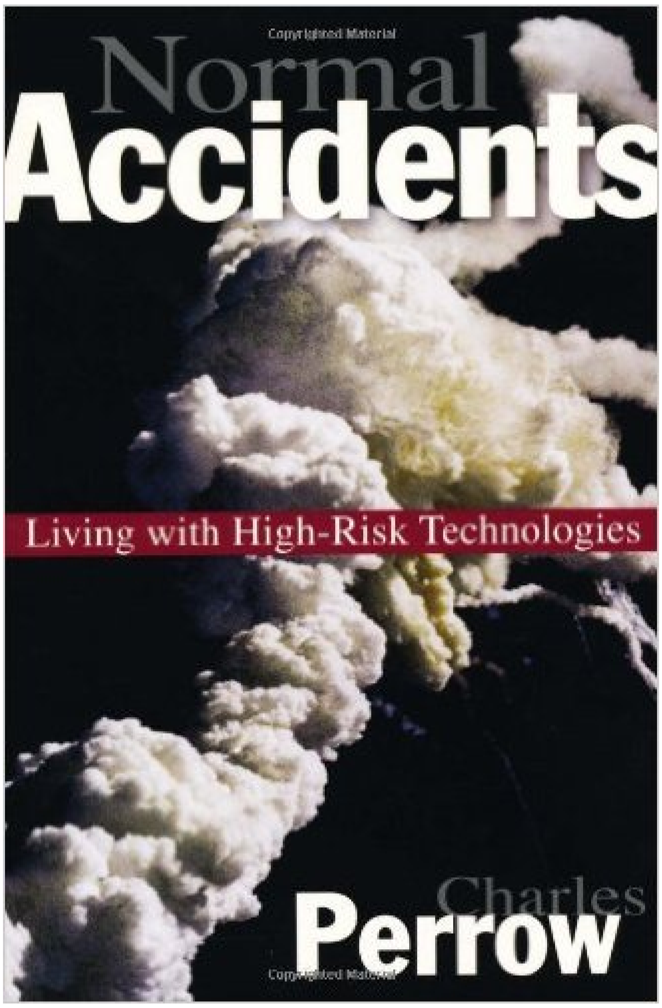
Normal Accidents: Living With High-Risk Technologies



Synopsis

Normal Accidents analyzes the social side of technological risk. Charles Perrow argues that the conventional engineering approach to ensuring safety--building in more warnings and safeguards--fails because systems complexity makes failures inevitable. He asserts that typical precautions, by adding to complexity, may help create new categories of accidents. (At Chernobyl, tests of a new safety system helped produce the meltdown and subsequent fire.) By recognizing two dimensions of risk--complex versus linear interactions, and tight versus loose coupling--this book provides a powerful framework for analyzing risks and the organizations that insist we run them.The first edition fulfilled one reviewer’s prediction that it "may mark the beginning of accident research." In the new afterword to this edition Perrow reviews the extensive work on the major accidents of the last fifteen years, including Bhopal, Chernobyl, and the Challenger disaster. The new postscript probes what the author considers to be the "quintessential ’Normal Accident’" of our time: the Y2K computer problem.

Book Information

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Customer Reviews

I have been mulling over this review for a while now, and am still undecided on the correct rating to award this book. On the one hand Perrow offers some genuine insight into systems safety, but frequently does not understand the technicalities of the systems (or occasionally their operators) well enough to make informed decisions and recommendations. In more egregious cases he comes to conclusions that are guaranteed to reduce safety (as when he argues that supertankers should be run by committee, and the usefulness of the Captain is no more) or are merely the cherished liberal opinions of an Ivy League sociologist (he teaches at Yale) as when he argues for unilateral nuclear disarmament, government guaranteed income plans, and heroin maintenance (distribution) plans for addicts "to reduce crime." In the case of disarmament, remember this was written during the early 1980s while the Soviet Union was still a huge threat...complete nuclear disarmament would have resulted in fewer US nuclear accidents, but would NOT have made us safer as we would have been totally vulnerable to intentional nuclear attack. He has great personal animosity toward Ronald Reagan, and makes inflammatory statements in the mining section that mining safety regulations would surely be weakened by Reagan, causing many more accidents and deaths. Later in the same section, though, he concludes that mining is inherently dangerous, and no amount of regulation can make it safe. So which is it? Any of this is, at very best, folly, but regardless of political bent (he is a self avowed "leftist liberal") has absolutely no place in a book ostensibly on safety systems.

Edit of 2 April 2007 to add link and better summary.I read this book when it was assigned in the 1980’s as a mainstream text for graduate courses in public policy and public administration, and I still use it. It is relevant, for example, to the matter of whether we should try to use nuclear bombs on Iraq--most Americans do not realize that there has never (ever) been an operational test of a US nuclear missile from a working missle silo. Everything has been tested by the vendors or by operational test authorities that have a proven track record of falsifying test results or making the tests so unrealistic as to be meaningless.Edit: my long-standing summary of the author’s key point: Simple systems have single points of failure that are easy to diagnose and fix. Complex systems have multiple points of failure that interact in unpredictable and often undetectable ways, and are very difficult to diagnose and fix. We live in a constellation of complex systems (and do not practice the precationary principle!).This book is also relevant to the world of software. As the Y2K panic suggested, the "maze" of software upon which vital national life support systems depend--including financial, power, communications, and transportation software--has become very obscure as well as vulnerable. Had those creating these softwares been more conscious of the warnings and suggestions that the author provides in this book, America as well as other nations would be much less vulnerable to terrorism and other "acts of man" for which our insurance industry has not planned.I agree with another review who notes that this book is long overdue for a reprint--it should be updated. I recommended it "as is," but believe an updated version would be 20% more valuable.

Wow. This is an incredible book. I have to admit, though, that I had some difficulty getting into Normal Accidents. There seemed an overabundance of detail, particularly on the nuclear industry's case history of calamity. This lost me, since I'm not familiar with the particulars of equipment function and malfunction. The book was mentioned, however, by two others of a similar nature and mentioned with such reverence, that after I had finished both, I returned to Perrow's book, this time with more success.Professor Perrow is a PhD in sociology (1960) who has taught at Yale University Department of Sociology since 1981 and whose research focus has been human/technology interactions and the effects of complexity in organizations. (His most recent publication is the The AIDS disaster : the Failure of Organizations in New York and the Nation, 1990.)In Normal Accidents, he describes the failures that can arise "normally" in systems, ie. those problems that are expected to arise and can be planned for by engineers, but which by virtue of those planned fail-safe devices, immeasurably complicate and endanger the system they are designed to protect. He describes a variety of these interactions, clarifying his definitions by means of a table (p. 88), and a matrix illustration (p. 97). Examples include systems that are linear vs complex, and loosely vs tightly controlled. These generally arise through the interactive nature of the various components the system itself. According to the matrix, an illustration of a highly linear, tightly controlled system would be a dam. A complex, tightly controlled system would be a nuclear plant, etc.The degree to which failures may occur varies with each type of organization, as does the degree to which a recovery from such a failure is possible.

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