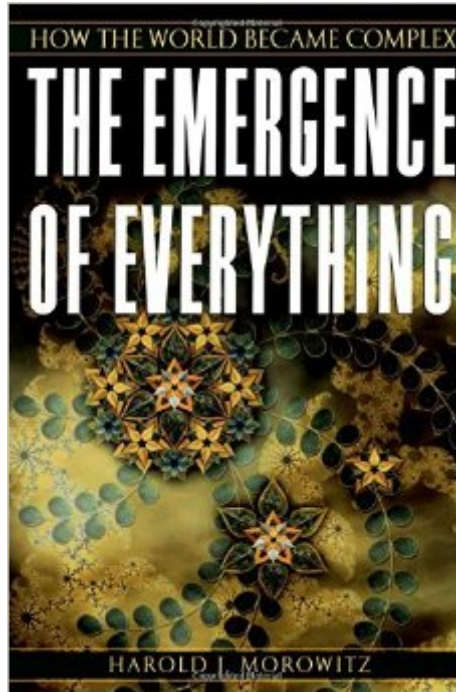


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# The Emergence Of Everything: How The World Became Complex



## Synopsis

When the whole is greater than the sum of the parts--indeed, so great that the sum far transcends the parts and represents something utterly new and different--we call that phenomenon emergence. When the chemicals diffusing in the primordial waters came together to form the first living cell, that was emergence. When the activities of the neurons in the brain result in mind, that too is emergence. In *The Emergence of Everything*, one of the leading scientists involved in the study of complexity, Harold J. Morowitz, takes us on a sweeping tour of the universe, a tour with 28 stops, each one highlighting a particularly important moment of emergence. For instance, Morowitz illuminates the emergence of the stars, the birth of the elements and of the periodic table, and the appearance of solar systems and planets. We look at the emergence of living cells, animals, vertebrates, reptiles, and mammals, leading to the great apes and the appearance of humanity. He also examines tool making, the evolution of language, the invention of agriculture and technology, and the birth of cities. And as he offers these insights into the evolutionary unfolding of our universe, our solar system, and life itself, Morowitz also seeks out the nature of God in the emergent universe, the God posited by Spinoza, Bruno, and Einstein, a God Morowitz argues we can know through a study of the laws of nature. Written by one of our wisest scientists, *The Emergence of Everything* offers a fascinating new way to look at the universe and the natural world, and it makes an important contribution to the dialogue between science and religion.

## Book Information

Paperback: 224 pages

Publisher: Oxford University Press (April 8, 2004)

Language: English

ISBN-10: 0195173317

ISBN-13: 978-0195173314

Product Dimensions: 9.1 x 0.8 x 6.1 inches

Shipping Weight: 10.4 ounces (View shipping rates and policies)

Average Customer Review: 3.6 out of 5 stars [See all reviews](#) (30 customer reviews)

Best Sellers Rank: #998,417 in Books (See Top 100 in Books) #119 in [Books > Science & Math > Physics > Chaos Theory](#) #435 in [Books > Textbooks > Humanities > Philosophy > Metaphysics](#) #1047 in [Books > Science & Math > Astronomy & Space Science > Cosmology](#)

## Customer Reviews

I feel somewhat presumptuous and impertinent writing critical words about a book written by an

author like Harold Morowitz. He's a man with impressive credentials including once having been editor of the journal *Complexity* and now on the Science Board of the Santa Fe Institute. And there are glowing comments on the book jacket--stunning, provocative, and brilliant--from the likes of highly respected John Holland. Nonetheless, here is my reaction as a layperson who's read many of the popular books on emergence, complexity, etc. First, some positive comments. Morowitz has written numerous books. He appears to have a vast knowledge of physics, biology and early western religious beginnings and in this book he provides a sweeping view of, well, everything! His most interesting insight: the far-reaching explanatory power of the Pauli exclusion principle. Morowitz also comes across as likeable and humble, the latter being a characteristic that is often lacking in the authors of other "complexity" books as previously noted by several reviewers. In fact, Morowitz seems likeable enough that I offer my apology for any personal offense he might take. On the less than positive side, I found the book "stunning" all right, but probably not in the way the publishers intended. The book is as much about "religion" as it is emergence. And I don't mean the emergence of a new kind of spirituality that arises out of discoveries in complexity theory. I mean old fashion Judeo-Christian religion. There are numerous pages of discussion of early Christian thinking and an extensive apologia for the Jesuit paleontologist, and Morowitz's role model, Pierre Teilhard de Chardin (p. 15).

This is a relatively small book with a huge message. It deals with complex, sophisticated theories - some explained clearly; others such as the emergence of metabolism, not so clearly despite Dr. Morowitz's efforts. It is written at a scholarly level - at least at the undergraduate level - as evidenced, for example, by his syntax and the technical lexicon he employs, often without definition. Dr. Morowitz's premise is that at the dawn of the 21st century "we now see the world through the fresh perspective and understanding of the computer revolution and the study of complex systems...[and] this new mode of thinking has begun to develop an exciting explanatory concept designated emergence, which develops previously unrealized ways of deepening our understanding of the past eons and illuminates how the universe, after a long and complex 12-billion-year trajectory from the Big Bang, has given rise to the human mind and modern man" (pg. 16). Classical science is based on reductionism and theory formation that work their way back up to the world of observation. I disagree from the review from *Scientific American* that emergence is the opposite of reductionism; rather, emergence supplements and complements reductionism, taking it to a new level. It essentially is the realization - the study - that the whole is often greater than the sum of the parts (pg. 23); that is, the system or process that emerges is something more

than would have been expected by the study of the constituent parts. Dr. Morowitz selected 28 examples of "observed instances that have emergence in common but vary over an enormous range...

In the last few decades, there have been more and more scientists stepping out into the realm of philosophical thought and tossing in their two cents regarding important metaphysical questions. On the whole, this is a good, encouraging trend. Yet, it is becoming too predictable that a philosophy book, written in the vain of science, will undoubtedly be strong in the latter, and fall so short in the former: Morowitz's "Emergence of Everything" is yet another testament to this trend. I do not want to be too harsh, as there are some things this book does well, so I will focus on those first. "Emergence of Everything" discusses the new trend in scientific thinking to group things into wholes rather than separate them into parts. This trend was realized in philosophy by the Idealists showing roots in Plato, but taking life with Kant and primarily Hegel. He then launches into a so-called "brief history of everything;" how evolution has transpired since the beginning of the cosmos until present day. The scientific explanations are quick, sometimes dense, but well-described. He leaves nothing out--including social sciences into latter day evolutions. And in the end even tampers with some spiritual implications. My point: the overview itself is satisfactory... even well-done I suppose. Unfortunately, that is basically all of the book's merits. It ends there: just a string of cosmological and historical observations. Despite explicitly calling his own book a "philosophical treatise" he lends no thought, analysis, or anything beyond questioning of the form, patterns or causes of specific evolutions or emergences.

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