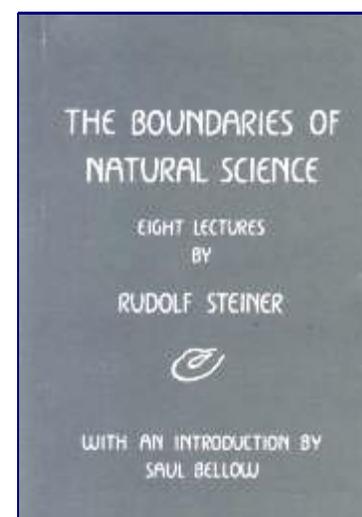


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*A READER'S JOURNAL*  
**The Boundaries of Natural Science, GA# 322**  
by  
**Rudolf Steiner**  
**Eight Lectures, Dornach, Sep-Oct, 1920**  
**Introduction by Owen Barfield**  
Published by The Rudolf Steiner Press/UK in 1983  
A Book Review by Bobby Matherne ©2003



To the pertinent question, "How does consciousness arise out of material processes?" Du Bois Reymond at the end of the 19<sup>th</sup> Century gave this answer, *Ignorabimus - we shall never know*. Bellow reminds us of this in his Foreword and explains that, in spite of all the wonders of modern science, when it tries to come up with an answer to this question, science still doesn't know. One hundred years after Reymond made his statement of ignorance, modern science thinks it is poised on the verge of discovering how consciousness arises out of material processes. [Gerald Edelman](#) provides us with a grand masterpiece of how the matter of the brain is organized and assembles itself into recursive, intertwining loops of systems of neuronal groups as it bootstraps itself into perception, primary consciousness, and higher consciousness. Edelman considers that the wetware of the human body, nervous system, and brain is enough to explain how consciousness arises. Other intrepid prognosticators predict that consciousness will arise from cybernetic roots in thinking machines, what's called AI, or Artificial Intelligence.

Bellow notes on page x that the poet Paul Valéry, in his *Address in Honor of Goethe*, says that Goethe brought to life "the rather seductive if extremely imprecise idea of Orphism, the magical idea of assuming existence of some unknown principle of life, some tendency towards a higher form of life in every animate and inanimate thing; the idea that a spirit was fermenting in every particle of reality." It is not surprising that modern science, with its myopic view that harvests the surface of reality, is moving in the other direction, away from higher forms of life to lower and lower forms of life, to explain the arising of consciousness from such things as neuronal groups and cybernetic software systems. Scientists who claim such things are abstracting from the whole human, identifying building blocks, and claiming that their building blocks can generate the whole human given enough time, neurons, computing capacity, etc.

Saul Bellow closes out his Foreword to this book by summing it up:

**[page xiii] What is reality in the civilized West? "A world of outsides without insides," says Owen Barfield, one of the best interpreters of Steiner. A world of quantities without qualities, of souls devoid of mobility and of communities which are more dead than alive.**

In the next quote, Steiner points to the constancy of modern science, its claim to capture the essence of things in its web of abstract thought, a web that it knits by day, but at night, like Penelope's never finished shroud for Laertes(1), a web that is taken apart by the reality that informs the essence of things.

**[page 9] We want . . . to consider the question: is there not perhaps something more intelligent that we as human beings could do than what we have done for the last fifty**

**years, namely tried to explain nature after the fashion of ancient Penelope, by weaving theories with one hand and unraveling them with the other? Ah yes, if only we could, if only we could stand before nature entirely without thoughts! But we cannot: to the extent that we are human beings and wish to remain human beings we cannot. If we wish to comprehend nature, we must permeate it with concept and ideas. Why must we do that? We must do that, ladies and gentlemen, because only thereby does consciousness awake, because only thereby do we become conscious human beings. Just as each morning upon opening our eyes we achieve consciousness in our interaction with the external world, so essentially did consciousness awake within the evolution of humanity.**

Here Steiner introduces us to what may be called the parallel arc of the microcosmic and the macrocosmic time scales of humanity. Our gentle awakening to clear consciousness each morning parallels the gradual awakening (evolution) over aeons of human beings into clear consciousness. And it is that gradual macrocosmic emergence of clear consciousness that comprises the *essence* of what it is to be human: it is not in the realm of something that we will ever outgrow. We are like Penelope weaving Laertes's shroud: we weave with one hand and unravel with the other when we form our concepts of nature.

**[page 11] In coming to such concepts as we achieve in contemplating nature, we at the same time impoverish our inner conceptual life. Our concepts become clear, but their compass (capacity) becomes diminished, and if we consider exactly what it is we have achieved by means of these concepts, we see that it is an external, mathematical-mechanical lucidity. Within that lucidity, however, we find nothing that allows us to comprehend life. We have, as it were, stepped out into the light but lost the very ground beneath our feet.**

Like in the story of Nasruddin and the lost key, we lost the key inside, but we are searching for it outside where there is more light. We have achieved clarity and lost our essence of humanity in the process, up until now. The question, "How does consciousness arise out of material processes?" must be answered, not to fulfill some abstract "need to know," but to "meet man's need to become fully human." (page 14) Steiner's theme for these lectures is how we may strive to answer this question in our present stage of human evolution.

The next concept of Steiner's takes a little explaining and getting used to, so contrary is it to what one might expect from a spiritual scientist. This paradoxical situation helps explain why Steiner is so little read and even less understood by modern materialistic scientists. Steiner accuses them of going beyond their senses, that is, of creating a conceptual world of the sensory data they receive, but going *beyond the realm of the senses*, breaking through the boundary of the senses to construct concepts that lie beyond the senses. The concept of atoms were such a construct in Steiner's day, and the concept of quarks is such a construct today, one that lies clearly beyond our senses.

**[page 23] One wants to think ever farther and farther beyond and construct atoms and molecules - under certain circumstances other things as well that philosophers have assembled there. No wonder, then, that this web one has woven in a world created by the inertia of thinking must eventually unravel itself again.**

Was there a scientist who refused to move with the inertia of thinking, who stopped before moving past the barrier of the senses? Yes, Goethe, the famous German poet, scientist, and phenomenalist. Simply put, Goethe knew when to stop: at the brink of the observable world. Steiner says that "it is the tragedy of the materialistic world view that, while on the one hand it presses for sensory experience, on the other hand it is driven unawares into an abstract intellectualism, into a realm of abstraction where one is isolated from any true comprehension of the phenomena of the material world." (page 32)

In the next quotation Steiner outlines my life's study, beginning with my period as a physicist from 1958

through 1975, and then my foray into acquiring knowledge of the spirit thereafter.

**[page 32] We must begin by acquiring the discipline that modern science can teach us. We must school ourselves in this way and then, taking the strict methodology, the scientific discipline we have learned from modern natural science, transcend it, so that we use the same exacting approach to rise into higher regions, thereby extending this methodology to the investigation of entirely different realms as well.**

Rather than downplaying the importance of materialistic science at the expense of his spiritual science, Steiner exhorts us to become scientists first, so as to better understand the spiritual world. He quotes Novalis, a poet who studied mathematics, as calling mathematics the "grand poem." And where does this poem begin, he asks, it begins in what weaves in our bodies during our first seven years on Earth. No wonder, mathematics with its number systems, addition, subtraction, algebra and geometry are universally taught in grade schools to our youngsters soon after they reach the age of seven. In learning mathematics, they begin to learn about the patterns that had infused their bodies for all of their life, had engaged their entire bodies.

**[page 38] There enters into mathematics, which otherwise remains purely intellectual and, metaphorically speaking, interests only the head, something that engages the entire man. This something manifests itself in such youthful spirits as Novalis in the feeling: that which you behold as mathematical harmony, that which you weave through the phenomena of the universe, is actually the same loom that wove you during the first years of growth as a child on earth.**

Now let's tie this back to Goethe. He was not a great mathematician by his own admission, but in his vision of archetypal phenomena there was a natural mathematical mode of thought that any mathematician will readily recognize.

**[page 41] He (Goethe) demands that we trace external phenomena back to the archetypal phenomenon, in just the same way that the mathematician traces the outward apprehension [äusseres Anschauen] of complex structures back to the axiom. Goethe's archetypal phenomena [Urphänomen] are empirical axioms, axioms that can be experienced. . . . what Goethe seeks is a modified, transformed mathematics, one that suffuses phenomena. He demands this as a scientific activity.**

There are two poles to be approached by humanity in our age: one is the concept of matter and the other is the concept of consciousness. Goethe pointed the way to shed light into the dark emptiness of matter with his Ur-phenomena, and Steiner shed light into the concept of consciousness in his *Philosophy of Freedom*.

A friend of mine recently called me a polymath, which is a wonderful word, meaning a person of great and varied learning. I explained to him that if I were such a person, I'd have already known the definition without having to look it up. This wonderful word is an apt description of anyone who dares to "delve into the depths of consciousness in order to come to grips with its true nature."

**[page 46] One must delve into the depths of consciousness itself, yet at the same time one must not remain a dilettante. One must acquire a professional competence in everything that psychopathology, psychology, and physiology have determined in order to be able to differentiate between that which makes an unjustifiable claim to spiritual scientific recognition and that which has been gained through the same kind of discipline, as, for example, mathematics or analytical mechanics.**

These words should disabuse anyone of the notion that spiritual scientists are airy-fairy mystics who build imaginary castles in the air. They must be scientists first, steeped in the experimental method, able to allow the phenomena themselves to confirm the ideas contained in some formulated natural law or mathematical formula. And yet, that same process will not suffice for social judgments, because we cannot apply

principles to society without causing thousands to suffer before we can confirm the errors of our ways. The entire 20<sup>th</sup> Century has proven that to be the case many times. There are two poles to investigate: matter and consciousness. If we stop at the doorway of the senses in investigating the pole of matter, we develop what Steiner calls the process of Inspiration. If we are to come to understand the other pole, that of consciousness, we need employ the process of Imagination or Imaginative cognition. Both of these processes are described in detail in Steiner's book, *Knowledge of Higher Worlds and its Attainment*.

There should be no doubt in anyone's mind that we live in a skeptical age. There are magazines and organizations devoted to promoting skepticism about everything from religion, extra-terrestrial life, scientific claims, UFO's, the Moon landing in 1969, and even one group that questions whether the Earth is round. This "pathological skepticism" as Steiner calls it creates people who, while remaining fully rational, are overcome with questions about everything.

**[page 63] Where does the human heart come from? Why does it beat? Did I not forget two or three sins at confession? What happened when I took Communion? Did a few crumbs of the Host perhaps fall to the ground? Did I not try to mail a letter somewhere and miss the slot? I could produce a whole litany of such examples for you, and you would see that all this is eminently suited to keeping one uneasy.**

An historical exemplar of pathological skepticism is Nietzsche, who ended his life in a condition that was labeled by his doctor as an "atypical case of paralysis." Steiner had occasion to visit him a few years after the onset of his illness and here's what he saw.

**[page 68] He lay upon the sofa after dinner, staring into space. He recognized nobody around him and stared at one like a complete idiot, but the light of his former genius still gleamed within his eyes.**

Everyone has had the experience of returning home from a movie with all kinds of questions spinning through one's mind, and only sleep seems to bring relief from the onslaught of the questions, because when morning comes the press of questions has abated. But what if one attempts to enter this region consciously and without proper preparation? One risks the fate of Nietzsche in whom the process of Inspiration arose pathologically.

**[page 65] In order to perform valid spiritual research, one must bear into this region unimpaired judgment, complete discretion, and the full force of the human ego. Then we do not live in this region in a kind of super-skepticism but rather with just as much self-possession and confidence as in the physical world. And actually all the meditative exercises that I have given in my book, *Knowledge of Higher Worlds and its Attainment*, are intended in large part to result in a greater ability to enter this region preserving one's ego in full consciousness and in strict inner discipline.**

The pathological skepticism syndrome exists at the pole of matter; at the other pole, the boundary of consciousness, we encounter the various syndromes of claustrophobia, astraphobia, and agoraphobia. The cure for the skepticism syndrome is the cultivation of Inspiration, and the cure for the consciousness syndromes is the cultivation of Imagination or Imaginative cognition. (page 70) Claustrophobia is the well-known syndrome in which one is afraid in enclosed spaces. Agoraphobia is the opposite: a fear of open spaces. Astraphobia is a less known but extant syndrome in our time: a fear of storms, whether thunderstorms, tornados, blizzards, or hurricanes. Steiner describes the process through which these phobias infiltrate human beings in our time. The process has two divergent tendencies, one healthy and the one un-healthy.

**[page 81] Again we have divergent tendencies: the healthy tendency to extend the power of love into Imagination or the pathological tendency to expose ourselves to fear of what is outside. We experience what lies outside with our ego and then, without restraining**

**our ego, bear it down into the body, giving rise to agoraphobia, claustrophobia, and astraphobia. Yet we enjoy the prospect of an extremely high mode of cognition if we can develop in a healthy way what threatens humanity in its pathological form and would lead it into barbarism.**

If we are able to develop in ourselves the healthy processes of Inspiration and Imagination, then we are in a position to join the two and develop a healthy Intuition. And once we have completed that trio, we are in a position to effect social judgments, not before. Considering that we live in a world in which those people implementing social judgments have hardly conquered any one of the three processes, it is not surprising that their judgments, while well-intentioned, have proven to be disastrous in the long run. One can think immediately of the 1960's War on Poverty undertaken in the United States of America as one prominent example: it created more of the very conditions of poverty and dependency that it hoped to eliminate.

**[page 83] Only what is gained by attaining Imagination on the one hand and Inspiration on the other, and then uniting Imagination and Inspiration to Intuition, gives man the inner freedom and strength enabling him to conceive ideas that can be effected in social life.**

One of Steiner's important themes and insights into our modern world has to do with the influence of the East, its spiritual heritage and religions. The 1960s brought a renewal of interest in the cultures of the East to the West and saw many young adults leaving their homes to move to India to study under gurus and masters of various Eastern religions and cults. Here is the clearest statement of Steiner's opposition to such a movement to the East that I have found.

**[page 88] I want to make it clear from the start, however, that this path can no longer be that of our Western civilization, for humanity is in a process of constant evolution, ever moving forward. And whoever desires - as many have - to return to the instructions given in the ancient Eastern wisdom-literature in order to enter upon the paths of higher development actually desires to turn back the tide of human evolution or shows that he has no real understanding of human progress.**

Rightly understood, the wisdom of the East has progressed to the West and has become incorporated in the content of our religious creeds already, in a form that is appropriate for our culture in our time. Curiously this progression culminates in skepticism in the West.

**[page 98, 99] And in the final analysis it is nothing other than the reaction of the Western temperament [Gemüt] to the now decadent Eastern wisdom that gradually produces atheistic skepticism in the West. . . . Skepticism is merely the march of the spiritual life from East to West, and it must be countered with a different spiritual stream blowing henceforth from West to East.**

That different spiritual stream is at the core of Steiner's teachings: how one can attain spiritual cognition in the processes of Inspiration, Imagination, and Intuition. This is "the knowledge of higher worlds and its attainment" described in his book with that title. As Steiner tells us on page 113, "We in the West have as our task more to contemplate man himself in following the path into supersensible worlds." We must work in conjunction with what has already infused us from the East to form a new and living science of the spirit.

**[page 123] We in the West can allow perception and thinking to resound through one another in the soul-spirit, through which we can rise to something more than a merely abstract science. It opens the way to a living science, which is the only kind of science that enables us to dwell within the element of truth. After all the failures of the Kantian, Schellingian, and Hegelian philosophies, we need a philosophy that, by revealing the way of the spirit, can show the real relationship between truth and science, a spiritualized science, in which truth can really live to the great benefit of future human evolution.**

*footnote*

1. Penelope was the wife of Odysseus, and her husband was thought to be dead. For twenty years Penelope waited for her beloved husband and had to fend off suitors. She said that she was working on a shroud for Laertes, Odysseus's father, and would not marry again until she was finished weaving the shroud. She wove the shroud by day and unraveled it by night as she waited for her husband's eventual return.

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