(Even in one as short as that given, Ehrlich should have included the Morrisons' book *Powers of Ten*, (Freeman, 1991) based on the fabulous Eames film of the same name.)

The essays are mostly successful. The book should be in the library of any teacher offering a course for non-science majors. It would make a nice gift to a curious person of any age.

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Dynamics: Numerical Explorations

Helena E. Nusse and
James A. Yorke
Springer-Verlag, New York, 1994.
484 pp. $79.00 hc
ISBN 0-387-94254-8

If you learn by example, this is the dynamics book for you. But beware, because *Dynamics: Numerical Explorations* and its accompanying software are addictive. Before you get to the end of the book you may succumb to the allure of dynamical systems. This happened to me several years ago, and I've been working in the field ever since.

Yorke, more than anyone else, understands the importance of a graphical intuition about dynamical systems, and for several years he has circulated his graphics-based software program with the intent of conveying the beauty and intricacies of nonlinear dynamics. Now he and coauthor Helena E. Nusse present the most current investigative tools of nonlinear dynamical systems in a beautifully illustrated book that includes the Dynamics software package.

Tools such as dimensions, Lyapunov exponents, bifurcation diagrams, basins of attraction, straddle trajectories, unstable and stable manifolds and unstable periodic orbits are presented in numerous hands-on examples. All of these tools can be put to use on an extensive list of nonlinear differential equations and maps, including the Henon, cubic, logistic, tent and Ikeda maps and the forced damped pendulum, Lorentz, Lotka–Volterra and Duffing differential equations. The authors also provide excellent instructions, enabling the readers to add their own favorite dynamical systems to the program. This makes Dynamics an excellent research tool, because the included tools and techniques are state of the art.

This is not a conventional textbook. Think of it as an exploratorium of nonlinear dynamics and chaos. Consequently it would serve as an excellent companion volume to a textbook on dynamical systems (such as the excellent *Nonlinear Dynamics and Chaos: with Applications to Physics, Biology, Chemistry, and Engineering* by Steven H. Strogatz (Addison-Wesley, 1994) or as a stand-alone text for a dynamical systems computer lab (all source code in C is provided).

The accompanying Dynamics program runs under the MS-DOS and UNIX operating systems. I found the MS-DOS installation to be quite straightforward. For the UNIX installation I shamelessly procured the help of Hank Roark, a UNIX-savvy undergraduate. He installed the program on several unsuspecting workstations with equal ease.

Lest you think I am in the pay of the authors, I should offer a few critical comments. First, a Macintosh version of the software would be nice. Also, the user interface for Dynamics, while easy to use, looks a bit dated compared to more current Windows-based interfaces. Paradoxically this may also be Dynamics's strength, as the hardware requirements to support the interface are quite modest (PC and VGA graphics) and the source code is very readable. Indeed the authors encourage the use of their excellent routines in the user's own programs (with proper citation of course).

With all the books on chaos and nonlinear dynamics appearing these days, one has to show some discrimination in what to read. I can recommend *Dynamics: Numerical Explorations* as high on the list of required reading for those who are interested not just in reading about but in exploring dynamical systems. But be forewarned: You might be seduced by the beauty of dynamics before you know it.

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A Friendly Guide to Wavelets

Gerald Kaiser
Birkhäuser, Boston, 1994. 300 pp.
$34.50 hc ISBN 0-8176-3711-7

Wavelet transforms have been finding widespread acceptance over the past 10 years, with contributions coming from the mathematics, physics and engineering communities. Wavelets may be thought of as atomic functions that are localized in both time and frequency and whose dilates and translates span some Hilbert space of interest. The field is much richer than one might expect upon casual ob-