of inspiration. At times, they seem to arise from the inner depths of one's soul. Though the way they materialize in our awareness may differ, in both cases we experience a sensation of intimate connection to a higher plane, one beyond the scope of subjective human consciousness. Why is it so seldom that this plane's activity reaches our awareness? Could it be that this plane awakes to life only occasionally, while at other times is in retreat? Or does it always exist, whereas it is our awareness that habitually hides behind walls of forgetfulness?

We will return to these questions when we discuss the hierarchic structure that typifies our reasoning activity as thinking beings. This will make it easier for us to characterize the field of human creativity and its limits; and to understand how this creativity relates to universal creative reality in which we are the Maker's agents, placed on earthly planes to fulfill a meaningful task. For the purposes of this discussion, the word *intuition* will be used to describe the penetration of universal wisdom into the boundaries of individual consciousness, even though normally the use of this word in spiritual sciences denotes a higher level of consciousness.

What is the source of the term *spiritual science*? Science is precise and logical. Its findings can be measured or weighed and the data is accessible to anyone who performs the experiment under exactly the same conditions. What does this have to do with mystical revelations, which few people are privileged to experience and which cannot be repeated in a verifiable way? If this wisdom is indeed esoteric (hidden and secret), how can we trust the findings that are either encoded or sometimes given by hints? If such knowledge is truly meant for the betterment of humankind, why is it hidden?

These are important questions indeed, and we must treat them with respect. Rudolf Steiner, who coined the term *spiritual science*, considered the knowledge he brought humanity to be of a vast array in which regularity and scientific precision are no less prevalent than in the natural sciences. Gurdjieff, founder of the Fourth Way school, presented a conceptual world that is adopted mostly from materialistic conceptions. His hydrogen table, the reverberation levels of materials, the law of the octave and other laws are phrased with scientific precision in the spirit of the age. Yet, is this enough to justify the term *science*?

Esoteric knowledge is mostly unique, in that it is received through tools of perception different from those we use in daily life. The expanded awareness developed through esoteric practice can interrelate with planes of existence not accessible to daily awareness. Does this indicate that such experiments have a vague, mystical character? It is, in fact, quite the contrary; such experiments are based on thinking that acts at higher levels of awareness and is incredibly lucid and sober, more so than the rational thinking we use to solve daily problems. The spiritual researcher finds facts through direct experience whose validity is greater than that derived from sensorybased thinking.

The natural sciences strive for objectivity; an experiment's reliability and credibility will be enhanced the more researchers can separate themselves from the objects they observe. An experiment in which the researcher is involved emotionally or otherwise is considered unreliable. Moreover, while this criterion has admittedly lessened since the birth of quantum mechanics and since the observer has become part of the game, the spirit of this attitude is still deeply entrenched within the minds of researchers of the macrocosmic world.

In spiritual-scientific research, on the other hand, there is no separation between researcher and research matter. The researcher, the laboratory, and the facts under investigation are one united field, lit by divine consciousness. The subjective boundaries of the researcher gradually melt away, and the planes of existence revealed are not something separate but a continuum, a unitary whole of which the researcher is also a part.

Spiritual science does not reject the demand by science for repetition and for the findings to be identical through additional inquiries conducted under the same conditions. The main difficulty arises in bringing the conventional researcher into the same condition in which the spiritual researcher made the original findings, since this condition is about the transformation of one's entire being. Clearly, one who remains within ordinary, limited consciousness cannot verify the findings of suprasensory spiritual science; yet those who read the unique literature of this tradition can feel an inner sense of credibility. Many people report a sense that the inner knowledge found in esoteric literature existed within their souls well before reading the texts. According to their testimony, the knowledge and the expression of that knowledge simply awakened what had always been waiting within the depths of their soul.

Esoteric knowledge, or at least a great part of it, is not hidden at all. According to modern spiritual messengers, the period when this divine knowledge was kept secret has come to an end. If this knowledge is not easily available to modern readers, it is not because it has been withheld intentionally, but because it requires an effort to reach the inner depth of such wisdom. Among other things, esoteric material is meant to transform the reader's thinking. It is not aimed toward an intellect that packs in organized bundles of lifeless information; it is itself a means to stimulate hidden skills that students do not yet have at their disposal. In Gurdjieff's writings, information is not given in a way that is accessible to ordinary thinking and is often intentionally coded; yet students should find the key to understanding within their own experience when the moment is right. Until then, they are asked only to exercise their intellectual muscles as much as possible through experiment and error until they can reach the depth of knowledge.

I have tried to characterize briefly the relation between esoteric knowledge and the knowledge available to the natural sciences of today. One detects a tone of criticism toward the scientific research within this book whenever I compare these two ways of knowing; perhaps such skepticism is useful if it is framed properly.

There is no doubt that Western scientific research is guided by a deep impulse to understand the world and ourselves within it, and there is still good reason to observe research methods—that is, the tools and systems used in the various scientific disciplines. As noted, spiritual research deals with observing the reality underpinning the phenomenal world directly, and meditative research enables the researcher to make an immediate investigation of reality through direct contact. One experiences things and knows them. In the Hassidic path of initiation, there is a saying: "I knew him; I became him," indicating the special nature of divine knowledge. One does not acquire such knowledge without becoming one with the object of inquiry, becoming part of it. There is a rule within the divine path of inquiry that, in order to know the object of inquiry, one must vibrate at the same frequency that it does. This experience includes all of the soul's faculties, rather than just *thinking* as a separate faculty; and, when it is revealed, it requires no circumstantial evidence, since it qualifies itself.

As it advances toward an understanding of the secrets of the universe, natural-scientific research sets a careful foot down, pulls it back, and then sets it down again on a different spot. It sends a probing ray of light into a hidden world that refuses to yield its secrets. Spiritual science goes toward the light itself. The ray of light sent back from an unknown existence supports our own progress as researchers, calling on us to reveal our oneness with the universe. Natural scientists, seeking to know the secrets of the universe, base their investigation on sensory information, while moving gradually by theorizing and testing those theories and by developing and using various tools of measurement. Because normal awareness relies on sensory input, its database is limited to the physical world; each theory that scientists raise is vulnerable to the next.

It is a fact that quantum mechanics is not accepted by many modern physicists, despite its great reliability in predicting experimental results on a microscopic scale. In fact, even some of its developers think it is far from ideal for describing the workings of the universe. The scientific community is sharply divided over most theories that try to "understand God's thoughts," as scientists call it. The timeless debate between Niels Bohr, with his theory of probability, and Albert Einstein's rejection of it is just one well-known example of the arguments that can arise between two leading scientists when one claims to hold the theory that unlocks our understanding of all reality, and the other dismisses it as just so much nonsense. Einstein's oft-quoted comment was "I, at any rate, am convinced that He [God] does not throw dice." Regardless of which one is right, the very fact that such sharp debates can occur between scientists at the forefront of their field tells us something about the nature of the theories and the way they are developed.

What, then, are the conclusions of scientists at the forefront when it comes to the secrets of the universe? I am no expert in modern astrophysics, but from my reading of relevant materials I can identify a thinking process something as follows. First, it is assumed that light behaves at least partly according to the rules of wave theory. Accordingly, we can assume that the Doppler effect, relating to the change in frequency of moving bodies should apply to light, as well. When we examine the spectrum of the light that comes to us across space, physicists find that there are patterns in it that are similar to the elements of our own planet, except that there is a shift toward red. According to the theories, when light reaches us, it is slightly different in the case of a moving source than if the distance between its source and us were to remain unchanged. This matter of color then becomes one of the tools for calculating the speed at which light sources move away from us, and this leads to hypotheses about the possible expansion of the universe,

its age, and its birth from a single point in the so-called Big Bang. Though this may be a somewhat simplified description of conjunctures and may not be entirely accurate, it does reflect the scientific way of thinking and allows us to see the weaknesses that accumulate at every junction on the path of theories and deductions, until the theory at the end of this process looks like it, too, is headed toward a big bang.

Scientific research makes liberal use of mathematical equations provided by talented mathematicians; nevertheless, it seems that a considerable number of the cosmological theories presented recently derive solely from an analysis of mathematical equations that handle gravity, bent space, and the relativity of time and space.

It is true that many of the phenomena of the material world can be expressed properly and accurately through mathematics; this is convincingly authenticated by the numerous achievements of modern technology. Yet the world is more than just mineral masses coming together on microscopic or galactic scales. Mathematical equations cannot describe the life forces that resonate in the great creation we find every morning when we open our eyes. The deep mystery of consciousness cannot be explained through complex calculations of nervous systems, nor can the origin of our emotional life be understood through chemical analysis of glandular excretions and reactions.

Physicists search for a simple, elegant model that can be expressed through simple equations to explain the infinite variety we see around us. Albert Einstein best expressed this attitude when he said, "All physical theories, their mathematical expressions apart, ought to lend themselves to so simple a description that even a child could understand them." Still, scientific theories chase one another, at one point describing reality using atomic theory, then using quantum mechanics. At another point invoking deterministic Newtonian laws, then by applying statistical principles under uncertainty principles. At yet another point employing relativity theory, and then using the new string theory. The "theory of everything" that everyone looks for that is, the theory that would bind all universal laws into a single, cohesive rule—does not seem to lie at the doorstep of scientific research. Is it not strange that spiritual messengers discovered such a unified theory thousands of years before modern physics?

For example, " $E = mc^2$ " expresses the idea that energy and physical matter are initially the same entity. The ancient text of the Upanishads expressed this idea almost five thousand years ago. Heisenberg's findings about how the electron sometimes appears as a wave and sometimes as a massive particle strictly corresponds to the ancient teaching of the Fourth Way, which describes the universe as a mass of vibrating entities, self-transforming from one plane of existence to another that is higher or lower.

Using the materialistic approach, scientists have tried to understand the secrets of the universe through thorough investigation of the presumed universal building blocks. Scientists believe that by discovering the fundamental building block they can assemble a perfect model of all reality. Spiritual science presents the opposite approach; it starts with overall unity and then descends to the investigation of details derived from that unity. According to spiritual science, it is impossible to understand the details when they are disconnected from their original unity.

This essential characterization leads us to another deep, essential difference between the two fields of research. The natural sciences look for regularity in a one-dimensional environment perceived through the senses. In spiritual science, we discover the existence of additional planes of existence that mutually permeate one another. According to esoteric wisdom, reality spreads not just through the infinite spaces of the visible dimension, but also, and even more, into the depths of a vertical dimension—a Jacob's ladder whose base is in the world of the senses while its top rises into the world of spirit. According to this approach, the materialized world is no more than a coalescing, or condensation, of the spiritual essence of its existence; this essence vitalizes the world toward a broader evolution of its hidden possibilities.

Until the appearance of the strange phenomena in subatomic research that led to the creation of quantum mechanics, five classic qualities were required of scientific method: visibility, causality, locality, self-identity, and objectivity. Because scientific investigation is essentially one-dimensional that is, ignoring the existence of higher planes of activity not revealed to the senses—the foundations of modern physical research were shaken by the appearance of strange phenomena, since subatomic phenomena completely contradicted the classic assumptions. It was discovered that reality's tiny building blocks behave at times as particles and at other times as waves, and, further, that two particles fired at the same target each influences the behavior of the other. It was also discovered that the behavior of a single particle cannot be predicted; only the whole can be predicted, and then only statistically. Even more shocking, it was also found that the observing researcher influences the very results of the experiment.

One by one, the classic criteria were contradicted; causality was shaken, locality dropped, and even self-identity was lost forever.

Spiritual science, on the other hand, never recognized those five standards. It was never based on the demand for visibility or sensory perception.

Spiritual science does not seek the self-identity of objects in the sensory world; it finds causes in a higher world, where self-identity can be found if it exists. For example, regarding the behavior of schools of fish, beehives, or flocks of birds, it is noted that they respond to the demands of the moment as one body. Spiritual science does not view a single fish as having self-identity; it points toward a kind of "group self" that determines the school's behavior from a higher plane of existence.

The latest subatomic research, which reveals that a beam of electrons influences the behavior of a single electron, would not have surprised researchers had they been familiar with the principles of spiritual science. The mysterious appearance and disappearance of particles would not be seen as such if researchers had been familiar with the ancient esoteric idea that passage between different planes of existence is possible. In fact, esoteric wisdom has long been familiar with the principles evoked in Albert Einstein's revolutionary statement about the duality of matter and energy.

Reality's quantum behavior is a new discovery for the natural sciences, yet it stands at the center of esoteric traditions such as Kabbalah and the cosmology of the Fourth Way. The discontinuous nature of processes is a profound principle that is broadly discussed in theories that identify cosmic vibration as the originator of universal order, while phrasing its laws through concepts. This is a field of infinite depth that could expand greatly and enrich scientific research, if only natural scientists had ears to hear.

Is spiritual science interested only in matters of the spirit? Does it consider higher worlds to be its sole area of interest? Not at all; spiritual science also involves itself with the physical reality revealed to our senses. Yet, in doing so, it does not limit itself to the strictly material aspect but examines the whole—the physical object and its roots, which lie in etheric or spiritual planes. This is why it can also shine new light into some shadowy corners in areas being studied by physics and medicine. For example:

According to current scientific research, the heart, a highly efficient "pump" that works constantly through our decades of existence, makes blood flow through our highly-branched blood system. A simple pressure analysis shows that no mechanical pump could push liquid through such a complex system, which includes tens of kilometers of microscopic capillaries; any planner who specializes in liquid mechanics will attest to this. Dr. Rudolf Steiner pointed to a sheath of etheric forces as being responsible for making the blood flow through the thousands of minute capillaries in our body. This

miraculous sheath of unseen forces bolsters our body in its struggle against the forces that threaten its regular activity and, as noted, it also has to do with the functions of memory and thinking.

- Our motions are governed by a double nervous system: the proprioceptive system, which provides the brain with spatial information about our organs; and the motor system, which transfers the brain's orders, to the muscles that move our organs. Schematically, this is how science sees the functioning of the nervous system. Anthroposophic science claims that the nervous system does not send orders to the organs at all; rather, it sends spatial and sensory information from the organs to the entity that makes them work. The nervous system is first and foremost an aid to human consciousness, providing an overall picture of the moving organ. The motivating force is supplied by our will forces, which, despite their great importance, are not at all known to science because mechanistic and analytical tools are used to research them.
- Thinking occurs in the brain. Electric currents run through nerve cells, process the information received by the brain, and allow it to create thoughts. This is how most brain research theories see things. Sri Aurobindo's Integral Yoga or Steiner's spiritual science see the brain as an aid, a reflecting tool for human consciousness. The brain does not create insights and thoughts. Human thinking acts in the subtler layers, which thread the human body, and are constantly moving around and inside it. Deep thoughts and creative intuitions come from the intelligent spaces of universal reality.

Spiritual science has much to tell the thirsty human soul, even in the fields of physiology and medicine. Its tools of research go to hidden areas where even the most powerful microscopes are useless.

The evolution and history of humankind are fascinating fields for science, which investigates them using archaeological means and historic documents. The age of artifacts is discovered through various methods, such as examining radioactive elements and mathematically calculating the loss of radiating mass. Spiritual science derives its findings from a historical document not created by humans at all. According to the spiritual messengers, reality is imbued with "etheric" substance, which like a cosmic memory preserves a record of everything that happens on our planet, including the changes in the planet itself. Spiritual messengers point to this great cosmic ether as a source for the tremendous information it gives us about human

history, human evolution, and the evolution of the planet. Humanity's prehistoric way of life before the invention of reading and writing is described in amazing detail in the writings of spiritual messengers; they describe the ancient civilization of the Rishis, which left no physical traces; the civilization of Atlantis that preceded us and was lost in the sea; and even more ancient civilizations, such as the Lemurian period, which left only old folk tales to attest to its existence.

If these lines make some readers smile, such skepticism can be attributed to the enormous gap between the findings of spiritual science and the scientific world of concepts on which we were raised and in which our education is so firmly rooted. If criticism here is aimed at the attitude of the scientific establishment, it is directed only at its stubborn refusal to draw on the ideas of spiritual science revealed to Western culture since the beginning of the twentieth century. Yet, esoteric wisdom enters human consciousness even without our awareness. Some inspired scientists have been exposed to divine knowledge, which until recently was limited to narrow circles of the ancient mysteries and the schools of the esoteric path. Meetings and fruitful conversations took place between David Bohm and Jiddu Krishnamurti, between Einstein and Rabindranath Tagore. Evidence of those conversations can be found in Einstein's many sayings in favor of the existence of divinity, and in Bohm's holistic approach to the many pieces of the puzzle of reality that modern physics investigates.

Esoteric knowledge is destined to give humanity back the inner warmth and the sense of existential meaning it has lost. In ancient times the cultural split was not as deep as it is today. Scientists of the past were priests, neophytes, and Rishis who held all-encompassing knowledge about the nature of our being and our soul. The sharp dichotomy between science, religion, and philosophy would not have been possible in the past. The goals of modern civilization should include a unified human knowledge with a wide perspective, presenting scientific research, the humanities, and art as part of an overall cultural mosaic, imbued by the light of the spirit.

It seems, then, that human intelligence actively operates between two poles—a mental pole relying on the physical brain and the intuitive pole deriving from universal intelligence that uses the individual as a channel of expression. What happens between those two poles that seem so distant from each other? It is human reasoning that is capable of moving back and forth between the two different planes of thought, enriching the world of mental concepts with the fragrance of greater cosmic consciousness, which pulls the whole of reality and the human being into a single continuum. Like creators in other areas, inventors discover the objects that they manifest in the earthly world, defining them through an array of concepts and logical connections. Inventors are inclined to search for the solution on this level; when no solution is found, the problem's data is metamorphosed to a higher level, where thinking is no longer concerned with the concrete forms that compose the problem, but rather with a special category of archetypal principles, of which the given problem is a specific example. At the level of the archetypal principle, thinking parallels the intuitive plane, and can therefore transport the problem's data to this superior plane, where it is further processed. The results of this process will strike the inventor as a flash of enlightenment at a time when least expected, perhaps while one is taking a walk or lying in bed.

It is this power of active reasoning that pulls the two planes, the mental and intuitive, into a mutually inspiring encounter that creates new solutions in the earthly plane of defined concrete shapes and forms. Active creative reasoning is valuable because it can merge with a multidimensional cosmic intelligence to inspire creativity in the earthly realm of matter and power.

Nature's abundant creation realizes a world that is rich with shapes and colors. Thanks to the unique process I have outlined, human beings can continue the general universal process of creation and imbue it with a new quality, bringing it to new planes beyond the reach of nature's creativity. Later we shall again examine the relationship between human creation and general creation from the special viewpoint of the conceptual world.