

Preface and acknowledgments

This book has had a very long gestation. The senior author (R.U.A.) has spent much of his time during the last 40 years or more – amidst numerous distractions – trying to understand the fundamental relationship between technology and economics. Some of that history is recapitulated in the book. However, the author’s learning experience during a year at Resources for the Future, Inc. (RFF) during 1967–8 was crucial. In particular, it was a line of research initiated by Allen V. Kneese at RFF that has led us finally to this point. It was during that period that the senior author began to see that the economy is truly a physical system that converts raw materials into goods and services, subject to the laws of thermodynamics. It has taken most of the rest of the time since 1968 to understand how and why our conceptualization is inconsistent with standard neoclassical economic theory. Enlightenment has been very slow in coming, and even now it would be foolish to claim ‘Eureka!’ But since the two of us joined forces in 2001, we have made some progress – enough, we think, to warrant publication of some results.

During the past decade we have received valuable intellectual stimulation from discussions with a number of persons deserving special thanks, including (in alphabetical order) Kenneth Arrow, Christian Azar, Jeroen van den Bergh, Jonathan Cave, Paul David, Nina Eisenmenger, Karl-Erik Erickson, Marina Fischer-Kowalski, Arnulf Gruebler, Andrey Krasovskii, Reiner Kuemmel, Katalin Martinàs, Nebojsa Nakicenovic, Shunsuke Mori, Adam Rose, Warren Sanderson, Heinz Schandl, Leo Schrattenholzer, Gerry Silverberg, David Simpson, Alexander Tarasyev, David Toman, Chihiro Watanabe and Eric Williams. None of them is responsible for any errors or misunderstandings on our part.

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Chapter 9 is partly the work of Jie Li, a Ph.D. student at Princeton, who was a member of the Young Scientists Summer Program at IIASA, in 2005. It was she who (under the direction of Robert Ayres) carried out the statistical analysis in the published paper that finally resulted (Li and Ayres 2007) and which is the basis for the results presented in this book.

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