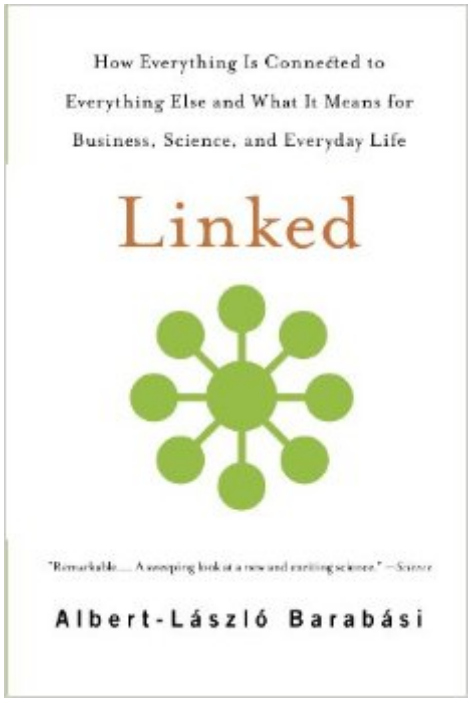
Linked: The New Science Of Networks Science Of Networks



Synopsis

In the 1980’s, James Gleick’s Chaos introduced the world to complexity. Now, Albert-LÃ¡szlÃ BarabÃ¡si’s Linked reveals the next major scientific leap: the study of networks. We’ve long suspected that we live in a small world, where everything is connected to everything else. Indeed, networks are pervasive--from the human brain to the Internet to the economy to our group of friends. These linkages, it turns out, aren’t random. All networks, to the great surprise of scientists, have an underlying order and follow simple laws. Understanding the structure and behavior of these networks will help us do some amazing things, from designing the optimal organization of a firm to stopping a disease outbreak before it spreads catastrophically.In Linked, BarabÃ¡si, a physicist whose work has revolutionized the study of networks, traces the development of this rapidly unfolding science and introduces us to the scientists carrying out this pioneering work. These "new cartographers" are mapping networks in a wide range of scientific disciplines, proving that social networks, corporations, and cells are more similar than they are different, and providing important new insights into the interconnected world around us. This knowledge, says BarabÃ¡si, can shed light on the robustness of the Internet, the spread of fads and viruses, even the future of democracy. Engaging and authoritative, Linked provides an exciting preview of the next century in science, guaranteed to be transformed by these amazing discoveries.From Linked:This book has a simple message: think networks. It is about how networks emerge, what they look like, and how they evolve. It aims to develop a web-based view of nature, society, and technology, providing a unified framework to better understand issues ranging from the vulnerability of the Internet to the spread of diseases. Networks are present everywhere. All we need is an eye for them...We will see the challenges doctors face when they attempt to cure a disease by focusing on a single molecule or gene, disregarding the complex interconnected nature of the living matter. We will see that hackers are not alone in attacking networks: we all play Goliath, firing shots at a fragile ecological network that, without further support, could soon replicate our worst nightmares by turning us into an isolated group of species...Linked is meant to be an eye-opening trip that challenges you to walk across disciplines by stepping out of the box of reductionism. It is an invitation to explore link by link the next scientific revolution: the new science of networks.

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Customer Reviews

What do sexually transmitted diseases, the World Wide Web, the electric power grid, Al Queda terrorists, and a cocktail party have in common? They are all networks. They conform to surprising mathematical laws which are only now becoming clear. Albert-Laszlo Barabasi has helped discover some of those laws over just the past five years, and though they are some pretty abstruse mathematics, he has written a clear and interesting guide to them, _Linked: The New Science of Networks_ (Perseus Publishing). Not only has he attempted in this book to bring the math to non-mathematicians, he has shown why the work is important in down-to-earth applications.It is important for those multitudes who have no taste for math to know that this is not a book full of equations; Barabasi knows that for most of his readers, doing the math is not as important as getting a feel for what the math does. He explains the basic history of network theory, and then shows how his own work has turned it into a closer model of reality, a model that most of us will recognize. Networks are all around us, and they are simply not random. Some of our friends, for instance, are loners, while others seem to know everyone in town. Some websites, like Google and , we just cannot avoid clicking on or being referred to, but many others are obscure and you could only find them if someone sent you their addresses. Barabasi calls these "nodes" with such an extraordinary number of links "hubs," and he and his students have found laws of networks with hubs, showing such things as how they can continue to function if random nodes are eliminated but they fragment if the hubs are hit.

Updated 28 Dec 07 to add links.I have mixed feelings about this book. On the one hand, it is coherent, thoughtful, and tells a story about the emerging science of networks that anyone, who can read, can understand. This is a non-trivial accomplishment, so 4 stars.However, the book is also--being brilliantly designed to be understood by the lowest common denominator, an undergraduate--somewhat shallow and empty.... especially when compared with Stephen Wolfram's "A New Kind of Science", 1197 pages not counting the index, which is at the other extreme.Although there are good notes, there is no bibliography, and the author fails to use network methodology to illustrate and document the emerging literature on networks--called citation analysis, this would have been a superb appendix to the book that would have taken it up a notch in utility.Among the key points that the author discusses and which certainly make the book worth buying and reading, my above reservations not-with-standing:1) Reductionism has driven 20th century science (and one might add, all other knowledge), with the result being that we have experts who know more and more about less and less--and)as CIA and FBI recently found)while leaving us devoid of generalists and multi-disciplinary artists and scientists who can "connect the dots" across these fragmented foci.2) Contrary to the prevailing wisdom about networks being equally distributed and thus largely invulnerable to catastrophic meltdown, the author does a fine job of documenting the importance of selected "hubs", so important that their removal ultimately breaks the network down into isolated pieces.

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