Nature's Open Secret

Introductions To Goethe's Scientific Writings

By Rudolf Steiner

With an Essay

"Participatory Science as the Basis for a Healing Culture"

by John Barnes

Editor’s Introduction

One thing that distinguishes Rudolf Steiner from other explorers of the human psyche is the success of his pioneering work in practical fields such as education, medicine, and agriculture. Steiner was at home in the realm of science and practical life as well as in the world of the human spirit. For him, spiritual experience had become concrete and practical; practical, physical experience had revealed its spiritual dimension.

The unity of these realms was not initially given to Steiner, however. It was, rather, the result of an arduous search involving rigorous self-development. Steiner's penetrating study of Goethe's science played a pivotal role in this process. His introductions to Goethe's scientific works, which comprise the main content of this volume, can be seen as the foundation of his later work: They establish the epistemological basis for a science that reveals the essential, spiritual nature of the sense-perceptible world.

In his autobiography, Steiner describes his own development and the path that led him to his crucial encounter with Goethe's science. He describes how, as a child, he distinguished between things and beings that are "seen" and those that are "not seen," the latter category comprising his rich inner experience of spiritual realities. Even later, when he entered the Technical University in Vienna,

> Spirit and nature were ... present before my mind in their absolute contrast. There was for me a world of spiritual beings. That the I, which itself is spirit, lives in a world of spiritual beings was for me a matter of direct perception. But nature refused to enter into this spiritual world of my experience. (p. 36)1

His study of the idealist philosopher Fichte confirmed his conviction that thinking, the spiritual activity of the I, is the starting point of all knowledge.

> Thought-experience was for me existence in a reality that--as something actually experienced through and through--doubt dared not approach. The world of the senses did not seem to me so completely a matter of experience. It is present; but one does not grasp it as one grasps a thought. In it or behind it an unknown reality may be concealed. (p. 43)

However, the young Rudolf Steiner was determined to develop his cognitive powers to the point where they could penetrate to the hidden reality concealed within nature. Overcoming the dualism of his experience appeared to him to be a precondition for establishing a meaningful worldview. Already in high school he had come to the conviction that "one will only be able to cope with the soul experiences of the spiritual world when one's thinking itself has

achieved a form in which it can reach the reality of being that lies hidden in natural phenomena" (p. 24).

As Steiner immersed himself in the study of physics and physiology, he was met everywhere by the assumption that the qualities perceived by the senses are only subjective sensations triggered by objective material processes: "This caused me unspeakable difficulties in my thinking. It drove all spirit from the objective external world" (p. 48).

A breakthrough came when he had sufficiently penetrated the field of optics: "The views to which I had come in physical optics seemed to me to form a bridge between insights into the spiritual world and what is derived from natural-scientific research" (p. 70).

Steiner's experiments led him to the conclusion that light itself belongs to the realities that are "not seen." The emptiness of outer space, for example, though flooded with sunlight, appears to us as utter darkness. Light, however, is a powerful reality that illuminates the physical world and brings warmth, life, joy, and color to our Earth. Yet, like the power of human love or human thinking, it remains beyond the realm of the sense perceptible. It is an invisible reality manifesting in the visible world.

Light is, of course, accompanied by electromagnetic phenomena just as our thinking is accompanied by electrical impulses in the brain, or as any organic growth is accompanied by subtle electromagnetic forces. Declaring that light, life, or thought are nothing but electromagnetic activity, however, would be equivalent to arguing that happiness itself does not exist and that a joyous smile is

1 Unless otherwise noted, page numbers refer to The Course of My Life.

nothing but a contraction of certain facial muscles. It would be a rejection of the most self-evident realities, a denial of the very heart of our experience.

At this time, Steiner encountered in Goethe's color theory a view akin to his own, one that did not simply explain colors in terms of an angle of refraction or a particular wavelength but, by immersing itself in the world of the colors themselves, uncovered their own lawful interrelationships.

Having come to a certain clarity regarding the nature of light, Steiner now turned to the study of anatomy and physiology. Here, he writes, "I came in my own way upon Goethe's view of metamorphosis. I became increasingly aware of how the picture of nature available through the senses called on what was spiritually visible to me" (p. 71).

At the age of twenty-one, Steiner was asked to edit and introduce Goethe's scientific works for Kürschner's edition of German National Literature.

> For me, this task included coming to grips with natural science on the one hand and with Goethe's entire worldview on the other. Now that I had to present to the public such an exposition, it was necessary for me to bring to a certain conclusion all that I had thus far acquired in the form of a worldview. (p. 80)

Throughout the next fourteen years of his life, Steiner engaged in this work—at first intensively as editor, then more intermittently as a researcher at the Goethe and Schiller archives in Weimar.

It was at this time that Steiner gained his first insights into what he was later to develop in detail as his view of the threefold nature of the human being. Over the next thirty years he pursued this research into the complex interrelationships of the human body, soul, and spirit, research that provided the basis for the practical renewal of education and medicine that Steiner initiated during the last phase of his life.

Both Steiner and Goethe are often mistakenly referred to today as proponents of German idealist philosophy. In a lecture on April 22, 1915,2 Steiner characterized German idealist philosophy through an analogy, setting it off from contemporary empirical science on the one hand and Goethe's scientific approach (which was also his own) on the other. He described the German idealists as forming their ideal philosophical view of the world *within* a house, i.e., in pure thought—without going outside to actually observe the world they are exploring. The English empiricists, on the other hand, look out of the window as it were, but do not enter the outer world with their inner experience. They form a detached view of the outer world at the same time that they remain within their experience of the inner, moral, or divine world. Isaac Newton, for example, known for his mathematical optics and his discovery of the universal law of gravitation, was in many ways typical of contemporary scientists. "But throughout his life he saw the limits of the capacity of human reason to encompass experience, which explained, too, his unflagging interest in the Bible and in Prophecy."3 Goethe, however, goes further. He opens the door and carries his inner experience out into the world. He participates in nature with his full being, enters into it, and becomes one with it.

2 "The World View of German Idealism," not translated.

Goethe's worldview is not thought out as was the philosophical worldview of the idealists. It is experienced directly. Nor is there a dichotomy of inner "subjective" and outer "objective" experience as there is with Newton and with most contemporary scientists.

Whereas the detachment of the empiricists lends itself to the analysis and technical manipulation of inorganic nature, Goethe's participatory approach is particularly suited to research in the organic realm. Steiner saw Goethe's dynamic idea of metamorphosis as a decisive breakthrough to a deeper understanding of living nature. He saw Goethe's central achievement in the fact that he "discovered how one must think about the organic in order to grasp it in knowledge" (p. 81).

Steiner described how this transformed cognitive capacity leads to a comprehensive worldview rising from organic life to ever more immediate manifestations of spiritual reality:

> Step by step one sees the organic creative forces become more spirit-like as one rises from consideration of the plant entity to the various forms of the animal shape. In the organic form of the human being, creative spiritual forces are active that bring about the highest metamorphosis of the animal shape. These forces are present in the formation of the human organism; and they finally manifest as the human spirit, after having created in their bodily nature a vessel fit to receive them in a form of existence in which they are free from nature.... Seen in this way, Goethe's view of nature becomes one that, by tracing natural development from

3 D. Boorstin, *The Discoverers*, p. 407.

the inorganic to the organic, gradually leads natural science over into spiritual science. (pp. 83–84; my translation)

Through his study of Goethe's science, Steiner laid the foundations for a scientific worldview that opens itself to the qualitative richness of the sense-perceptible world as well as to the richness and depth of creative spiritual principles. Though this study certainly benefitted from the inner clarity of the German idealist philosophers, the enduring success of the practical applications of Steiner's participatory science in education, medicine, and agriculture demonstrates its capacity for profound and very concrete insight into organic and human nature.

Steiner wrote his introductions to Goethe's scientific works with the immediacy of youthful enthusiasm. Reading them, we can almost witness the birth of the seminal ideas that led to his more elaborated philosophical works, and ultimately to his later lectures on the practical renewal of culture.

These introductions follow in a new translation that attempts, once again, to capture the meaning of the original in good, readable English.

An essay exploring the profound implications of participatory science for our time comprises the last section of this volume.

JOHN BARNES

Chapter One

Introduction

Rudolf Steiner

On August 18, 1787, Goethe wrote to Knebel from Italy:4

> After what I have seen of plants and fishes around Naples and in Sicily, I would be greatly tempted, if I were ten years younger, to make a journey to India—*not for the purpose of discovering anything new, but to observe in my own way what has already been discovered*.

These words provide the viewpoint from which to consider Goethe's scientific works. For him it was never a question of discovering new facts but one of opening up *a new perspective* and viewing nature in a particular way. It is true that Goethe made a number of great discoveries, such as the intermaxillary bone and the vertebral theory of the skull in osteology, the inner identity of plant organs with the leaf in botany, and so on. But the animating soul that imbued all these particular achievements was the magnificent view of nature upon which they are based. In Goethe's study of organisms one great discovery overshadows all else—*the discovery of the nature of the organism itself*. Goethe presented the principle of how an organism manifests as it does, the causes leading to the outer expressions of life. Indeed, he illuminated everything related to the principles involved in such matters.5

4 Karl Ludwig von Knebel (1744–1834), German poet and translator, was associated with Goethe and Schiller in their literary circle in Weimar. —ED.

5 Those who from the outset declare such a goal to be unattainable will never understand Goethe's views of nature. But those who study his views

From the very beginning, this was the goal of Goethe's efforts in the organic sciences. As he pursued this goal, his discoveries occurred as of themselves; he had to make them in order not to be hindered in his further striving. Natural science before Goethe was unaware of the essential nature of living phenomena. It simply investigated organisms with regard to the composition of their parts and external characteristics, just as one investigates inorganic phenomena. Consequently, that older science often interpreted details incorrectly and presented them in a false light. Investigation of the particulars themselves cannot, of course, reveal any such error. Interpretive judgments can only be made after we have first understood the organism, because the particulars, considered separately, do not contain the principle that explains them. They can be explained only through the nature of the whole, because it is the *whole* that gives them being and significance.6

It was not until after Goethe had discovered the nature of the whole that he realized those interpretations were erroneous. They could not be reconciled with his theory of living beings; they contradicted it. Before he could go any further he had to eliminate

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in an unbiased way and leave this question open will certainly reach an affirmative answer. Some may well be led to doubt this assertion by certain remarkss of Goethe himself, such as, "*Without presumptuously wishing to discover the primal driving forces of nature*, we have focused on the manifestation of those forces through which the plant gradually transforms one and the same organ." Such statements by Goethe, however, are never intended to deny the possibility in principle of coming to know the essential nature of things. He was simply being careful not to make premature judgments about the physical-mechanical conditions upon which the organism depends, for he knew very well that it takes time to resolve such questions. —R. STEINER.

such preconceptions. This was the case with the intermaxillary bone.[7] Facts that are valuable and interesting only if one has a theory like the vertebral nature of the skull were unknown to previous natural science. All these hindrances had to be cleared away through individual discoveries. In Goethe's case, therefore, these discoveries were never ends in themselves, but were always necessary to corroborate a great thought—to confirm his *central* discovery.

We cannot deny that Goethe's contemporaries eventually made the same observations and that perhaps all of them would be known today even without Goethe's endeavors. But it would be even more difficult to deny that, until today, no one else has independently formulated in such an outstanding way his great discovery embracing all of organic nature; indeed, even a somewhat satisfactory assessment of his discovery is still lacking.[8]

Whether Goethe was the first to discover a fact or only rediscovered it seems irrelevant when viewed in this fundamental

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6 Intrinsic in Goethe's scientific method is that its explanations move from the whole to the parts, from the central principle to the outer particulars. —ED.

7 Goethe knew that the intermaxillary bone must also be present in the human being only because he had recognized the fundamental formative principle, the "type," that gives rise to the human form and the forms of the higher animals. —ED.

8 We do not mean to say that Goethe has never been understood at all in this regard. On the contrary, we refer repeatedly in this text to people who seem to us to carry further and elaborate Goethean ideas. Among these are names such as Voigt, Nees von Esenbeck, d'Alton (senior and junior), Schelver, C. G. Carus, Martius, and others. But these people based their systems on the views laid down in Goethe's writings, and one cannot say of them that they would have arrived at their concepts *without* Goethe. Contemporaries of Goethe—for example, Joseph of Göttingen in the case of the intermaxillary bone, and Oken in the case of the vertebral theory—arrived at their discoveries independently. —R. STEINER.

way; for the fact only gains real significance because of the way he fits it into his view of nature. Thus far, this has been overlooked. The particulars have been overemphasized, and this has caused undue provocation and polemics. Goethe's conviction of nature's consistency has in fact often been pointed out, but without realizing that this is only a very insignificant characteristic of his views. In organic science, for example, the primary goal is to reveal the basis of this consistency. If we call it the *type*, then we must identify what the essential nature of the type is according to Goethe.

What is significant in the metamorphosis of plants, for example, is not the discovery of the single fact that leaf, calyx, corolla, and so on, are identical organs; rather, it is the magnificent thought structure of a living whole consisting of mutually interpenetrating, formative principles. This dynamic thought structure, which arises from that discovery, determines out of itself the details and individual stages of plant development. The greatness of this idea—which Goethe then sought to extend to the animal world as well—dawns on us only when we try to bring it to life in our own mind and attempt to rethink it. That is when we become aware of how this thought is the very nature of the plant itself, translated into the *idea,* and living in our mind just as it lives in the object. We observe also that we bring an organism to life for ourselves—right down into its smallest parts—when we picture it not as a dead, finished object, but as evolving and becoming and never at rest within itself.

As we endeavor in what follows to present in detail all that has been indicated here, we will also come to see the true relationship between the Goethean view of nature and that of our own time, especially modern evolutionary theory.