Book Review

Westrum, Ron. (1991). *Technologies & society: The shaping of people and things*. Belmont, CA: Wadsworth Publishing Company, $24.50 (paperback), 394 pp. (ISBN 0-534-13644-3)

Reviewed by Alan C. Finlayson

Technology educators and university students will find no better general introduction to the broader social issues and contexts of technology than this new book. What seems to be an acceleration in the rate of catastrophic failures of technological systems (Chernobyl, Bhopal, Challenger, and Three Mile Island to name but a few) has made the need for such a text all the more urgent. Westrum's general thesis is that the pace of technological change is more rapid than is the transformation of covalent social structures and institutions: "We have third generation machines [but] first generation minds." [p.5]

This work gives us a superb "grand tour" of a crucially important field that is simply not available elsewhere. There are, to be sure, many excellent but more specialized articles and books in the emerging field of the sociology of science and technology and the interested reader is guided to them by Westrum's extensive annotations and references.

Westrum's work is a fine example of applied scholarship. The text is a generalized tool for teaching and learning about the complexities and subtleties of the interactive relationships between technology and society. Westrum's writing is open and inviting and the ideas accessible precisely because the author has rigorously purged his work of the "priestly language" which is, unfortunately, the taken-for-granted hallmark of "serious scholarship."

Not only is this an excellent text for academic application, it could also be very usefully read and effectively employed by practicing engineers and managers of technologically intensive businesses and organizations. People in roles as diverse as military command and hospital administration could use the insights and broadly-drawn data from this book to improve their understanding and use of technologies.

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The book opens with a review of the history of our understanding of the relationships between culture, social organization, and technology. This ranges from Marx's emphasis on the inherent political content of technologies to the autonomous and deterministic theory of technology propounded by William F. Ogburn in the early 1920's to the presently growing influence of the view that technologies are "socially constructed." Westrum's own treatment is an even-handed and sustained synthesis of all of these more radical and uncompromising perspectives.

> This book is about the mutual shaping of people and things. It explores the interaction of people and technology in a changing society. It examines the social relations between people and milk bottles, parking meters, nuclear power plants, and many other technologies. It explores how people and technologies shape each other... [p.5]

The work is so well organized and transparently written that it is easy to overlook the fact that Westrum has accomplished one of the most difficult tasks in analytical sociology. His exegesis of the social/technical nexus weaves seamlessly through all levels of social organization and does so from multiple perspectives. A historical review of the role of innovative individuals flows into a discussion of how varying social structures and cultural environments influence the rate and direction of technological development. One chapter opens with a micro-study of the small firm that developed liquid hand soap, segues into an expanding analysis of the triangular dynamics of technology, corporate organization, and markets, moves on to examine the causes and con-ditions of social resistance to technologies, and closes with a look at the evo-lution of technological niches. Similar deft and thoughtful treatment is given to the interactive relationships with technology of our political, regulatory, and educational institutions.

Applied in its intended context this text will be a extremely useful and effective piece of work. Westrum's target audience is undergraduate students majoring in technological fields such as engineering and students who plan to concentrate on social studies of science and technology. It should also be a required text in courses that prepare technology educators for the nation's K-12 schools. Ideally, the course should be taught by a person well-versed in the sociology of science and technology. Like the best of such books, Westrum's work is thought-provoking and will surely give rise to questions that are not directly answered in the text.

However, it would be a pity if the readership of this superb and thought-provoking work was bounded by the walls of the academy. We live in a thoroughly and relentlessly technological world of our own construction. Every aspect of our lives is in some way dependent upon and affected by technology. The clothes we wear, the housing that shelters us, the work we do, the food we eat, even the air we breathe reflect our socially mediated technological choices. Anyone who's life and work intersects with technology--inventors, developers, designers, entrepreneurs, stylists, marketers,

regulators, sponsors, opponents, competitors, users, and consumers of technology--could profit from an open-minded reading of Westrum's work. °