Editorial: Coverage of Complex Systems

During the past decade physicists have increasingly been turning their attention to the study of the dynamical systems which are inherently nonlinear and complex, and which may be either nonadaptive or adaptive. Examples of the former are turbulence in fluid flow, chemical reactions that display complex spatial patterns and temporal oscillations, and pattern formation in crystal growth, while examples of adaptive systems, which may be either artificial or living, include neural networks, machine intelligence, and all of biology. Theoretical physicists have used both spin glasses and cellular automata to model the behavior of both types of complex systems.

The alert reader of this journal will have noted an increase in the number of articles in *Reviews of Modern Physics* that deal with these topics. To cite a few titles:

Statistical mechanics of cellular automata
Ultrametricity for physicists
Ergodic theory of chaos and strange attractors
Spin glasses: Experimental facts, theoretical concepts, and open questions
Viscous flows in two dimensions
Turbulent solutions of the equations of fluid motion
Physics of climate
Roads to turbulence in dissipative dynamical systems
Strange attractors and chaotic motions of dynamical systems

It seems therefore timely to recognize the keen interest of so many physicists in nonlinear science and complex adaptive systems, by appointing an associate editor of this journal to solicit and review articles in this area which would enable the physicist working in other fields to keep abreast of recent developments. Gérard Toulouse, of the Ecole Normale Supérieure, Paris, who has been a major contributor to the study of complexity from the physicist's perspective, has agreed to undertake that responsibility, and it gives me great pleasure to welcome him as a member of our Board of Editors.

David Pines
Editor

