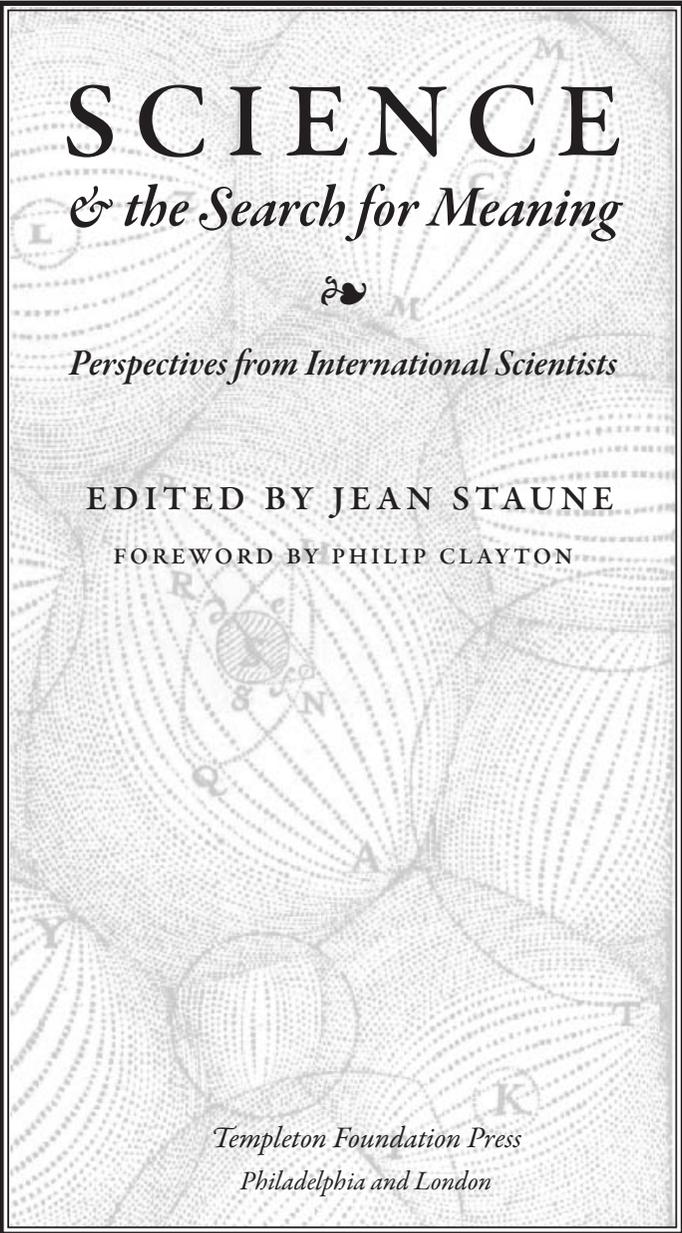


SCIENCE

& the Search for Meaning





SCIENCE
& *the Search for Meaning*



Perspectives from International Scientists

EDITED BY JEAN STAUNE

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Foreword

PHILIP CLAYTON

Even those who most disagree with the tenor of this book will have to acknowledge that it is an exciting time to be reading and reflecting on the implications of the sciences. Only in a few periods of the history of modern science—the Renaissance and the birth of modern science, the early responses to Galileo and Newton, the heated responses evoked by Darwin, and the early reactions to relativity theory and quantum physics—has there been such a clear opening for connecting science and the transcendent. And at *no* other point in the history of modern science have so many distinct debates converged upon a few central questions:

- Is the world studied by science the only reality, or does it point to a deeper reality?
- Is nature a random and chance process, or a project with a purpose?
- Can humanity be fully understood in terms of the natural sciences, or is there a transcendent dimension to human existence?

I

It was certainly unexpected that the period of the greatest breakthroughs in the history of science would also expose the greatest limitations on the scope of scientific knowledge. Is it not ironic that the best verified equation of motion in the history of physics, the Schrödinger

wave equation, would be connected with an inherent limit on knowledge of the quantum world? And was it not surprising to learn, just as we completed mapping the human genome in the Human Genome Project, that the dream of genetic reductionism was impossible, because there are too few genes (only about 30,000) to code for all but a few human behaviors? It is not remarkable that humanity would come to have such good scientific reasons to know that there are things we will never know: the location and momentum of a subatomic particle at some moment of time; the future states of a “chaotic” system, given that its present state can never be measured with sufficient accuracy; or the state of the universe outside our “light cone” or before the big bang.

Yet none of these limitations, and the many others described in this book, show or imply that the project of science is itself bankrupt. The limits are humbling to our desire for complete knowledge, yet they are not mortal wounds to the human quest to know our world by scientific means. Of course, a different result was possible. We might have learned that the scientific project is fundamentally flawed, that the quest for scientific explanations is absurd because nature is not lawlike or because all systems are as unpredictable as chaotic systems. But this has not happened. Indeed, the fact that science is powerful enough to demonstrate its own limitations is a good reminder of what an effective means of knowledge it is. Nonetheless, it has turned out that science, that potent aid to human knowledge, is not all-powerful. Science, we now know, can tell part of the story, but it cannot tell the entire story.

An interesting example of this new “yes and no” to science is the discussion of emergence in the natural world.¹ Scientists have recently begun to understand how, as nature increases in complexity, new levels of organization emerge—the biological out of the chemical, the psychological out of the neurophysiological.² The biophysicist H. Morowitz has even identified twenty-eight distinct levels of emergence in natural history.³ On the one hand, the new phenomena that appear over the course of evolution remain dependent on earlier levels of universal history and thus on the biological, chemical, and physical laws that govern those levels. For example, consciousness cannot be fully understood

without understanding the nature of the human brain and the history of its evolution; and the same is true for all other emergent phenomena in the evolution of the cosmos. On the other hand, the newly emergent phenomena cannot be fully understood in terms of the lower-level laws on which they remain dependent. For the evolutionary process continually produces new sorts of systems, with new types of entities and causal processes. Hence, a full understanding of the new levels requires explanations *given in terms of the emergent phenomena themselves*. The new theory teaches that emergent phenomena are irreducible with regard to their causes, their explanations, and hence their true nature as objects or processes.

What is true for emergent phenomena is true also for comprehending the directionality of the process itself; no explanation at a “lower” level can explain why the process would eventually produce the higher-order phenomena that it has produced. Explaining the process as a whole requires a theoretical perspective broad enough to include the “highest” point reached by the process so far. Indeed, since the process of evolution continues, we suppose that a yet higher standpoint is needed than any that nature has reached so far. This was also the position taken by Teilhard de Chardin.⁴ (Of course, one can accept emergence theory without claiming the degree of knowledge of the future that Chardin claimed.)

Each of the authors in this book responds in a different way to the new evidence that reveals the limitations on scientific knowledge. One can distinguish three groups of authors. The first group advances clearly religious positions on the nature of the “other reality” that transcends scientific reality and, from that perspective, they are able to speak of what science knows, what science can never know, and what another kind of knowing might look like. The more cautious authors, in the second group, still affirm that science cannot explain all parts of our experience. But their arguments are more analogous to the classical *via negativa*, insofar as they point toward a deeper reality, a veiled reality, which relativizes the reality known to science but that (they argue) never gives itself to us to be known.

A third group of authors stands between the other two, although here there are sharper differences among the various authors. For these authors, science provides us with at least some knowledge of the *Jenseits*, some hint of what lies beyond. They argue that science—or science supplemented by philosophy or morality or poetry—does not merely declare its own limits; it also begins to indicate the nature of what lies beyond. Some signs within the natural world, which Peter Berger calls “signals of transcendence,”⁵ open a window that allows us to see vistas of another realm altogether. “Now we see but a poor reflection as in a mirror” (1 Corinthians 13:12, NIV), yet we do see *something* of what lies beyond. Beyond this minimal point of agreement, however, speculations differ. Some of the authors believe in a reality that transcends the natural order altogether, whereas others discern a deeper level that grounds or produces all natural realities. Nevertheless, the thinkers in this third group are agreed that the natural world, when studied carefully, gives signs that there is more to know than what the natural sciences can reveal to us. And it is science that gives us the first hints of what this “something more” is and how it can be known. Perhaps one hears here the spirit of Pascal:

Man is only a reed, more frail than nature, but he is a thinking reed. It does not need the whole universe to wipe him out; a breath, a drop of water, is enough to kill him. But when the universe wipes him out, man will still be more noble than what kills him, since he knows that he dies and knows the advantage the universe has over him. The universe knows nothing. . . . It is not at all in space that I must seek my dignity, but in the ordering of my thought. I would have no advantage at all in possessing the earth. By space the universe embraces me and swallows me up like a point, but by thought I understand it.⁶

II

The wise man is the one who knows which opinions can be altered by the force of the better argument, which opinions should be altered but will not be, and which opinions go beyond matters of argumentation altogether. Bernard d’Espagnat maintains that the choice between his two major theories of the Real falls in the third category. Yet there is

another distinction among the authors of this book that is equally fundamental and which may *precede* rational debate rather than respond to it.

One detects a certain cautious or skeptical attitude in the writing of some authors regarding science and the beyond, and a certain boldness in the responses of others to this topic. Certainly, both groups are represented in this volume, and the reader needs no help from a foreword to distinguish between the two. (Indeed, it would seem that the preface and the introduction of this book may have been divided between authors representing the two types!) In history it is usually the bold thinkers who have introduced the major new paradigms of thought. These thinkers are quicker to see the tentative implications of their field of study and to follow these implications outward into new uncharted territory. The bold authors are quicker to argue for the validity of other kinds of knowing. They look for plausible connections and grand coherence, and they are more likely to insist, "How will we know whether the new paradigm is plausible unless we first explore it?" By contrast, the cautious or skeptically minded thinker is an expert at the suspension of belief, at balanced agnosticism, at the *epoché* of Husserl. Perhaps the eyes of such a thinker are equally skilled at seeing the possible implications of both the knowledge and the limits of science. But he or she believes that it is wiser to describe many possible connections, many possible implications, than to select just one theory of ultimate reality as true.

As I said, both types of thinkers are represented in this book. The bold authors see in the ordered world of physics a sign of a Creator who has ordered it; they see in the broad patterns of biological development an indication of purpose in nature, and they see in consciousness a proof that humanity will only be understood when we include the spiritual dimension in our explanations. The cautious or skeptical thinkers encourage their readers to pay attention to each of these possibilities, to keep an open mind, to wonder whether the world may not be massively more complex, more elusive, and more mysterious than we have supposed. But where the bold thinker sees proof, or at least scien-

tific evidence, the cautious thinker sees grounds for speculation and no more. Where the bold thinker discovers a new metaphysical paradigm, the cautious thinker finds reason to acknowledge limitations in existing paradigms. Where the bold thinker is kataphatic, the cautious thinker is apophatic.

One finds exactly this same distinction in the styles used by the various authors as they discuss the limitations on naturalism. All of the authors in this book appear to reject materialism in the traditional sense of the word, the sense that has been dominant in scientific circles for many decades if not centuries. All the thinkers affirm that there seems to be more to reality than what the natural sciences have presented and are able to present. But beyond this point their responses vary. Some of the authors argue that science has now presented us with conclusive grounds for recognizing the falseness of naturalistic assumptions. By contrast, the cautious thinkers conclude only that the assumption of naturalism is always hypothetical or methodological, for although scientific naturalism is our best means for attaining rigorous knowledge it cannot comprehend everything that reality is. Reality is grander than any narrow naturalism will allow, even though we may not have the epistemic faculties to comprehend it in all of its splendor. To the bolder thinkers, this reticence is unnecessarily cautious. “You have before you good reasons to conceive reality according to a new paradigm,” they respond, “and yet all you will talk about is *what we do not know*. But this is a mistake, for not to know something scientifically does not prove that it *cannot* be known.” And, they might be tempted to add, quoting Augustine, “The heart has its reasons that reason knows not of.”

The wise person knows which disagreements are fundamental or personal, as d’Espagnat writes—and I suggest that the difference I have just described is one of them. For each reader will likely find himself or herself falling into one or the other of the two groups, and no argument is likely to shift a person from the one to the other. What for one person is evidence that the entire natural world is surrounded by, or enveloped in, or revelatory of the divine is for the other person merely a hint that there is more in the heavens and on earth than your theories will ever

contain. The fact that I am not disturbed by this disagreement, even if the ambiguity is *never* [italics added] resolved, is perhaps evidence of which of the two camps I belong in. It seems to me that the two sides represented in this book are in the end allies in helping to undercut all claims for the sufficiency of scientific reason as a means for providing the full range of knowledge that humans need and long for. From this perspective, at any rate, the authors in this book speak with one voice.

What is true of the question of naturalism is also true of the question of meaning. After reading this book, even the cautious reader must conclude that the human quest for meaning transcends any answer that the natural sciences can provide. For it is the essential nature of consciousness to be always *darüber hinaus*, to be always asking why in the face of any statement of fact. Whenever human thought becomes metaphysical—and it does so frequently—it is inevitably characterized by “thirdness” (C. S. Peirce), by the faculty of “synthesis” (Hegel), or by the ceaseless activity of “noesis” (Husserl). The sum total of scientific facts gives us Spinoza’s *natura naturata*, the objective side of nature; but it can never give us his *natura naturans*, the underlying source of its becoming—much less *nous noetikos*, the divine “thought thinking itself,” in the sense of Aristotle.

Yet we will have made full sense of the world only when we have come to understand not only the totality of facts but also our own drive to make the world make sense. It is no small task. As the great existentialist philosophers of the French tradition have shown, the quest for sense is nothing less than the quest to understand the nature of the human being who poses this question. If the quest for meaning were not fundamental to human existence, humanity would abandon it. But all evidence suggests that we are unable to do so. If, therefore, the quest for meaning is fundamental to our very being, this implies that it cannot be reduced downward to some explanation at a lower level, for to reduce downward is to explain away.

It may be that there is an answer to the human quest for meaning, a Being or a realm that is the answer to life’s deepest questions. Many of the authors in this book have presented this belief in a beautiful fashion,

and I cannot provide any stronger reasons for this belief than they have already given. I wish instead to make a different point, a point that even the cautious thinkers can accept. A world of materialism, of chance, and of reduction to physicalist explanation can never answer the question of meaning because it lacks the resources even to formulate the question. Only when we give up the goal of reduction, as the results of science are now suggesting that we should, only then can we begin to address the question of meaning and its possible answers. Finally—and this is perhaps the main point—to give up the philosophies of materialism and chance is *already* to have discovered the first part of the answer. For some readers this step will be too little. But, the cautious among us insist, it is *not nothing*.

III

The strategy that I have applied to both naturalism and the question of meaning may at first appear insufficient for the religious or spiritual question. After all, does not religion require knowledge of a supernatural source, of a cosmic purpose, of a transcendent being? Nevertheless, the same strategy is helpful for this question as well. In the discussion with the sciences there may be room not only for bold religious belief but also for a more cautious religiosity.

For many persons, religion is of value only if it offers robust knowledge of the origin of the universe and of its final destination, of the purpose of our life on earth and the nature of the life eternal. But there are also dangers with claiming to know too much. We see these dangers in the violent form that religious fundamentalism sometimes takes. But the less extreme manifestations of claiming to know too much are also dangerous, as one can see in the present policies of the government of the United States. The overly simplistic religious claims that seem to dominate popular religion in the United States today come to be expressed in international policies and in a warlike attitude, especially toward the Islamic world. Americans (and others) need to learn less boldness and more caution in matters religious. After all, if humans are the

most complex organism we know, and if the religious dimension of humanity is connected with our most complex personal and cultural behaviors, must not religion belong among the most subtle, most comprehensive, and most ambiguous expressions of the human spirit? Perhaps the dogmatic claims, the distrust of science, and the intolerance toward other religious traditions that one finds in some popular religion are *more* distant from the true religious impulse than is the caution of those who listen carefully to the methods and results of the sciences but make fewer truth claims.

These considerations suggest the possibility of a vital synthesis of the scientific quest with the religious or spiritual quest. In the end, this is the intriguing possibility that this book most strongly supports. Even the most cautious scientist must acknowledge that there are inherent limits on what can be known by the scientific method. At the same time, as many of the authors here have argued, there are signs that the phenomenal world studied by science is the manifestation of a deeper reality of some sort. Perhaps humanity can only know that other reality through intuition, through speculation, or through a “leap of faith” (Kierkegaard), or perhaps we also possess epistemic faculties that allow for real knowledge of a noumenal realm. This question I must leave open here. It is nonetheless important to recognize that this book offers not one but two different “new paradigms” for responding to this insight. The first paradigm finds evidence within the sciences—both in that which they know and in that which they cannot know—that points to another realm and to another kind of knowledge; and it describes the means, be they faith or intuition or the sense of moral obligation, for pursuing that knowledge.

But the book also offers a second paradigm. It is the paradigm for a type of religiosity that corresponds to the caution of the scientific method and mindset. Of course, this paradigm too must endorse a speculative moment, for there is no religion that is based on algorithms, logical deductions, and scientific inference alone. Nevertheless this second paradigm seeks to walk the religious way with a sort of devout uncertainty, a holy agnosticism, a mystical unknowing. The “scientifically religious”

acknowledge that lines of implication move outward from what the sciences know (and from what they cannot know) in the direction of the divine. However, according to such persons, these speculative lines eventually disappear into the clouds that obscure the ontological heights, as the ski lift up the side of Mont Blanc disappears into the grey clouds on a winter's day. Of course, if one then turns his back on the mountain or always remains on the safe ground below, his response will not be a religious response. But some persons, as they begin the ascent, speak of the mountains that rise above them with mystical and apophatic language, being uncertain of what lies above but certain that it is grand and always greater than they can understand.

At one time science was famous for the doors it had closed, the kingdoms it had abolished, the religious claims it had disproved. The present book has helped to dispel the myth of science as the Great Defeater of all things mystical. Today we instead encounter a science that opens windows onto a rich and mysterious reality. Perhaps we disagree on how much of that reality can be seen and how much will always be obscured by the mists of human ignorance. But we do agree that science does not abolish the human quest for meaning. We agree on the great importance of the new rapprochement between science, on the one hand, and the profound ontological and axiological questions, on the other hand. The human quest for meaning cannot be pursued in isolation from the sciences of today, even though science alone will never provide the answer.

NOTES

1. See P. Clayton, *Mind and Emergence: From Quantum to Consciousness* (Oxford: Oxford University Press, 2004); P. Davies and P. Clayton, eds., *The Reemergence of Emergence* (Oxford: Oxford University Press, 2006); B. Pullman, ed., *The Emergence of Complexity in Mathematics, Physics, Chemistry, and Biology*, Pontificiae Academiae Scientiarum scripta varia 89 (Rome: Pontifical Academy of Sciences, 1996).

2. See the very helpful treatment of the different levels of reality in the chapter by Thierry Magnin and the discussion of the emergence of the universe by Khalil Chamcham.

3. H. Morowitz, *The Emergence of Everything: How the World Began Complex* (Oxford: Oxford University Press, 2002).

4. P. Teilhard de Chardin, *L'avenir de l'homme*, Oeuvres, vol. 5 (Paris, Editions du Seuil, 1959); idem, *Le phénomène humain* (Paris, Editions du Seuil, 1955, 1970).

5. Peter Berger, *A Rumor of Angels* (Harmondsworth, England: Penguin Books, 1971), e.g., "By signals of transcendence I mean phenomena that are to be found within the domain of our 'natural' reality but that appear to point beyond that reality. In other words, I am not using transcendence here in a technical philosophical sense but, literally, as the transcending of the normal, everyday world that I earlier identified with the notion of the 'supernatural'" (70).

6. B. Pascal, *Pensées*, ed. Philippe Sellier (Paris: Mercure de France, 1976), § 231, § 145.