https://doi.org/10.21061/jte.v6i2.a.6

Book Reviews

Mitcham, Carl. (1994). *Thinking through Technology*. Chicago: The University of Chicago Press, $17.95, (paperback), 397 pp. (ISBN 0-664-25203-60)

Reviewed by Richard A. Deitrich

Thinking through Technology is designed ". . . to be a critical introduction to the philosophy of technology." The author is a past president of the Society for Philosophy and Tech- nology (l98l-l983), present general editor of the serial publication, Research in Philosophy and Technology, and Director of the Science, Technology and Society Program at Penn State University.

Thinking through Technology is more than an introduction, it is a comprehensive resource for the philosophy of technology movement: to this end, it is nearly encyclopedic. Part One is a history of the philosophy of technology beginning about l850; Part Two is an exhaustive analysis of issues in the field; the Epilogue is a sweeping historical look at three ways of being with technology; and the Notes, References, and Index are a wealth of information about the Philosophy of Technol- ogy movement.

The title of this book is itself indicative of the syntactic "play" used by Mitcham concerning the subject of the book, "the philosophy of technology." The word "tech- nology" can be seen as a subjective or an objective genitive in both. The title is really a gerund, "thinking-through," followed by the genitive "of technology." Thus the book title is the "thinking-through of technology," and the book subject is "the phil- osophy of technology." Therefore, these two terms are nearly identical in meaning. Both the subjective and objective genitives are intended in both terms, as will be seen in Part One.

Part One. Historical Traditions in the Philosophy of Technology

The subtitle of *Thinking through Technology* is "The Path between Engineering and Philosophy." Actually, much of Part One describes a concourse between engi- neering and the humanities. The literary concourse for this history of the philosophy of technology field connects its two traditional discourses – the engineering phil- osophy of technology (EPT) and the humanities philosophy of technology (HPT).

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In Chapter One, Mitcham details the EPT (which uses "technology" as the subjective genitive) by beginning with the German philosopher Ernst Kapp (l808-l896) who coined the phrase "Philosophie der Technik." Next, the life and work of Russian engineer Peter Engelmeier (l855-ca. l94l) are examined; followed by that of German businessman/philosopher Friedrich Dessauer (l88l-l963). Then, Mitcham deals briefly with several non-German engineering-oriented philosophers of technology. His brevity is explained by this comment:

> Outside Germany, the term "philosophy of technology" has not until the l980s been widely used, although the positive intellectual attraction and power of the technical realm has not gone philosophically unrecognized.

Chapter Two explores the humanities philosophy of technology (HPT), which uses "technology" as the objective genitive. Mitcham details the life and work of four representatives--Lewis Mumford (l895-l988), Jose' Ortega y Gasset (l883-l955), Martin Heidegger (l889-l976), and Jacques Ellul (l9l2-l994).

There have been several attempts to reconcile EPT and HPT, and three such attempts are discussed in Chapter Three. The first occurred after World War II when the Society of German Engineers was refounded in l947. The second notable attempt is by the "pragmatic phenomenological approach" in America represented by John Dewey and Don Ihde. The third is the whole Marxist worldview, especially in its twentieth century neo-Marxist expression.

However, Mitcham forsakes reconciliation. With set-jaw determination, he builds "a brief for the primacy of humanities philosophy of technology" over its engineering counterpart.

This sets the stage for Chapters Four and Five which are, respectively, a philosophical questioning of technology, set in modernity; and, a philosophical questioning of techne, set in the classic Greek era. This de-linearization of history is somewhat problematic, but the correlation of modern technology and ancient techne are a preparation for the predominant work of the book– the thorough treatment of analytical issues in the philosophy of technology.

Part Two. Analytical Issues in the Philosophy of Technology

Chapters Six through Ten are an outstanding demonstration of the modus operandi of the humanities philosophy of technology. Having established its historical "primacy" over EPT in Part One, Mitcham establishes its effective hegemony in Chapter Six this way. He entertains engineering objectives to HPT, courts phil- osophical objections to HPT, weighs the arguments, then examines the extension of the word "technology" in modernity. The verdict: the term "technology" is so broad that only HPT can meaningfully engage it. In fact,

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scholars are, "techno-logists" when doing analytical, methodological, pragmatic, and technique-laden work in the philosophy of technology field.

Given this apologetic, the following four chapters analyze technology as object, as knowledge, as activity, and as volition. Here is water to swim in for conversant scholars, but deep for others. The notes and references, as was said, are nearly encyclopedic of the field. Also, the attempt to be thorough, even exhaustive, is evident.

For example, Chapter Seven (Types of Technology as Object) analyzes clothes and toys as technological objects, lists types of basic machines (lever, screw, wedge, etc.) and discusses biological artifacts (baked bread, engineered genes, cyborgs, etc.). We are faced with the question, "When does organic existence cross the line to artifact?" A thorough analysis of the phenomenology of artifacts follows.

Chapter Eight (Types of Technology as Knowledge) is an analytical epistemological scrutiny of technology. Piaget, Polanyi, and Kuhn are a few of the many scholars noted. The issue of scientific vis a' vis technological knowledge is explored.

Chapter Nine (Types of Technology as Activity) sets forth seven basic types of behavioral engagements of technology as activity. The Aristotelian notions of cultivation versus construction as "actions of making" are examined; and the terms "cobbling and badging" (patching and jerryrigging) are not ignored. The spectrum of activity from bricolage, to crafting, to engineering is analyzed. Also, "maintaining" (an intermediary activity between "engineering" and "using"), then "using," and lastly "work" are analyzed. "Work" is found to be both a making and a using activity.

Chapter Ten (Types of Technology as Volition) is an analytical feast of psychologies of technology. The human will to survive, to construct, to control, to freedom, to efficiency, to order, etc. speak of embracing technology as a tactic of living. Various philosophies of volition are examined as fleshed-out by Spengler, Ferre', Mumford, Jünger, Arendt, Ricoeur, and Heidegger et al.

The above final chapter is interestingly concluded by discussing the problem of technology and the weakness of the will – otherwise known as "technological incon- tinence." The eight-page conclusion is a very broad-brush recapitulation as well as a PR piece for the Society for Philosophy and Technology which was founded in l978. Eight pencil-drawn likenesses of former presidents of the Society appear on page 270, including Carl Mitcham who was president (l98l-l983).

A twenty-four page Epilogue (Three Ways of Being-with Technology) closes out the book. Although anticlimactic, it deals interestingly, though incompletely, with these three ways: ancient skepticism (Socrates, Plato, Aristotle), Enlightenment Optimism (Bacon, Kant, Hume), and Romantic Uneasiness (Wordsworth, Rousseau, Blake). Table 5 compares these three ways of being-with technology on the hori- zontal axis, while correlating them with technology as volition, as

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activity, as knowledge, and as objects on the vertical axis. The Epilogue is incomplete because it omits a fourth way of being-with technology—a well traveled way in modernity. This fourth way, beyond Romantic Uneasiness, might be termed "Post-modern Immersion."

Thinking through Technology succeeds in beckoning the reader to historically and analytically explore the philosophy of technology field. Part One is a clearly mapped, readable venture into its history. I heartily recommend venturing forth. However, Part Two is of difficult terrain. I caution you: it is a difficult and tedious venture, but it can successfully be a hardy and high adventure into issue-laden analysis. This work is, to my knowledge, the most comprehensive critical introduction to the emerging philosophy of technology field. For this reason, among others, it has earned a place on the working shelf of those with visage toward this field.