

and a fair amount of *why*, but *how* it happens remains pretty much a mystery. This is a different kind of understanding from what we got in freshman physics; it isn't quantitative model building and quantitative model testing so much as it is deductive and based on empirical analysis of large information data bases. That seems to be what Loewenstein is saying: the mere fact that information is lost is sufficient to explain what happens; don't bother me with the details. Who knows! Maybe this is the best way to approach biological complexity, but I hope not.

In the end I think such an approach must fail. Lord Kelvin said that when you could put a number on a quantity than you really had some understanding. Handwaving about information theory and demons without a quantitative model to test must lead to a dead end. This became clear to me by the end of this book, when the subject arose of how the human mind works. I was shocked to find that an uncritical discussion of the quantum-coherence-in-the-mind nonsense of Hans Froehlich played a central role in the discussion. Any basic analysis of wavefunctions, correlation lengths and coherence times instantly destroys this model, but of course if your science has no numbers, there is no test of models.

This book is an amusing read and it will send you running to John Pierce's excellent *An Introduction to Information Theory* (Dover, 1980) to try and figure out if you really have been missing something in your understanding of statistical mechanics, but I just can't take it seriously. Long live freshman physics! When we can explain things at the freshman-physics level, with real numbers, we truly understand things.

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