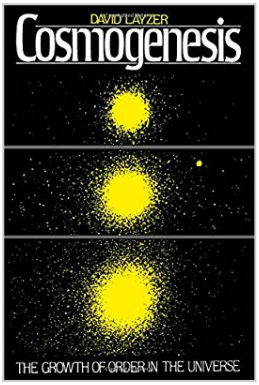

Cosmogenesis: The Growth of Order in the Universe

By David Layzer

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Eminent Harvard astrophysicist David Layzer offers readers a unified theory of natural order and its origins, from the permanence, stability, and orderliness of sub-atomic particles to the evolution of the human mind. *Cosmogenesis* provides the first extended account of a controversial theory that connects quantum mechanics with the second law of thermodynamics, and presents novel resolutions of longstanding paradoxes in these theories, such as those of Schroedinger's cat and the arrow of time. Layzer's main concerns in the second half of the book are with the philosophical issues surrounding science. He develops a highly original reconciliation of the conflict between traditional scientific determinism and the intuitive notion of individual freedom. He argues that although the elementary processes underlying biological evolution and human development are governed by physical laws, they are nevertheless genuinely creative and unpredictable.

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Editorial Review

Review
"Lazyer, an eminent astrophysicist, discusses the fundamental question, how did order arise in the universe? This is a broad treatment at a level appropriate for undergraduate science students and sophisticated nonscience majors. The roles of randomness and order in subjects such as quantum mechanics, galactic origin and evolution, molecular biology, the evolution of species, and the development of language are presented and discussed in a way that ties them together....Since the chapters are somewhat self-contained, the book could be used effectively as outside reading in a 'science for nonscientist' class."--Choice

"Inspired by cosmology, Layzer deals with the paradox of creation of order by saying that, if entropy in the environment increases more than the entropy of the system, then the system becomes more ordered in that environment. Entropy and order can both increase at the same time without violating the second law of thermodynamics. This phenomenon can be described as: if the expansion of a set of systems is so quick that a number of states which are occupied increases less rapidly than the number of states which are available (i.e., the phase space gets bigger), entropy and order can increase at the same time. Unlike Prigogine, Layzer does not need to assume that an energy flow from the environment of a system can cause a local decrease in entropy within the system. Entropy and order increase together because the realization of structure lags behind the expansion of phase space." -- Piero Scaruffi, Thymos.com

From the Back Cover
Eminent Harvard astrophysicist David Layzer presents a unified theory of order in the universe--from permanence, stability, and orderliness of sub-atomic particles to the evolution of the human mind. Cosmogenesis is the first extended account of a controversial theory that connects quantum mechanics with the second law of thermodynamics and presents novel resolutions of longstanding paradoxes in these theories.

About the Author

David Layzer is the Donald H. Menzel Professor of Astrophysics at Harvard University. He is the author of *Constructing the Universe*.

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