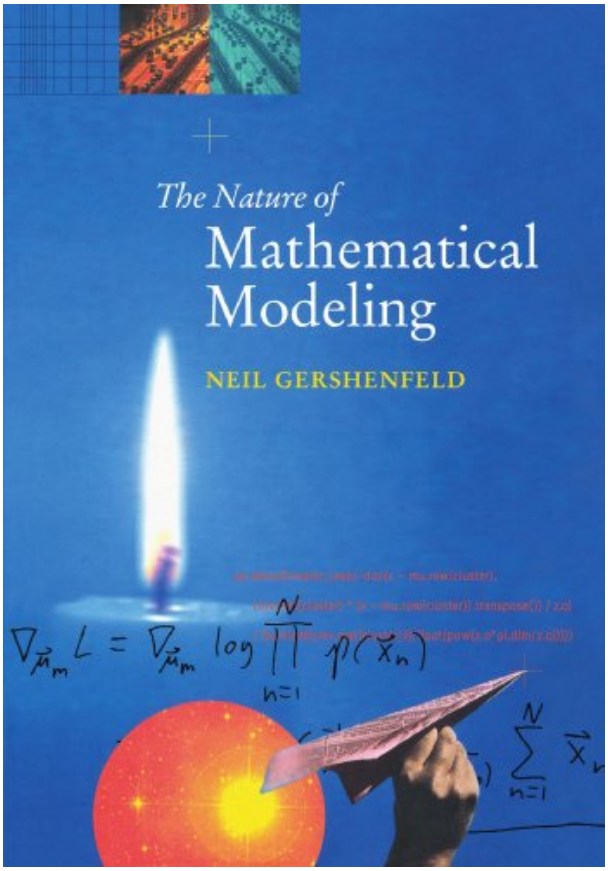
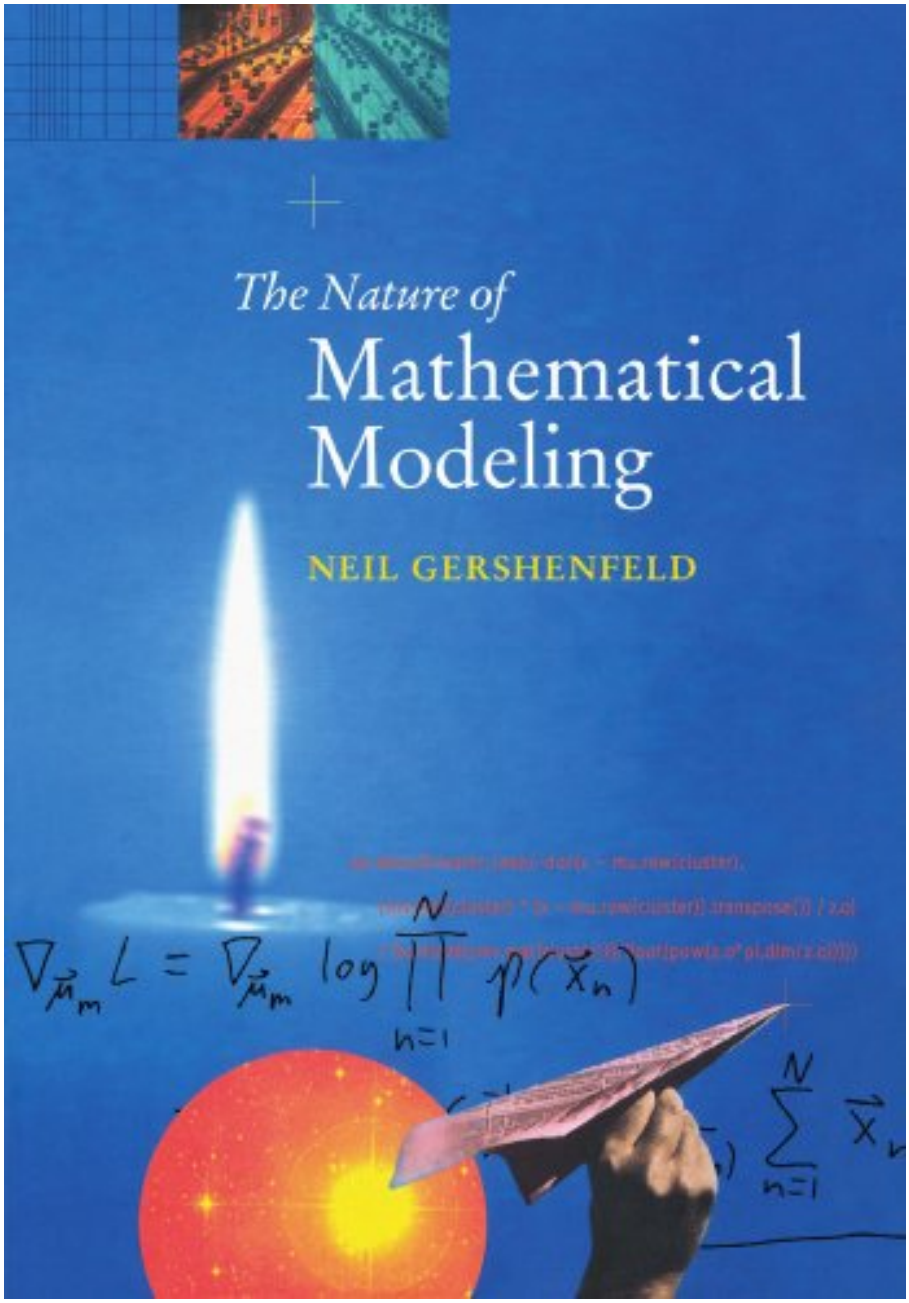
THE NATURE OF MATHEMATICAL MODELING BY NEIL GERSHENFELD





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Review
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This book first covers exact and approximate analytical techniques (ordinary differential and difference equations, partial differential equations, variational principles, stochastic processes); numerical methods (finite differences for ODE's and PDE's, finite elements, cellular automata); model inference based on observations (function fitting, data transforms, network architectures, search techniques, density estimation); as well as the special role of time in modeling (filtering and state estimation, hidden Markov processes, linear and nonlinear time series). Each of the topics in the book would be the worthy subject of a dedicated text, but only by presenting the material in this way is it possible to make so much material accessible to so many people. Each chapter presents a concise summary of the core results in an area, providing an orientation to what they can (and cannot) do, enough background to use them to solve typical problems, and pointers to access the literature for particular applications.

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14 of 15 people found the following review helpful.
Good Book, But Beware of the Reissue Edition
By Romann M. Weber
Please note that this review pertains only to the paperback "reissue edition" and not the 1999 hardcover. The

content of the book itself, which deserves its own review, is excellent. I am truly impressed at how much material and insight Gershenfeld has collected in a single slim volume.

When I saw that the book was being reissued as a less-expensive paperback, I assumed that it would have a few minor corrections and a soft cover. Even if it didn't have any corrections (and it appears not to), I'd have been satisfied.

However, the reissue I received, bought as new directly from Amazon, is clearly a print-on-demand (POD) book (indeed, this one was printed in Lexington, KY, the day I ordered it). POD is not always a bad thing, but in this case, images and equations (and sometimes the text itself), all of which look great in the original hardcover edition, have become grainy and look as though they have been printed from a compressed image-based (i.e., scanned) source as opposed to the original files. The effect is more pronounced on some pages than on others, but even a random flipping-through finds plenty of examples.

My book was also damaged during shipment, so the decision to return it was effectively made for me. Had it not been, though, the decision would have been a bit tougher. It's the right book, and a good book, but I can't get over how much it looks like a bootleg. If that doesn't bother you, go for it; it is a good book to have on your shelf. Otherwise, if you're trying to save some money on this title, try to find a used hardcover that's in decent shape.

1 of 1 people found the following review helpful.
OK for a read on a long journey
By Martin A
I bought the book (hard copy form) in a second hand bookshop while on holiday in Ireland. It is well printed on good quality paper and my copy is noted as 'reprinted 2003'.

I have several criticisms:

- It is mistitled. It does not discuss "the *nature* of mathematical modeling" of physical systems. It does give a brief review of numerous mathematical techniques relevant in mathematical modeling of physical systems. It also discusses a few relevant aspects of computer programming.

- The coverage of any individual topic is superficial, covering only a few pages. If you already know about a topic, what the author says makes sense. But if it's new to you, you'll probably only get a general impression of what the topic is all about.

- The book does not touch on large areas of significance in mathematical modeling. For example, although the first page asks "How would you describe ... Highway traffic during a rush hour?", queuing theory and the mathematical analysis of discrete event systems do not seem to be mentioned.

But having said all that, I felt I had my money's worth and enjoyed reading it on a long ferry trip and being reminded of mathematical methods that I had used years ago - a bit of nostalgia.

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