

Science and Anthroposophy

By Arthur G. Zajonc

My feeling was that I must grapple with nature in order to acquire a point of view with regard to the world of spirit which confronted me in self-evident perception.

Rudolf Steiner recalling his youth¹

The relationship between science and spirituality has been a difficult one since at least the time when Giordano Bruno and Galileo Galilei were tried by the Inquisition and condemned for their scientific and theological views at the dawn of the 17th century. Following the influence of Kant in the late 18th century, in more recent years an uneasy truce has existed in which the Roman Catholic Church and Protestant theologians ceded the investigation of the natural world to scientists, while reserving for themselves the moral and spiritual dimensions of life. Two realms of truth, or two non-overlapping magisteria, became the accepted norm with a hazy and uncertain dividing line running between them. With the increasing success of science in the late 19th and early 20th centuries—think of Darwin and Einstein—the relationship between these two dominant cultural forces of science and religion shifted.

¹ Rudolf Steiner, *The Course of My Life*, 2nd edition, transl. Olin Wannamaker (Hudson, NY: Anthroposophic Press, 1951), p. 24.

The philosopher Alfred North Whitehead captured the situation well when he wrote in 1925, “When we consider what religion is for mankind, and what science is, it is no exaggeration to say that the future course of history depends upon the decision of this generation as to the relations between them.”² The “two-realms” treaty had been no real solution. One of the great accomplishments of Rudolf Steiner’s lifework was to offer an entirely different solution for the perennial conflict between science and religion, one that advanced a cognitively oriented, contemplative spirituality as a bridge between two realms of human life otherwise separated from each other.

A Lifetime Task

During his childhood and youth, Rudolf Steiner sought ways to ground his early spiritual experiences in philosophy and science. In his autobiography he tells us that in those years a world of spirit “confronted me in self-evident perception.” He recognized even then the need to apply to his spiritual experiences the lucid and reliable thinking he had recently discovered in studying Euclidean geometry, and the careful methods of investigation that he was learning in physics and chemistry at school. But for all their clarity and power, the methods of pure mathematics and conventional science would need a further metamorphosis and development before they would become suitable for a spiritual science. The scientific study of nature would offer to the young Steiner both a point of view and a challenge as he sought for a means of bringing science and spirituality together in a manner that honored the crucial spiritual strand in relation to the increasingly secular perspectives of Western culture.

² Alfred North Whitehead, *Atlantic Monthly*, August 1925, <http://www.theatlantic.com/doc/192508/whitehead>.

At the end of his life, Rudolf Steiner often returned to the familiar theme of science, technology, and spirit, as for example, in his lectures of 1920, *The Boundaries of Natural Science*, or his lectures of 1922, *The Origins of Natural Science*, or in his numerous science lectures to the teachers at the Stuttgart Waldorf School. It was fitting that Steiner's last letter to the members of the Anthroposophical Society concerned itself not only with the relationship between humanity and nature, but went further to describe the ways in which recent discoveries had led humanity into a technical civilization that reached below nature to what he termed "sub-nature."³ The call, he wrote in this letter, was and is to rise as high, above into super-nature as we have descended into sub-nature, assuring thereby that humanity does not "go-under." Thus science, technology, and spirituality are a braided set of themes that run through Steiner's life from his childhood to his deathbed, and include every important scientific development of the last quarter of the 19th century and the first quarter of the 20th century. In the same spirit, the articles in this collection span the gamut from the Goethean approach to science pioneered by Steiner and the development of image-methods of quality research according to his suggestions to the spiritual understanding of contemporary scientific and technological developments.

Goethe's Contribution to the Science of Spirit

The young Rudolf Steiner grew up in two worlds, the rural countryside of Austria/Hungary and the "high-tech" environment of the railroad. As his father was a railway stationmaster in various small towns, Steiner's childhood was simultaneously shaped by idyllic rolling hills and the clamor of the cutting edge technology of his own age: the steam locomotive.

³ Rudolf Steiner, *The Michael Mystery*, transl. E. Bowen-Wedgwood (London: Anthroposophical Publishing Co., 1956) revised ed. p. 183.

The contrasting images seem to represent the twin forces that beckoned Steiner, calling him to the newest developments in science, technology, and philosophy while simultaneously surrounding him with the beauties and powers of nature. He would weave both into his life with insight, originality, and continuing significance.

When setting off for his university studies in 1879, Rudolf Steiner did not enroll in the humanistic University of Vienna, but instead matriculated at the new Technical University of Vienna. Given the dominance of the Austro-Hungarian Empire at the time, the Technical University was one of the premier institutions in scientific and technical education: the MIT of the 19th century. While studying the normal range of mathematical, scientific and technical subjects as a first-year student, Steiner met a man who would become his mentor, Karl Julius Schröer, professor of German literature at the Technical University and a renowned scholar of Johann Wolfgang von Goethe. Their relationship led to Steiner's immersion in the writings of Goethe, and especially in Goethe's misunderstood and neglected scientific writings. In Goethe the scientist, Rudolf Steiner met a thinker who sought a development of science towards a holistic and experiential orientation. Here was a metamorphosis of the methodology of scientific research that, if suitably developed, could become the foundation for a science of the spirit—anthroposophy.

Seeing Steiner's deep interest in Goethe's scientific writings, and his parallel mastery of conventional science and philosophy, Schröer recommended that Steiner—then only twenty-two—should be entrusted with the editing of Goethe's scientific writings for the German National Literature, or Kürschner, edition. The young scholar was hired and performed admirably. Rudolf Steiner's introductions and commentaries to this edition were later gathered

and published as *Goethe the Scientist*.⁴ His study of Goethe's science was enormously significant for the formation of his own philosophy. In the years after his graduation from the Technical University, and during his six years as a scholar at the Goethe-Schiller Archive in Weimar (1890-96), Steiner continued his study of Goethe, edited many of Goethe's scientific writings, and also continued to elaborate his own personal philosophy as a furtherance of Goethe's approach. The publication of Steiner's *The Theory of Knowledge Implicit in Goethe's World Conception* (1886) and *Goethe's World Conception* (1897) bracket in time the publication of his own doctoral thesis *Truth and Science* (1892) and his *Philosophy of Freedom* (1894).

I emphasize Rudolf Steiner's profound and enduring relationship to Goethe and especially to Goethe's science because it later becomes an essential component in Steiner's creative response to the presumed conflict of science and religion. As a result of this critical component, many recent scholars have been able to advance the combined work of Goethe and Steiner. A collection of articles on this subject is available in *Goethe's Way of Science* edited by David Seamon and Arthur Zajonc, and many of the authors in this volume of the *Journal for Anthroposophy* are working out of the approach to Goethe that Steiner initiated.⁵

What did Steiner find in Goethe? In an age when scientific culture was entirely under the sway of a Newtonian mechanical science and philosophy, Goethe advocated not merely a criticism of Newtonian philosophy of science, or a Romantic rejection, but instead sought over decades to advance his own method of scientific inquiry in the study of color, plants, animal, weather and minerals. Goethe rejected the replacement of experience in favor of mechanistic models. As Goethe explained in a letter to his friend Schiller, he sought the enhancement of

⁴ Rudolf Steiner, *Goethe the Scientist*, transl. Olin D. Wannamaker, (New York: Anthroposophic Press, 1950)

⁵ See also the fine volume by Henry Bortoft, *Wholeness of Nature* (Great Barrington, MA: Lindisfarne Press, 1996). Also see the Nature Institute (www.natureinstitute.org) for the work of Craig Holdrege.

experience whereby the phenomena themselves could be elevated from simple “empirical phenomena” through “scientific phenomena” to “archetypal phenomena.” In a statement that is often quoted, he insisted that “phenomena themselves are the theory.” In other words, rightly seen, the sunset and blue sky contain within them the self-evident laws of chromatics.

Goethe’s faithfulness to phenomena was the pivot point for Steiner’s own spiritual philosophy of nature. If, as conventional science demanded, every experience needed to be reduced to mechanism, then spiritual experience itself would be excluded from the outset, reduced to neurological events and classified as psychological delusion. Once experience itself could be taken seriously, and “theory” understood as a form of perceptual knowing (*anschauende Urteilskraft*), Steiner had the key to a new epistemology or understanding of knowing. Spiritual experiences could be taken seriously in their own right, and investigated using a modified version of Goethean phenomenology suited to spiritual phenomena. Insight and error could be distinguished without resort to mechanistic reductive models.

This was precisely why Goethe was such an essential component of Rudolf Steiner’s biography. During his long study of Goethe, from his 1880 meeting with Schröder to 1896 when he left the Goethe-Schiller Archives, Steiner laid the firm philosophical foundations for his later spiritual science. Even if others would doubt him, personally he had found the inner security he was missing as a youth. In order to speak with assurance about spiritual realities, Steiner needed to create the sure basis for his mature and daring work of 1900-1925.

The Hidden Stream

While at the Technical University in Vienna, in November of 1879, at the dawn of the Michaelic age, Rudolf Steiner met a second individual who was extremely important to his

spiritual biography. Steiner was introduced to him through an intermediary, Felix Koguzky, an herb gatherer and nature mystic. We only know this second individual as the Master. Rudolf Steiner says little about him except that he instructed Steiner in this manner:

*If you would fight the enemy, begin by understanding him. You will conquer the dragon only by penetrating his skin. As to the bull, you must seize him by the horns. It is in the extremity of distress that you will find your weapons and your brothers in the fight. I have shown you who you are, now go—and be yourself!*⁶

With this meeting, Steiner was connected to a second and more hidden stream of spiritual endeavor, the one associated with the obscure but clearly very advanced 14th century esoteric figure, Christian Rosenkretz. Steiner describes the mission of Rosenkretz and the spiritual stream that emanated from him as one that would meet a set of challenges arising for modern human beings. In modern Western spiritual and religious traditions, particularly European Christianity, the inner life of contemplation (*vita contemplativa*) and the outer life (*vita activa*) were diverging from one another in a dangerous way. The spiritual and material life of humanity were becoming estranged from one another and a mighty intervention was needed that would knit the redeeming stream of Christ's sacrifice into the emerging scientific culture of the 15th century and beyond.

According to Steiner, Christian Rosenkretz reincarnates every century but does not reveal himself publicly, choosing to work quietly, unknown to the world. Rudolf Steiner was the visible partner of Christian Rosenkretz. It was his task to bring this hidden stream into public view in a manner that would lead to the union of the active life with the insights derived from the

⁶ Edouard Schuré, "Personality of the Author," Introduction to *The Way of Initiation*, Rudolf Steiner, Translated by Max Gysi (New York: Macoy Publishing and Masonic Supply Co., 1928) p. 21. See http://www.defendingsteiner.com/bio/rudolf_steiner_schure.php.

meditative life. We can understand Waldorf schools, biodynamic farms, anthroposophical medicine and the arts, as the fruits of that interpenetration.

In order to reunite the Pythagorean triad of science, art, and religion, Rudolf Steiner needed to unite them in himself. As the Master had instructed him to do, he set out to slip into the dragon's skin of modern scientific and technical life of sub-nature, and also rise as high above as he descended below. Only by holding the impossible tension of these extremes could Steiner bring to the world the Rosicrucian synthesis.

The Path of Science

In his many books and thousands of lectures, Rudolf Steiner not only related the results of his spiritual scientific research, but like a golden thread throughout his teaching he described a path of self-development. Steiner offered not only one path, but several, each suited to the community he was addressing, whether it be a general audience, a group of doctors, educators, or artists. In his *Boundaries of Natural Science (1920)*, Rudolf Steiner gives “a path into the supersensible that is much more for the scientist.”⁷ As a precondition, the spiritual student is to study his book *The Philosophy of Freedom* as a means of liberating thinking from the fetters that tie it to material and sense experience, allowing for a “thinking independent of the senses.”

On this foundation one is ready for exercises that will develop the spiritual capacity of Imagination, the first stage of spiritual experience. We can pursue Imagination in a way suited to modern life by “surrendering ourselves completely to the world of outer phenomena.” We leave our conceptual framework behind, silencing thought and practicing a pure Goethean

⁷ Rudolf Steiner, *The Boundaries of Natural Science*, transl. Frederick Amrine and Konrad Oberhuber (Spring Valley, NY: Anthroposophic Press, 1983) p. 106.

phenomenology. Instead of formulating concepts, one “elaborates perception symbolically or artistically.” One learns to dwell for longer and longer periods of time on an image that is completely known to us. Steiner says, “It is through phenomenology, and not abstract metaphysics, that we attain knowledge of the spirit by conscious observing.” In this way we come to notice that parallel with the practices suited to Imagination, “our thinking regarding *The Philosophy of Freedom* has undergone a transformation.” Pure thinking of the kind cultivated by this book has been transformed into Inspiration: “pure thinking has become Inspiration.”

Whereas in the Asian spiritual traditions the physical breath is used as the focus for meditative practice, Steiner offers to us in the West a “breathing of the soul-spirit in place of the physical breathing of the yogi.” When we perceive, we inhale; when we conceive, we exhale. The process of cognition is a spiritualized form of breathing that is no longer breathing in air, but breathing in light, the light of perceptive judgment.

Rosicrucian Science

Shortly after he refounded the Anthroposophical Society, in lectures of January 1924 Rudolf Steiner spoke of the ways in which the older Rosicrucian spiritual practices were linked to the methods of his own spiritual science.⁸ Through their particular spiritual practices, the old Rosicrucians studied and mastered the science of their day—Copernicus, Kepler and others—and “enhanced it into true wisdom.” They offered the modern knowledge of their day to the Gods and the Gods gave back wisdom. “This possibility has remained up to the present time,” said Steiner. He then described how in his own life he studied the materialistic Darwinian theory of

⁸ Rudolf Steiner, *Rosicrucian and Modern Initiation*, (London: Rudolf Steiner Press, 1965), 13 January 1924.

evolution as taught by the German biologist Ernst Haeckel. At the same time developed and perfected the practices he recommended in his *How to Know Higher Worlds*. If one does both, then material evolution becomes the description of spiritual evolution as found in his *Outline of Esoteric Science*. “Human beings must first bring to the Gods what they can learn here on Earth. ... Thus is natural science of today the true basis for spiritual seership.”

In these ways we can appreciate that both Goethean phenomenology and the study of conventional natural science have an important place in the spiritual development of the scientist. Goethean science offers us a method for the cultivation of Imagination, and a right orientation towards the first dawning of spiritual experience. We learn not to apply the concepts that are ready-to-hand, but to withhold them, striving instead for those sense-free ways of thinking suited to the new experiences of spirit. Our work with the *Philosophy of Freedom* is transformed into Inspirative understanding, a living thinking that is able to move with the living world of spirit realities. The discoveries of science from quantum physics and relativity theory to neuroscience and biotechnology all beckon. They wait for those who will master these disciplines, internalizing the discoveries of each field, and simultaneously steep themselves in the meditative practices of anthroposophy. Then can the Gods change stones into bread, dead knowledge into healing spiritual wisdom.

This Volume

1. Ehrenfried Pfeiffer (1899-1961) was one of Rudolf Steiner’s youngest and closest pupils, often traveling with him as he lectured in various cities. Pfeiffer worked in the scientific laboratory at the Goetheanum and later directed a biodynamic farm in Holland before moving to Spring Valley, New York. He is probably best known for developing copper chloride

crystallization and other image methods for analyzing the quality of soil, plant materials, and blood. These methods were created following personal indications given by Rudolf Steiner and continue to be used to this day. In his article “A New Concept of Life,” Pfeiffer contrasts the mentality of conventional science with the Goethe-Steiner approach, especially as it plays out in the domain of life which resists reduction to matter and forces alone.

2. Wilhelm Pelikan (1893-1981) was a pioneer in anthroposophical pharmaceuticals and in the Goethean study of metals and plants. He became a student of Rudolf Steiner in 1918 after reading Steiner’s book on meditation and attending his lectures. He immediately joined in scientific studies and in 1924 became head of the pharmaceutical and cosmetic firm Weleda, a position he held for forty years. In his article “Archetypal Relations between Plant and Man,” which is taken from his book on medicinal botany, Pelikan turns our attention from the world of fixed form to that of metamorphosis so important to Goethe’s view of the plant. In order to uncover the medicinal properties of plants we need go further and bring the plant into relationship with the human being. Pelikan leads us into the threefold relationship between plant and the human, as presented by Rudolf Steiner: leaf and the rhythmic system, root and the nervous system, flower and the metabolic system. These principles are the basis for numerous plant remedies developed by Pelikan and his colleagues at Weleda.

3. In his article, “Spirit in Matter: The Research Work of L. Kolisko,” G. A. M. Knapp describes the research work of Lily Kolisko (1889-1978). Working from an indication of Steiner’s on the cosmic influences on metals in liquid, Lily Kolisko made a thorough study of metal salts using a method known as capillary dynamolysis in which the edge of filter paper is placed in the liquid, which then rises by capillary action creating a set of patterns as it rises. After

Steiner gave his lectures on biodynamic agriculture, she shifted her work to the study of compost, agricultural sprays and other processes relevant for a biodynamic farm. In 1936 she moved to England where she faithfully continued her research on plants using her method of capillary dynamolysis. In her book *Spirit in Matter*, Lily Kolisko envisioned science as “a holy art,” one that required scientists to become “endowed with the qualities of an artist and a priest.” She was one of the pioneers in accomplishing this vision, one whose deep meditative practice aided her equally profound study of nature.

4. and 5. Theodor Schwenk (1910-1986) was a dedicated student of water and its movements. His widely-appreciated book *Sensitive Chaos* is a comprehensive treatment of the science, beauty, and mystery of water. For twenty-seven years he worked as a research assistant to one of Germany’s most distinguished scientists in the area of fluids and aerodynamics. Through his contact with Pelikan and Kolisko, Schwenk applied his knowledge and experience with water to create an entirely new image method for the analysis of water quality. Schwenk’s son and other colleagues continue to develop this method at Schwenk’s Black Forest laboratory. In the two pieces reprinted here, Theodor Schwenk discusses the large philosophical issues surrounding water, but he is also deeply concerned with the analysis and re-enlivening of water, spiritually as well as physically.

6. Michael Wilson (1901-1985) worked with George Adams and Olive Whicher as part of the Goethean Science Foundation in Clent, near Stourbridge, England. Wilson became widely appreciated for his careful experimental studies of color, and especially for his penetrating insights concerning Edwin Land’s so-called Retinex Theory of Color. He applied his deep understanding of color as a therapy for mentally handicapped children at Sunfield Children’s

Home, which he co-founded. In his article “Goethe’s Concept of Darkness” we are led through a wide-ranging series of experiences with light and color in order to discover in the phenomena themselves the patterns and laws of this realm.

7. On occasion Rudolf Steiner would give indications for particular scientific experiments to his colleagues and students. This led to the establishment of laboratories in Stuttgart and Dornach which Steiner would visit and whose co-workers he would advise. One particular series of experiments that have been pursued with mixed results concerned the “bending” of the color spectrum by a strong magnetic field. Howard Pautz skillfully leads us through the ideas and efforts made by various researchers devoted to understanding this phenomenon.

8. In his article on “Biotechnology and Anthroposophy” Nicanor Perlas thoroughly addresses the prominent role played by technology in contemporary society. He suggests that Steiner’s epistemology and ethics will “heal the wound” between knowledge and action so prevalent today. Perlas especially probes the emerging area of biotechnology and its moral and spiritual consequences. These problems are as much with us today as in 1986 when Perlas wrote his article.

9. In one of the earliest numbers of the *Journal for Anthroposophy* (1966), the theme of environmental disaster and the ethical responsibility of humanity for the Earth is beautifully voiced by Marjorie Spock and Mary Richards in their account of Rachel Carson. The environmental movement is often dated to the appearance of Rachel Carson’s *Silent Spring* (1962). What is less well-known is the significant part played by Spock and Richards in the research and development of Carson’s landmark book. Spock and Richards offer a sensitive yet

invigorating account of the life and struggle of Carson, and of their own role in helping her make her case before the world.

10. I close this volume with an article from the second number of the *Journal* (1965) by the biologist Hermann Popplebaum (1891-1979) on “The Dignity of the Earth.” Carson’s heartfelt plea finds an echo in Popplebaum’s description of the Earth as the place that provides us the field for spiritual development and the achievement of our true humanity. The dignity and significance of the Earth remains, regardless of the changes in cosmological theories.

The sweep of Rudolf Steiner’s accomplishments is breathtaking; he confronted many profound challenges. One of the most significant was bridging the abyss between science and spirituality in the Christian West. We have seen how his life exemplified these challenges in a modern soul. His simultaneous study of science, philosophy, Goethe, and the practice of a contemplative spirituality gave him the resources he required to address this perennial theme, surely more urgent today than a century ago.