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# Emergence: The Connected Lives Of Ants, Brains, Cities, And Software



## Synopsis

In the tradition of *Being Digital* and *The Tipping Point*, Steven Johnson, acclaimed as a "cultural critic with a poet's heart" (*The Village Voice*), takes readers on an eye-opening journey through emergence theory and its applications. A NEW YORK TIMES NOTABLE BOOK, A VOICE LITERARY SUPPLEMENT TOP 25 FAVORITE BOOKS OF THE YEAR, AN ESQUIRE MAGAZINE BEST BOOK OF THE YEAR. Explaining why the whole is sometimes smarter than the sum of its parts, Johnson presents surprising examples of feedback, self-organization, and adaptive learning. How does a lively neighborhood evolve out of a disconnected group of shopkeepers, bartenders, and real estate developers? How does a media event take on a life of its own? How will new software programs create an intelligent World Wide Web? In the coming years, the power of self-organization -- coupled with the connective technology of the Internet -- will usher in a revolution every bit as significant as the introduction of electricity. Provocative and engaging, *Emergence* puts you on the front lines of this exciting upheaval in science and thought.

## Book Information

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## Customer Reviews

An individual ant, like an individual neuron, is just about as dumb as can be. Connect enough of them together properly, though, and you get spontaneous intelligence. Web pundit Steven Johnson explains what we know about this phenomenon with a rare lucidity in *Emergence: The Connected Lives of Ants, Brains, Cities, and Software*. Starting with the weird behavior of the semi-colonial organisms we call slime molds, Johnson details the development of increasingly complex and

familiar behavior among simple components: cells, insects, and software developers all find their place in greater schemes. Most game players, alas, live on something close to day-trader time, at least when they're in the middle of a game--thinking more about their next move than their next meal, and usually blissfully oblivious to the ten- or twenty-year trajectory of software development. No one wants to play with a toy that's going to be fun after a few decades of tinkering--the toys have to be engaging now, or kids will find other toys. Johnson has a knack for explaining complicated and counterintuitive ideas cleverly without stealing the scene. Though we're far from fully understanding how complex behavior manifests from simple units and rules, our awareness that such emergence is possible is guiding research across disciplines. Readers unfamiliar with the sciences of complexity will find *Emergence* an excellent starting point, while those who were chaotic before it was cool will appreciate its updates and wider scope. --Rob Lightner --This text refers to the Unknown Binding edition.

To have the highly touted editor of a highly touted Web culture organ writing about the innate smartness of interconnectivity seems like a hip, winning combination unless that journal becomes the latest dot-com casualty. Feed, of which Johnson was cofounder and editor-in-chief, recently announced it was shuttering its windows, which should make for a less exuberant launch for his second bricks-and-mortar title, following 1997's *Interface Culture*. Yet the book's premise and execution make it compelling, even without the backstory. In a paradigmatic example here, ants, without leaders or explicit laws, organize themselves into highly complex colonies that adapt to the environment as a single entity, altering size and behavior to suit conditions exhibiting a weird collective intelligence, or what has come to be called emergence. In the first two parts of the book, Johnson ranges over historical examples of such smart interconnectivity, from the silk trade in medieval Florence to the birth of the software industry and to computer programs that produce their own software offspring, or passively map the Web by "watching" a user pool. Johnson's tone is light and friendly, and he has a journalistic gift for wrapping up complex ideas with a deft line: "you don't want one of the neurons in your brain to suddenly become sentient." In the third section, which bears whiffs of '90s exuberance, Johnson weighs the impact of Web sites like Napster, eBay and Slashdot, predicting the creation of a brave, new media world in which self-organizing clusters of shared interests structure the entertainment industry. The wide scope of the book may leave some readers wanting greater detail, but it does an excellent job of putting the Web into historical and biological context, with no dot.com diminishment. (Sept. 19) Forecast: All press is good press, so the failure of Feed at least makes a compelling hook for reviews, which should be extensive. A

memoir of the author's Feed years can't be far behind, but in the meantime this should sell solidly, with a possible breakout if Johnson's media friends get behind it fully. Copyright 2001 Cahners Business Information, Inc. --This text refers to the Unknown Binding edition.

Steve is a pop writer and never spends the time to dig deep into his subject matter. The latter half of the book completely falls apart into blather. At some points, one gets the impression that ALL events that are not conducted by a "centralized, Stalinist leader" (he uses Stalin way too much) somehow qualify them as 'emergent.' So, there is no conceptual clarity about what IS and what IS NOT emergence. Just vagueness and no rigor. Melanie Mitchell on 'Complexity' is way better (though harder to read than this, but hey, it is a complex subject matter, so it SHOULD be harder than Steve's book!!!).

An interesting look at the new discipline of Complexity science, and a subtle jab at the idea of reductionism as the only way to understand the universe. Johnson, a columnist for Discover, looks at the phenomenon of Emergence as it takes new forms. Starting from the idea of slime molds and ant colonies, both of which are collectives made up of not particularly "intelligent" individual parts that do pretty amazing things as a collective, to brain cells (again not particularly amazing on their own), to computer software that gains complexity as time goes on. Emergence is a complicated subject that covers a verity of phenomena, but is about how things go from simple to complex, and pick up new qualities as they do so. This runs counter to the normal way that science tends to do things, namely to reduce things to the smallest units to understand a thing. Emergence is noted for having a "downwardly causative" affect upon the individual parts that is not particularly predictable by looking at the parts. That is in part why it can be a confusing book: it seems to jump from topic to topic, all the while it is talking about a phenomenon that cuts across all sorts of disciplines and can be seen in many different places. It also, as I noted, works in a way that runs counter to the general dogmatic proposition of reductionist thought that dominates analytic philosophy and science. This leads many to reject the concept out of hand as being "unscientific" or "unfocused." However, it is a real thing, that can be seen in slime mold movements and the development of urban areas. The book points to how it can be harnessed and tapped in order to build a, potentially, better future.

The publishing industry continues to fuel the growth of popular science with titles like Emergence. I'm all for the growth of science titles, but the price comes at the increase in the number of watered-down, easy-to-digest material you'll find in bookstores. With the explosion in books written

on the topic of complex adaptive systems, I found it difficult to choose a single book in the category. With little restraint, I dove in. *Emergence* is a light, easy read devoted to describing systems that demonstrate adaptive behavior. The author spends significant time on contemporary systems such as the news media, the worldwide web, and large urban areas. On more than one occasion, the author appears to be reaching to make a conclusion. It's difficult to say whether he hadn't done the research or wanted the reader to draw his/her own conclusion. Nonetheless, Steven Johnson paints an abstract picture of systems that demonstrate a larger, collective set of smarts. Like most abstract art, some people will be inspired and others won't. I found the writing and subject matter interesting enough to keep my curiosity fueled to pick up another book on complex systems. If you approach *Emergence* with a mind-set of getting more art than science, you're less likely to be let down.

An excellent read - I first read it 10+ years ago, but lent my copy out (terminally, it appears) and have been missing it ever since. Picked up the digital copy for my Kindle and have found it just as interesting now as it was the first time around.

As per the previous reviews the book is an exuberant romp through a fascinating field of theory. The first half of the book is wonderful and will get you thinking about things differently (unless you are already well read in the area -- which I am not). The anecdotes regarding ants and cities are great introductory material but I found myself wanting the writer to go a little deeper. Chapters 5 and 6 are a little weak and find the author waxing excitedly about a variety of disconnected threads. The closing section of the book is an interesting attempt to extrapolate current trends into the future -- mostly dwelling on music, film, broadband etc. The futurism would have been more satisfying if it had touched more on other areas of life, medical, manufacturing, but that would have required a far greater leap. Overall, a fun book and a very quick read!

Very interesting and well written book. The author is pretty constantly pushing the idea that understanding emergence and writing emergent software are the be-all end-all solutions to everything. As a software engineer, I can assure you this is not the truth. In fact, "the 5 rules of emergence" need to be carefully and critically digested. I understand that an author in this type of publication needs to choose a strong thesis and defend it well, but please, take the ideas in this book in with a critical eye.

I found this book through a Public Radio broadcast of "Radio Lab" that was focusing on the

emergence of life in a variety of forms. Steve Johnson tells a compelling story, and for someone like myself who is not of a scientific mind, you are able to grasp what a surprising and powerful force life really is.

I read Tipping Point and Emergence within a month. This book had several dated chapters. Especially the video game portion. The chapters on ants and primates worked better for me.

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