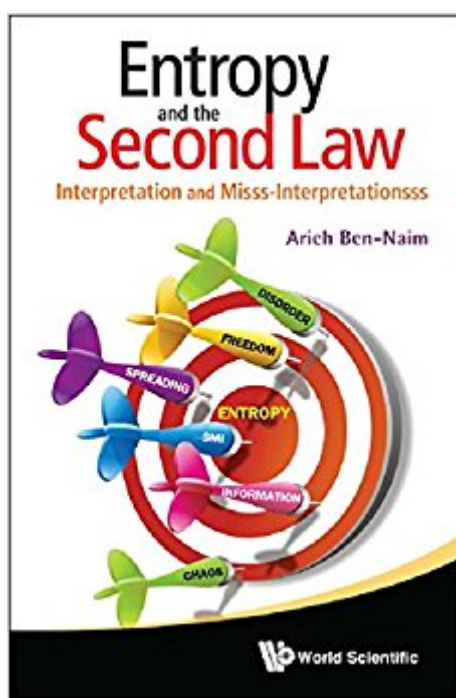




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# Entropy And The Second Law: Interpretation And Misinterpretationss



## Synopsis

This book presents a clear and readable description of one of the most mysterious concepts of physics: Entropy. It contains a self-learning kit that guides the reader in understanding the concepts of entropy. In the first part, the reader is asked to play the familiar twenty-Question game. Once the reader feels comfortable with playing this game and acquires proficiency in playing the game effectively (intelligently), he or she will be able to capture the elusive and used-to-be mysterious concept of entropy. There will be no more speculative or arbitrary interpretations, nor "older" or "modern" views of entropy. This book will guide readers in choosing their own interpretation of entropy. Readership: Undergraduate and graduate students in chemistry and physics, academics and lay persons.

## Book Information

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## Customer Reviews

"Ben-Naim does a thorough job in making the SMI a familiar and intuitive quantity. He presents his case in a very readable examination of entropy's multifaceted nature." -- Chemistry World

This book presents a clear and readable description of one of the most mysterious concepts of physics: Entropy. It contains a self-learning kit that guides the reader in understanding the concepts of entropy. In the first part, the reader is asked to play the familiar twenty-Question game. Once the reader feels comfortable with playing this game and acquires proficiency in playing the game effectively (intelligently), he or she will be able to capture the elusive and used-to-be mysterious concept of entropy. There will be no more speculative or arbitrary interpretations, nor "older" or

"modern" views of entropy. This book will guide readers in choosing their own interpretation of entropy.

This book is Dedicated on its initial page and then Preface to a rebuke of "an anonymous reviewer" whose critique of his journal article and his book on the best way to explain Entropy the author didn't like. Unfortunately, it continues as a screed against that reviewer and all others who disagree with his approach, with snarky asides throughout that get really, really tiring. I find it odd that no reviewer here to date other than Braithwaite mentions this off-putting weakness in presenting otherwise useful perspectives. About a quarter way through, you want to scream "Just Get Over It!" and throw the book away (I almost did), but if you can tolerate the pissing-contest remarks and make it past that point, he winds down the language on how stupid everyone is who disagrees with him, and his interpretations on Entropy are worthwhile food for thought, whether you agree with him or feel they are conclusive or not.

Very interesting approach to entropy with an analysis and conclusion I have never seen before. I am not on the level to really evaluate what he says but his analysis was novel and convincing to the degree I followed it. I think those interested in the subject this book is a must. Bob Schafer

I was getting ready to order Arie Ben-Naim's 2008 book, "Entropy Demystified", in order to prepare for a lifetime-learning class on the physics of time when I saw he had a newer book out. It sounded like it addressed issues raised by earlier works so it made sense to get his most current thoughts on the subject. I'm glad I did. I loved "Entropy and the Second Law". It's a fascinating set of topics that are covered in an enlightening and concise way for me. The organization of the book is nice and tight. In only five chapters author Ben-Naim develops his case for abandoning many imprecise descriptions of entropy (disorder, spreading, and freedom) and adopting Shannon's Measure of Information for scientific purposes. Using examples of thermodynamic processes, Ben-Naim shows how these commonly used terms mislead, or are inapplicable, and in any case fail to provide calculable results. Shannon's own words describing the result of his equation included information, choice and uncertainty. Although Shannon was developing a theory of communication, his results apply perfectly to thermodynamics too. (Wigner, where are you?) The math in the book requires some time to digest. How many of us remember how to use Lagrange multipliers to find a max/min with constraints after forty or more years of disuse? Also some derivations are sketchy and the reader is often referred to Ben-Naim's 2008 book which I don't have yet. I found it useful to have a

couple of undergraduate books on statistical thermodynamics such as Reif or M $\ddot{u}$ ller-Kirsten. The author interacts with the reader via numerous questions and thought experiments to attain your own unique opinion on how to interpret entropy. Among the surprising things I learned, I especially liked the process of assimilation of an ideal gas and its affect on entropy. I don't remember ever seeing that one. I hope there is a second edition of this book that can discuss some different points of view like Sean Carroll's assertion that time's arrow is only explicable with the "Past Hypothesis" which he presents in his book "From Eternity to Here". Another related area that would be nice to touch on is black hole entropy as discussed in Leonard Susskind's book, "Black Hole Wars". Black holes account for most of the entropy in the current universe and there are some mysterious aspects to information disappearing into a black hole. Landauer and Bennett's analysis of Maxwell's Demon warrants at least a comment. The book's value would be enhanced by a much expanded index.

Arieh Ben-Naim has been explaining entropy for decades it seems. Here is does it again, and very well.

When I graduated with a B.S. in Chemical Engineering, I understood how to use the concept of entropy to solve certain problems, especially those pertaining to phase and reaction equilibria, but I never really understood what the concept itself was all about. It was simply a mathematical tool to me. And this frustrated me because I believed the concept to be understandable but simply hadn't been presented to me in such a way to make it so. Since then, I realized that it wasn't as easy as this, that the confusion around entropy is deep, primarily due to the historical timeline of its evolution, with Clausius establishing it as a key cornerstone of Classical Thermodynamics before the atomic theory of matter had been firmly established and accepted. So the cart came before the horse, so to speak. And here we are over 150 years later still wrestling with the consequences of this situation. Thank goodness someone of Arieh Ben-Naim's curiosity and playful intelligence came along to clarify things for us. In this book, and others that he's written on the subject, Ben-Naim explores and clarifies the most fundamental aspects of entropy using fun and colorful examples together with sound logic and insight. This book is a delight to read, which says much because it's not often that one can make such a claim about a book on entropy! Bob Hanlon Philadelphia

Very interesting presentation of well known concepts. Book in very good condition.

Great book

Awesome book.

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