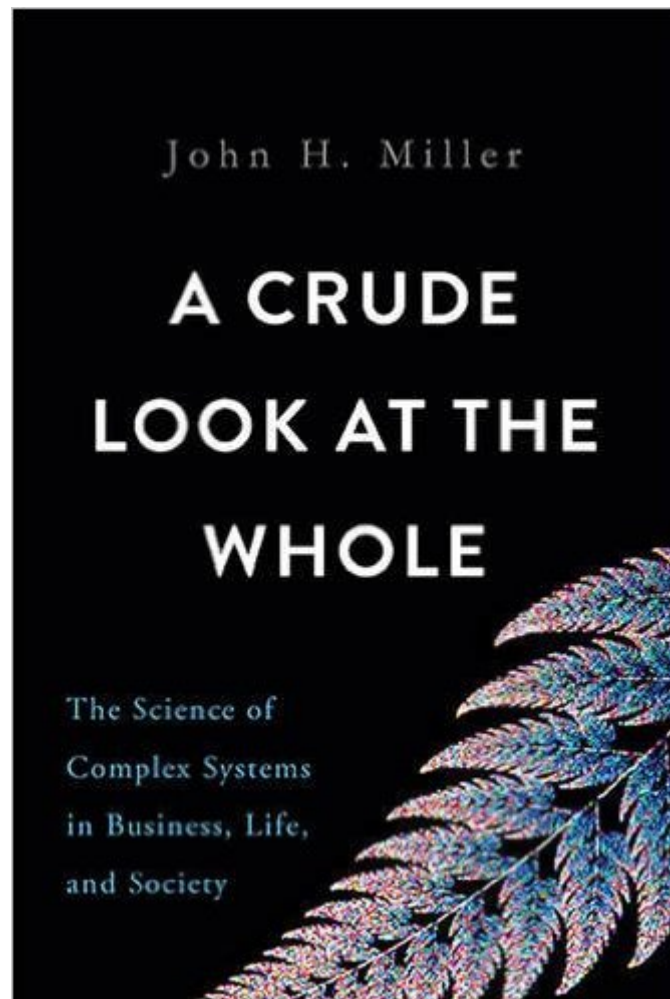


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A Crude Look At The Whole: The Science Of Complex Systems In Business, Life, And Society



Synopsis

Imagine trying to understand a stained glass window by breaking it into pieces and examining it one shard at a time. While you could probably learn a lot about each piece, you would have no idea about what the entire picture looks like. This is reductionism—the idea that to understand the world we only need to study its pieces—and it is how most social scientists approach their work. In *A Crude Look at the Whole*, social scientist and economist John H. Miller shows why we need to start looking at whole pictures. For one thing, whether we are talking about stock markets, computer networks, or biological organisms, individual parts only make sense when we remember that they are part of larger wholes. And perhaps more importantly, those wholes can take on behaviors that are strikingly different from that of their pieces. Miller, a leading expert in the computational study of complex adaptive systems, reveals astounding global patterns linking the organization of otherwise radically different structures: It might seem crude, but a beehive's temperature control system can help predict market fluctuations and a mammal's heartbeat can help us understand the "heartbeat" of a city and adapt urban planning accordingly. From enduring racial segregation to sudden stock market disasters, once we start drawing links between complex systems, we can start solving what otherwise might be totally intractable problems. Thanks to this revolutionary perspective, we can finally transcend the limits of reductionism and discover crucial new ideas. Scientifically founded and beautifully written, *A Crude Look at the Whole* is a powerful exploration of the challenges that we face as a society. As it reveals, taking the crude look might be the only way to truly see.

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Customer Reviews

A few years ago Stephen Hawking was asked what the most important science in the 21st century would be, and he instantly replied "the science of complexity". Hawking is right. The last five hundred years have seen an amazing explosion of progress in most of the traditional sciences: physics, biology, chemistry, mathematics, astronomy and others. But what is lacking is an understanding of how one science builds on top of another and leads to the universe we live in. Many of the most urgent problems confronting us - the brain, financial markets, healthcare, climate change, terrorism, the large-scale structure of the universe - involve probing connections between various phenomena rather than the phenomena themselves. This understanding of interconnections between various sciences leads to the science of complexity. John Miller's book tackles complexity in its broadest sense by considering a dazzling variety of complex systems, from neurons to honeybees, from irrigation canals in Bali to stock markets, from drug cocktails to manicured lawns in suburbs. His idea is to devote each one of the chapters in the book to a few examples which taken together illustrate a central feature of complex systems. Thus, the various chapters deal with hallmarks of complexity such as feedback, network effects, self-organized criticality, noise, scaling laws and cooperation. None of these qualities are independent of each other, each one builds on top of the other. The title of the book - "a crude look at the whole" - is actually a quote from the physicist Murray Gell-Mann and it very accurately describes how we need to deal with complex systems. We do need to take a look at the whole, but this look also cannot be too fine-grained; it needs to be pointillistic and crude.

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