lated consumers seek a “sublime” state behind the steering wheel. The chapter on the Titanic uses this tragedy as an example of the hidden hubris of technologists. In his chapter on flight, Bailey insists that the history of aviation and aeronautics has a barely hidden spiritual subtext. A chapter on robotics, or “the Pinocchio Project,” points to the millennialism dreams rampant in the artificial intelligence and robotics community.

Throughout, Bailey is prescriptive. He bases his position on phenomenologists such as Husserl and Heidegger who rejected the simple subject–object dualism and proposed a return to the notion of Being. He also cites Gregory Bateson, Morris Berman, and other thinkers influenced by environmentalism. Bailey’s effort to define “deep technology” overlaps with countercultural and environmentalist critiques of materialism. He strains to avoid pop jargon—rarely, for example, resorting to the word “holistic”—yet urges much the same program. Although he makes vague mention of international organizations and self-imposed ethical codes growing from within the technological communities, his prescription falls into the realm of the therapeutic as he argues that it is up to individuals to see and experience the world in its greater complexity, without the blinders of guiding enchantments.

*The Enchantments of Technology* is a useful synthesis of philosophy, religious studies, and history. Undergraduate engineering and science students, who might indeed have their eyes opened to the realm of hidden enchantments that Bailey unveils, would be ideal readers.

**FRED NADIS**

Dr. Nadis is the author of *Wonder Shows: Performing Science, Magic, and Religion in America*, which was reviewed in the July 2006 issue of *Technology and Culture*. He holds a Ph.D. in American studies from the University of Texas at Austin and teaches history at California State University, Channel Islands.

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**Technology, Institutions, and Economic Growth.**


What do historians and sociologists of technology have to talk about with economists? What common questions aren’t we asking, and what enlightening information aren’t we trading? These are not the central questions in the latest book by Richard Nelson, prominent economist and professor of international and public affairs at Columbia University. But they are questions that the readers of *Technology and Culture* should ask, and questions that clearly exercise Nelson much more than most economists.

Nelson’s aims are focused within the discipline of economics. He seeks to push back the hegemony of neoclassical theory—and high, formal theory generally—to reintroduce some ingredients historians of technology might find blindingly obvious. As he puts it, “there is an increasing recog-
nition among economists that there are entities out there such as universi-
ties that do research that feeds into technical advance in industry, and
whose teaching programs affect the supply of scientists and engineers; gov-
ernment agencies financing certain kinds of R&D, and others setting stan-
dards; banks and banking systems; and a variety of organizations and laws
that affect labor supply and demand” (p. 33).

Really? I think Nelson is being facetious, but I also trust that he is serious
in his description of economics. Many of T&C’s readers may have suspected
as much, but it is useful to hear these things from one of the discipline’s most
important internal critics. T&C readers will surely notice that the “entities”
Nelson lists are things historians and sociologists of technology have long
studied, particularly universities, federal organizations for conducting and
funding research, and systems of technological standards. Nelson himself
recognizes this, and turns repeatedly to a handful of authors T&C readers
will recognize—Walter Vincenti, Louis Bucciarelli, Alfred Chandler, Joel
Mokyr—to paint in broad strokes a non-neoclassical picture of technologi-
cal innovation. I could complain that Nelson ignores more relevant histori-
ical studies in favor of “big picture” writers, but, plainly, his point is not to
delve into history, but to persuade his colleagues to change their ways—by,
among other things, thinking more historically and sociologically.

Thus, for non-economists, the book can be hit-or-miss. The chapters
are redacted versions of articles Nelson (and his coauthors) have published
in economics and policy journals over the past decade. Each one stands on
its own, though Nelson elegantly explains how they are connected and
what, in toto, they build up to. Nevertheless, I suspect T&C readers will pick
and choose from the menu. Historians of development and/or of the
microelectronics industry in Asia, for instance, will find “The Asian Miracle
and Modern Growth Theory” a useful introduction to how economists and
policy makers talk about technology transfer and economic growth. Like-
wise, institutional historians and sociologists can use “Making Sense of
Institutions as a Factor Shaping Economic Performance” as a dictionary to
translate their understandings of technology and organizations into “eco-
nomics.” And epistemologically inclined readers can debate Nelson’s dis-
cussions of “know-how” and “evolutionary” growth and innovation in
chapters 3, 4, and 6.

There are points on which T&C readers will demand more of Nelson. I
found his disaggregation of “physical” and “social” technologies convenient
for bookkeeping but intellectually unconvincing. Likewise, Nelson’s de-
scription of social constructivism and its challenge to objective measures of
 technological progress is overly dismissive and strangely at odds with his
championing of evolutionary theory as a model. And his evocation of how
basic and applied research contribute to innovation and economic growth
is vague and somewhat dated—clearly an area where recent historical re-
search could contribute to his theory.
In sum, the book begins and ends well: Nelson’s account of growth theory and his disputes with neoclassical economics provide an excellent reference point for historians seeking inroads into economics, and his final chapters championing mixed markets are among the best arguments I have read against the current fever for deregulation, privatization, and market primacy. The book’s interior, however, left me dissatisfied, as it may many T& C readers. It is a useful kind of dissatisfaction, though, for which we should credit Nelson; he calls attention to (but also sometimes exemplifies) the lack of communication among economists and historians and sociologists of technology. If we are serious about overcoming that gap, this is the kind of book we should be reading.

CYRUS C. M. MODY

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Resources under Regimes: Technology, Environment, and the State.


Resources under Regimes is a provocative meditation on the technological and environmental implications of the modern state. By synthesizing a diverse body of scholarship (including some of his own) into a short, accessible volume, Paul Josephson encourages us to ponder a big question: Why do certain regimes act more responsibly toward the environment than others? Josephson frames his ambitious discussion in terms of three main regime-types: pluralist, authoritarian, and postcolonial. He argues that although all three have damaged the environment, pluralist regimes have done the least harm because they foster the development of legal, scientific, and activist institutions that are responsive to environmental concerns. In short, while pluralist states are strong enough to legislate, regulate, and sponsor environmental research, they are not so strong that they prevent their citizens from mobilizing behind environmental issues. In contrast, authoritarian regimes are so strong that they undermine the development of democratic institutions and thus face less citizen resistance in initiating environmentally destructive megaprojects, while postcolonial regimes are so weak that they are unable to enact effective conservation laws, regulate polluters, or promote adequate scientific research aimed at sustainable development.

Josephson is at his best in contrasting authoritarian and pluralist regimes. Without minimizing the environmental damage wrought by the “geoengineering projects” of pluralist states, he shows that the larger scale and greater momentum of similar projects in the Soviet Union and China have been far more environmentally and socially destructive. While the