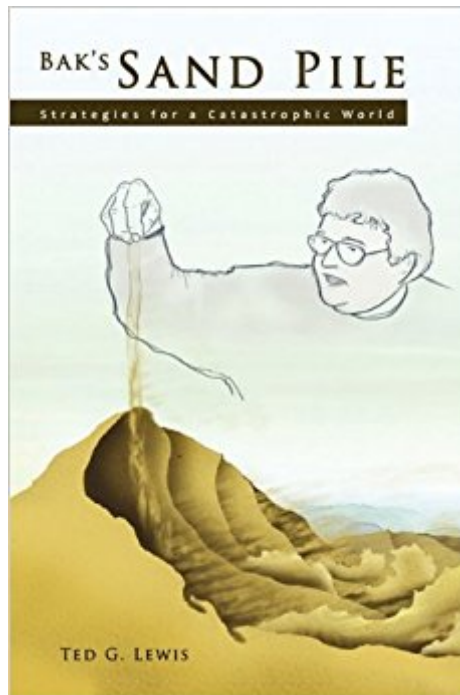




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Bak's Sand Pile: Strategies For A Catastrophic World



Synopsis

Did the terrorist attacks on the United States in 2001, the massive power blackout of 2003, Hurricane Katrina in 2005, and the Gulf oil spill of 2010 'just happen'-or were these shattering events foreseeable? Do such calamities in fact follow a predictable pattern? Can we plan for the unforeseen by thinking about the unthinkable? Ted Lewis explains the pattern of catastrophes and their underlying cause. In a provocative tour of a volatile world, he guides the reader through mega-fires, fragile power grids, mismanaged telecommunication systems, global terrorist movements, migrating viruses, volatile markets and Internet storms. Modern societies want to avert catastrophes, but the drive to make things faster, cheaper, and more efficient leads to self-organized criticality-the condition of systems on the verge of disaster. This is a double-edged sword. Everything from biological evolution to political revolution is driven by some collapse, calamity or crisis. To avoid annihilation but allow for progress, we must change the ways in which we understand the patterns and manage systems. Bak's Sand Pile explains how.

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Customer Reviews

Per Bak's very original book, *How Nature Works*, introduced the reading public to the science of self-organized criticality, SOC, and using examples from ecology, evolution, traffic flow and the like, demonstrated the utility of his basic idea, that complex systems evolve to a state of criticality. Upon reaching the critical state, these systems then become subject to cascades, rapid down turns in complexity from which they recover but will be experienced again repeatedly. Both the magnitude of

these repetitious events and their time spacing can be described by a power law. Lewis has taken both the theory and application of SOC an order of magnitude further. His book covers a wider range of topics than Bak's. I would particularly recommend the chapters on Levy Flights, Invention, Innovation, and Inspiration, and the final chapter, If I Were King. In these chapters he makes connections between SOC and movement, the burstiness of inventive occurrences and the distinction between invention and innovation, and in the last chapter is prescriptive with respect to our shared problems of the 21st Century, all of which appear to be consequences to SOC. Also, his discussion of system resilience and its relationship to the power law exponent is quite insightful. If you have an interest in self-organized criticality and in understanding SOC at some significant depth, if you have an interest in the many events that affect our collective experience (and existence) as a species, the occurrence of which cannot be described by normal distributions but exhibit skewed, long-tailed distributions, and if you appreciate accessible, insightful scholarship, then this book is for you.

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I am reading it because of a class, but it is a good book - tough to read but great material. I wish kindle they have page numbers rather than count...

Good

Lewis does a fantastic job in this volume of explaining the concept of self-organizing criticalities and why systems seem to drive themselves into disastrous situations. In short: we strive for efficiency and that doesn't always get along well with resiliency. This was explored by physicist Per Bak (thus the title) in a series of papers done with other colleagues that have since been cited tens of thousands of times across many disciplines. I've read a lot on this from other authors and this is one of the best explanations of related concepts. Lots of good content here and it's surprisingly accessible even if you're not familiar with the theories behind it. Highly recommended for students of disaster management or complexity theory, or for anyone interested in systems theory or system

resilience.

We must start to accept responsibility and make the changes necessary to protect the future environment, what is the real cost of buying cheaper products? We must change the way we evaluate progress.

I'm still thinking about "self-organized criticality" over a year after reading this. It impacts systems, governments, and most large-scale technologies. It made me think differently, more realistically and expansively, about system redundancy, back-up systems, capacity planning, and security. Another area where the book led to a greater understanding is that disasters aren't necessarily isolated events. There can be a devastating subsidiary disaster during a period of time afterwards due to the intricate linkages and dependencies of our complex world. Think mortgage meltdown & global financial crisis, which is still reverberating over 4 years later. Think tsunami & Fukushima meltdown. I highly recommend this book. It is highly accessible to generalists, and even more meaningful to someone with a foundational mathematical background.

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