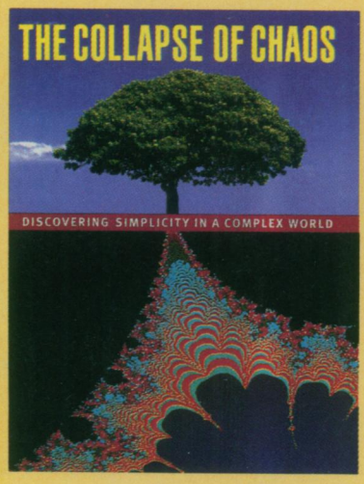
Complexity — Simple, Paradoxical, and Natural



The Collapse of Chaos is the first post-chaos, post-complexity book, a groundbreaking inquiry into how simplicity in nature is generated from chaos and complexity. Rather than asking science's traditional question of *how* to break the world down into its simplest components, Jack Cohen and Ian Stewart ask something much more interesting: *why* does simplicity exist at all? Their story combines chaos and complexity and — surprisingly — derives simplicity from the interaction of the two.

The Collapse of Chaos is composed of two parts. The first half provides a streamlined and accessible introduction to the central areas of modern science, including cosmology, quantum mechanics, the arrow of time, biological development, evolution, and consciousness. Educated by the first half to appreciate the subtler issues in the second, the reader is introduced to a novel and even heretical world where unconventional possibilities are explored through conversations with characters such as the Victorian computer scientist Augusta Ada Lovelace.

— from Viking

Viking, 1994, 495 pages, 6¼" x 9¼", hardcover, $23.95

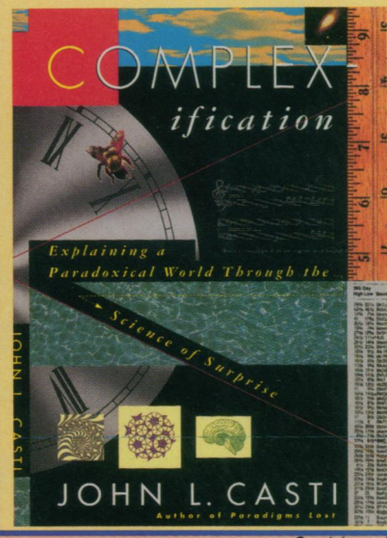
Why does time seem to fly on some occasions and drag on others? Why does atonal music sound "worse" to most of us than traditional music? How can a butterfly in Brazil affect the weather in Alaska?

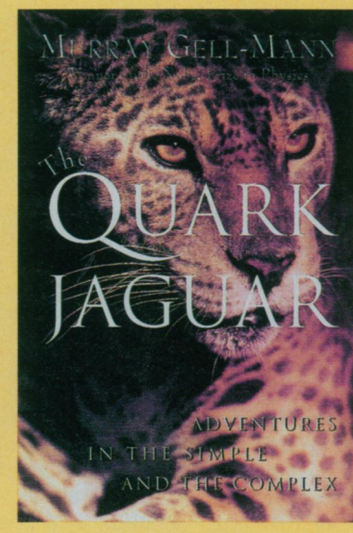
The set of ingenious interdisciplinary approaches that are, together, called the science of complexity offers answers to these and dozens of other questions. John L. Casti, renowned mathematician, argues that a complexity that defies human logic is only natural. He explores several types of phenomena that have, until now, consistently eluded science's attempts to understand them:

- the catastrophic, where a tiny change in a system produces a huge effect;
- the chaotic, which includes odd correlations like the ones that make predicting the weather so difficult;
- paradox, in which you follow a commonsense rule and something weird happens;
- the irreducible, where, as in symphonies, the whole is greater than the sum of its parts;
- the emergent, in which a pattern, like life itself, seems to arise out of nowhere.

— from HarperCollins

HarperCollins, 1994, 320 pages, 6¼" x 9½, hardcover, $25.00





As a theoretical physicist, Murray Gell-Mann's achievements include the 1969 Nobel Prize for work leading up to his discovery of the quark.But Gell-Mann is a man with lifelong interests in fields that seek to understand existence at its most complex: natural history, biological evolution, the history of language, and the study of creative thinking.

These seemingly disparate pursuits come together in Gell-Mann's current work at the Santa Fe Institute, where scientists are investigating the similarities and differences among *complex adaptive systems* — systems that learn or evolve by utilizing acquired information.

The Quark and the Jaguar is Gell-Mann's own story of finding the connections between the basic laws of physics and the complexity and diversity of the natural world.

The simple: a quark inside an atom. The complex: a jaguar prowling its jungle territory in the night. Exploring the relationship between them becomes a series of exciting intellectual adventures.

— from WH Freeman and Co.

WH Freeman and Co., 1994, 392 pages, 6¼" x 9½", hardcover, $23.95

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