

Reviews

Cosmic Impressions: Traces of God in the Laws of Nature. By Walter Thirring. Trans. Margaret A. Schellenberg. Philadelphia and London: Templeton Foundation Press, 2007. 189 pages. \$19.95 (paper).

Walter Thirring was born in 1927 in Vienna. He received his doctorate at the University of Vienna under the direction of his father, Hans Thirring, in 1949. He then spent ten years in Ireland, Switzerland, and the United States before returning as Professor of Theoretical Physics to the University of Vienna. Except for the period from 1968 to 1971, when he was a member of the Directorate at CERN in Geneva, he remained in Vienna until he became emeritus in 1997.

This book is an exploration of the structure of the laws of nature and of the consequences of that structure. We are on this “Goldilocks” planet for reasons that can be found in the laws of nature. And Thirring says that the language of God is the laws of nature (p. 32). Our understanding of these laws is and will forever be incomplete, but we have progressed in our comprehension far beyond that expressed in the book of Genesis. According to Thirring, our image is more grandiose and cerebral. He prefers the words found in Isaiah: We have seen the hem of his robe (p. 32).

Thirring takes the reader on an exploration of the intricacies of these laws of nature as we presently have them. This exploration is not explanatory. Thirring is a theoretical physicist and realizes that, as Paul A. M. Dirac proclaimed in *The Principles of Quantum Mechanics* (Oxford Univ. Press, 1958, p. 5), theoretical physics only describes and does not explain experiments.

At times it is easy to lose sight of the fact that Thirring is looking at the laws of nature as the language of God. He seldom mentions God. On the one hand this is refreshing. It is not necessary to adopt a separate metaphysics to see what is being said. On the other hand the approach is problematic because the reader can become lost in the intricacies of the details and almost completely lose sight of the purpose of the exploration.

Thirring has thought long about the implications of the laws of physics and their interconnections, and he presents to the reader the basic substance of the intricacies. He does not require any mathematical background even as he discusses details such as the substance of Lord Kelvin’s estimate of the lifetime of the sun (pp. 170–73). But this does not leave us with a comfortable or easy journey. To uncover what Thirring believes are the traces of God he must introduce some of the basic structure of modern particle theory, and he must speak about the quantum theory. To produce stars, which are integral to any discussion of the evolution of the universe, Thirring must address the concept of entropy and the basic idea of teleology in physics. He expounds on this in a discussion with the mathematical physicist Heidi Narnhofer (p. 84). She says that Thirring has an imaginative way

of saying that the system is moving toward equilibrium. Yes, admits Thirring, but the equilibrium is ordered. And he insists that he can still interpret the course of events teleologically so that the ultimate goal of star formation is achieved.

None of this is easy physics. But Thirring presents it in such a way that the reader can, with some thought, understand the ideas without becoming overly concerned with the subtleties.

At the end of many (but not all) chapters Thirring has some brief reminder of the purpose of the exploration. At the end of his chapter on the birth and death of stars he writes, "It seems nothing is too good for the crowning glory of God's creation" (p. 104), and at the end of his chapter on the creation of the elements "These webs have been so finely spun that they carry our lives; we are now entering curious worlds by digging deeper and deeper" (p. 74). Thirring is indicating to us that what has taken place reveals the language and the robe of God. But to see that we must do some of our own digging.

Even in the final words of the book Thirring leaves us with our own thoughts. After considering the anthropic principle in its weak, strong, and eschatological forms he points out that our universe is a sensitive structure with a thin line between success and failure. This universe seems to us to be random and even highly improbable. The parameters must have extremely rare values so that everything comes together so harmoniously. Thirring points out that these are the facts; interpretations vary. And then he asks us to try with him to formulate three ways of understanding these facts. Each comes up short. The ways that point to a creator who has chosen, Thirring bluntly says, are too speculative to be a part of science and too shaky for the basis of a *Weltanschauung*. However, we are now able to explain much that previously seemed incomprehensible, but only by introducing new, strange, and wondrous explanations. Our journey was our destination, for it is through this journey of discovery that we have been able to capture this new depth of understanding. This is where science and religion are called upon (pp. 162–63).

The journey on which Thirring takes us is not simply an explanation of the workings of the universe. Science is a product of the human mind. The developments of the great theories of physics do not all adhere to the Newtonian requirement that scientific theories follow from experiments. Albert Einstein's ideas that led to the theory of relativity are an example (Abraham Pais, *Subtle Is the Lord* [Oxford: Oxford Univ. Press, 1982], 138–73). And so the journey involves encounters with the scientists who formulated some of the ideas.

Thirring relates his own experiences with many of these people, which offer the reader glimpses into the face and the spirit of science. These include the thinking process of Werner Heisenberg, the person of Wolfgang Pauli, and the experiences of the visionary Fritz Hautermans at the hands of the communists and then the Nazis, neither of which blunted his scientific mind. Thirring also takes us through three acts and the epilogue of his experience with Narnhofer and Harald Posch modeling a star formation through computer simulation of interacting particles.

Where there are not real characters Thirring produces his own. He contrives a dialogue between Uranus and Neptune about the stability of the solar system and Pluto, he invents a dialogue between a discerning reader and himself, and he introduces characters to play a game of economics to create order out of simple rules. With these Thirring causes the reader to stop and think about what was just

said using the story as a method to convey a point. Whether this is effective or not will depend on the reader. The patient reader who really does want to follow Thirring's invitation to dig deeper will find these pleasant exercises. The reader who wants to discover the traces of God in the laws of nature without becoming so personally involved in the journey may find this approach frustrating. And therein lies a possible difficulty with this book.

None of this is easy or simple. To cross intellectual divides and to reveal what can be seen from the one side to those on the other is a formidable task. Thirring's solution is to ask the reader to look from his vantage point, rather than to attempt to explain the view.

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Freedom and Neurobiology: Reflections on Free Will, Language, and Political Power. By John R. Searle. New York: Columbia Univ. Press, 2007. 113 pages. \$25.50.

In this very brief book John Searle continues his project of trying to naturalize the psychological and social without doing away with either or reducing them to the natural. Consisting of versions of two lectures he delivered at the Sorbonne in 2001, the text easily succeeds in drawing the nonspecialist into the fray.

The first essay, "Free Will as a Problem in Neurobiology," addresses the putative incompatibility between the doctrine of freedom of the will and contemporary neurobiology by suggesting an account of free will that allows for an empirical, scientific solution. The second, "Social Ontology and Political Power," argues the logical priority of language to the existence of social institutions and political power and claims *inter alia* that deontic powers are ultimately grounded in social ontology. The 35-page introduction, "Philosophy and the Basic Facts," situates the two apparently disparate lectures within Searle's larger philosophical enterprise, although he admits that at "the level of authorial intent, [the two original lectures] do not have any connection" (p. 3). Common to both freedom and institutional facts is the existence of consciousness, intentionality, rationality, and language.

Clearly, Searle gets the central question right: "How can we square this self-conception of ourselves as mindful, meaning-creating, free, rational, etc., agents with a universe that consists entirely of mindless, meaningless, unfree, nonrational, brute physical particles?" (p. 5) This very old question is especially acute today because dualism no longer has plausibility in educated quarters. We simply know too much about the natural machinery of the brain to be able to ignore naturalistic explanations of mind. In our time, explanations of ourselves must be naturalistic. Accordingly, we should ask how consciousness, intentionality, language, rationality, free will, social institutions, politics, and ethics are possible in a closed, physical universe. As Searle points out, these eight notions are logically related: intentionality presupposes consciousness, language presupposes intentionality, rationality is constitutive structurally of language and intentionality, free will is coextensive with rationality, social institutions presuppose language, and politics and ethics presuppose all the other categories.