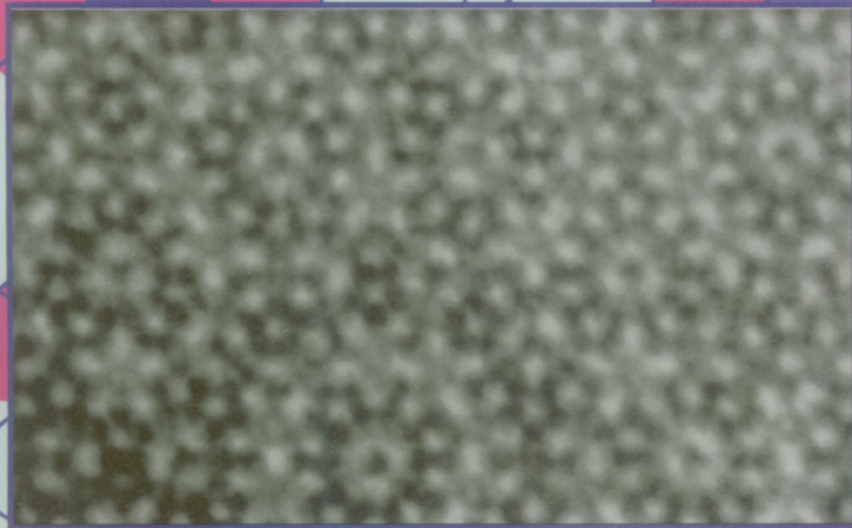


The Weekly Newsmagazine of Science

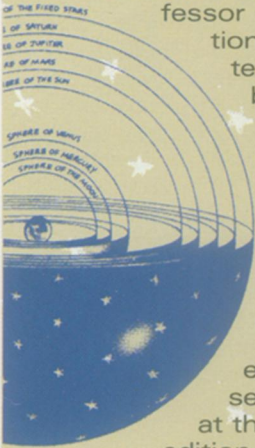
SCIENCE NEWS

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Building a Quasicrystal



In the 10 years since its publication in 1988, Stephen Hawking's book has become a landmark volume in scientific writing, with more than 9 million copies sold worldwide. That edition was on the cutting edge of what was then known about the nature of the universe. But the last decade has seen extraordinary advances in the technology of observing both the micro- and the macro-cosmic worlds, confirming many of Professor Hawking's theoretical predictions. Eager to bring to his original text the new knowledge revealed by these observations, he has written a new introduction, updated the original chapters throughout, and added an entirely new chapter on the fascinating subject of wormholes and time travel.



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The Logic of Failure

Recognizing and Avoiding Errors in Complex Situations

F

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Dietrich Dörner, winner of Germany's highest science prize, considers why—given all our intelligence, experience, and information—we make mistakes, sometimes with catastrophic consequences. Surprisingly, he finds the answer not in negligence or carelessness, but in what he calls "the logic of failure": certain tendencies in our patterns of thought—such as taking one thing at a time, cause and effect, and linear thinking—that, while appropriate in an older, simpler world, prove disastrous for the complex world we live in now.

Dörner finds no lack of examples. Why did the Aswan Dam planners who brought the blessings of cheap electricity to Egypt not realize that they would also interrupt the annual floods that for millennia had kept the Nile Valley rich and fertile? Why do planners of Third World health programs not realize that increased life expectancy requires increased food and thereby inadvertently end up contributing to starvation?

Working with intriguing computer simulations of his own invention, Dörner exposes the flaws in our thinking. His examples—sometimes hilarious, sometimes horrifying—and brain-teasing thought experiments teach us how to solve complex problems. Together they make *The Logic of Failure* a corrective tool, a guideline for intelligent planning and decision making.

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