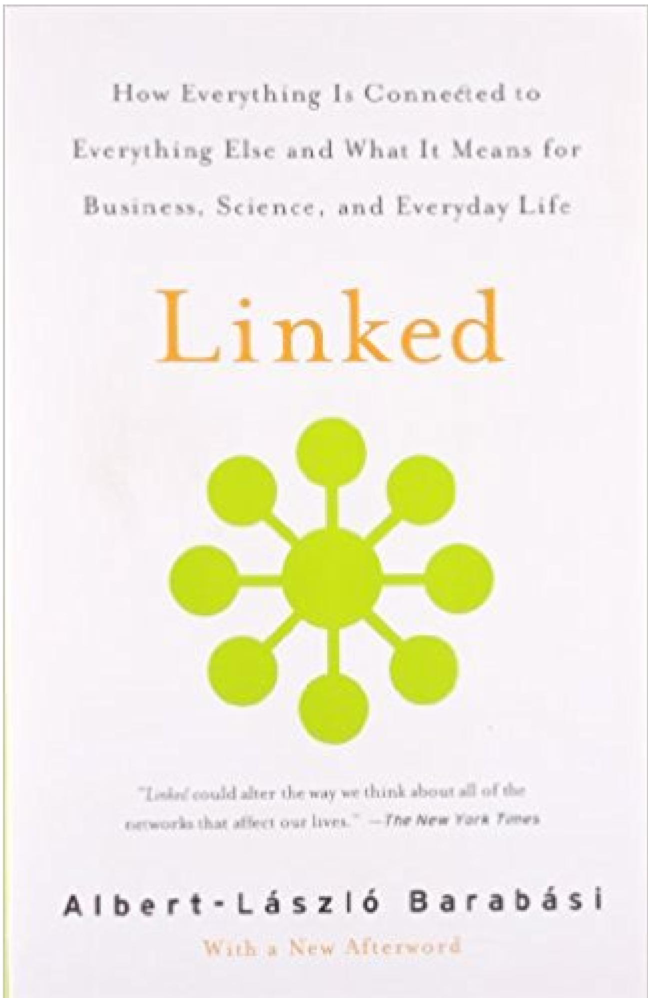
Linked: How Everything Is Connected To Everything Else And What It Means For Business, Science, And Everyday Life



Synopsis

A cocktail party? A terrorist cell? Ancient bacteria? An international conglomerate? All are networks, and all are a part of a surprising scientific revolution. Albert-LÃƒÂ¡szlÃƒÂ BarabÃƒÂ¡si, the nationÃ¢â ¬â„¢s foremost expert in the new science of networks and author of Bursts, takes us on an intellectual adventure to prove that social networks, corporations, and living organisms are more similar than previously thought. Grasping a full understanding of network science will someday allow us to design blue-chip businesses, stop the outbreak of deadly diseases, and influence the exchange of ideas and information. Just as James Gleick and the Erdos–RÃƒÂ©nyi model brought the discovery of chaos theory to the general public, Linked tells the story of the true science of the future and of experiments in statistical mechanics on the internet, all vital parts of what would eventually be called the BarabÃƒÂ¡si–Albert model. Ã Â

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Customer Reviews

"A sweeping look at a new and exciting science." Ã¢â ¬â •Donald Kennedy, Editor-in-Chief, Science Magazine "CaptivatingÃ¢â ¬Â|Linked is a playful, even exuberant romp through an exciting new field." Ã¢â ¬â •Time Out New York

Albert-LÃƒÂ¡szlÃƒÂ BarabÃƒÂ¡si is a pioneer of real-world network theory and author of the bestseller, Linked: How Everything is Connected to Everything Else and What It Means for Business, Science, and Everyday Life. At 32, he was the youngest professor to be named the Emil

T. Hofmann Professor of Physics at the University of Notre Dame and has won numerous awards for his work, including the FEBS Anniversary Prize for Systems Biology and the John von Neumann Medal for outstanding achievements. He currently lives in Boston and is Distinguished Professor and Director of the Center for Network Science at Northeastern University.

What it says is true and it is extremely informative (almost too much so) because each chapter is the same practically; and if you've studied much about networks or sociology at all, many of it is already secondary. Good book for people who want a lot of needless text.

This book is about the peculiar results obtained when the author set out to "map the internet". Just as we have maps of cities and towns it would be useful to know how to get from here to there via electronic means. One of the premises is that most people don't know that someone somewhere has produced information and published it to the internet unless your part of that "community". The author goes into detail about how new information is constantly being produced but that we can't find it unless it is connected thru "hubs" that many of us connect to in various ways (google, , etc.). These hubs provide links to other hubs that in turn lead us to other hubs. Its all about dissemination of information. Why do some videos go viral and others never even get started? They make reference to the game "6 Degrees of Kevin Bacon" to illustate how all of us are loosely connected in very short distances via particular routes. For example we all know someone that everyone knows for some reason or another. I wonder aloud how this field will boom into a science and how retailers will exploit it. I remember a line from a book about the Manhatten Project that says something to the effect that "technology itself in not inherently good or bad, its the implementation of technology that causes the distinction." You can't tell me that sharing all that information on Facebook doesn't have some negative consequences.

Very impressed with this book on how people, organizations and other things are linked. We have all heard of 6 degrees of Kevin Bacon, yet the author writes it is less than 3 degrees of Kevin Bacon. Using the internet to find the connections of networks, the studies have improved. The first study of the power of networking can go back to St Paul and the spread of Christianity. Later examples are the Air France Flight Attendant who spread AIDS, the many internet viruses and the 9/11 terrorists. Using these, how do we use our own networks? The fact is the power is actually not from our primary network, but our secondary network. The reason being is that our primary network has too much ego and history built in for much change, but the secondary network does not. While this book was written in 2002 and is probably outdated in some reagard (as much more data has obeen accumalted since), it is very fascinating and worth the read.

I agree with several other reviewers in that the book is repetitive and somewhat boring at times. The whole thing could have been condensed in way less pages. It is nonetheless a good overview and introduction of networks to people with no background. Also agree that the author raves too much about his own research and how great it was/is, but that didn’t bother me.

This book describes the emergence of an important new area of science, and it’s written by Alberto-Laszlo Barabasi, one of the pioneers and leaders in the field. The writing is clear and engaging, so the book should be fairly easy to read by general readers reasonably comfortable with science. Accommodating such a broad audience does limit the technical depth, but there’s still plenty of detail, and the book has abundant endnotes which go into further detail and also link the book with the professional literature (pun intended).The systematic presentation of the book makes it fairly easy to summarize:(1) Many systems are complex, and thus are not amenable to conventional reductionism. Instead, complex systems typically involve networks.(2) The study of networks began with "simple" graph theory, and then progressed to random networks in which most nodes have the about the same number of links.(3) Real-world networks tend to be "small worlds" in the sense that the shortest path from a given node to any other node is typically only several links. This is the case even for networks with millions or billions of nodes.(4) Rather than being entirely random, real-world networks tend to display clustering, with "weak links" between clusters. These weak links, which may be random, are the key to making these networks small worlds.(5) Small-world networks tend to have a minority of highly-linked "hub" nodes which shorten the average path between nodes. More precisely, such networks tend to have a hierarchical scale-free structure (topology) which follows a power law with an exponent of 2 to 3, such that there are many nodes with few links and progressively fewer nodes as the number of links per node increases (again, hub nodes have the most links). (By the way, the ratings of this book roughly follow a power law distribution.)(6) Scale-free structure in networks is largely the result of a preferential attachment process in which well-connected and competitively fitter nodes have a greater ability to attract further links as the network grows ("the rich get richer"). If a single node has dominant fitness, a "winner takes all" effect can occur in which the network develops a star structure rather than a scale-free structure.(7) Unlike random networks, scale-free networks are robust against even a large number of random removals of nodes. This is largely because the minority of hub nodes keeps the network connected. However, targeted removal of several hub nodes (~5% to 15%) can cause a scale-free network to collapse (loose connectivity), thus making such networks vulnerable to attack. The problem is compounded if such networks are vulnerable to cascading failures.(8) Viruses, fads, information, etc. can readily spread in scale-free networks because there is no minimum threshold which the spreading rate needs to exceed.(9) Because the links in the Web are directed, the Web doesn’t form a single homogeneous network, but rather has a fragmented structure involving four major "continents" and some "islands", and there is fragmentation within these continents as well.(10) Behavior of living cells is controlled by multiple layers of networks, including regulatory and metabolic networks. These networks typically have a scale-free structure with an average path length of about three. Across organisms, the hubs in these networks tend to be the same, but the other nodes (molecules) vary widely. This is why targeting drugs at hubs can be both effective and can have side effects (presumably, the key is to find and target hubs which are specific to disease states, if such hubs exist).(11) The economy is a network in which hub organizations tend to accumulate links as the network grows by absorbing smaller nodes through mergers and acquisitions.(12) Highly "optimized" organizations with a tight hierarchy tend to be less adaptive than networked organizations, and thus susceptible to failure.(13) Networked economies are susceptible to cascading failures, especially when the hubs become "too big to fail" (Barabasi’s warning here was of course all too accurate).(14) Real networks tend to have a hierarchically modular structure, while still being scale-free.The only significant "negative" is that this book came out in 2002/2003, whereas network science has continued to develop since then. However, Barabasi has another book (Bursts: The Hidden Pattern Behind Everything We Do) coming out in just a few weeks, which should bring us up to date, and it makes sense to read "Linked" first, so that you can start at the beginning. Very highly recommended.

Before reading this book, I didn’t know that Networks theories are with us since serveral decades. I’m almost finishing it, but I couldn’t wait to write something about the book; specially to recommend you to buy it!Barabasi work is really great. His redaction skills are as good that people without mathematics or science knowledge can understand and deeply learn Networks theory.

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