Book Reviews

Fact or Fancy?

Computers and Common Sense. The myth of thinking machines. Mortimer Taube. Columbia University Press, New York, 1961. 136 pp. $3.75.

This book is the work of an angry man. After ranging over research on machine translation, learning and problem-solving programs, defense systems, and other related areas, the author concludes that an uninformed, science-worshipping public is being deceived, hoodwinked, and bilked of millions of dollars by electrical engineers and computer enthusiasts. He charges electrical engineers and computer enthusiasts with "writing science fiction to titillate the public and to make an easy dollar or a synthetic reputation." He asserts that much of the allegedly scientific work they publish in learned journals in fact consists of "a great many names of nonexistent machines whose operations are described and debated as though they were real." Finally, the author claims that the purpose of all this is, in many cases, "to influence the allocation of research funds and defense budgets and to guide defense planning," and he warns that "uncritical acceptance can lead to catastrophe."

These are serious charges. How well are they documented? Part of Taube's argument rests on a number of thoughtful analyses of published work. The bulk of it, however, consists of allegations presented as facts, of misunderstandings, of debaters' tricks identical to those he decries in others, and of statements about the work of others which are simply untrue.

Consider, for example, Taube's discussion of learning programs. He wants to conclude that learning in human beings and in computers is two very different things, and so he informs his reader that "one acceptable definition of learning is the change from conscious to unconscious (habitual) activity to attain a desired goal." Acceptable to whom? The definition almost certainly is nowhere to be found in modern psychological writings on learning theory. Given this definition, of course, "machine learning would imply the existence of a conscious machine. . . ." But computers are not conscious. *Quod erat demonstrandum.* Here, as elsewhere throughout the book, Taube succeeds with his argument by the use of a technique well exemplified in a recent automobile advertisement: "There are only two kinds of '62 cars . . . those with Wide-Track and those without," the advertisement begins. And then, having appropriately defined the alternatives, it adds for those who haven't quite gotten the point, "(and you *know* who has Wide-Track!)."

Alternately, Taube simply denies or ignores the existence of facts that contradict his case. Thus, he states that translating machines, learning machines, chess-playing machines, "Simon, Shaw, and Newell's 'General Problem Solver,' and many other nonexistent devices have been named in the literature and are referred to as though they existed." Now, for many of these nonexistent devices, the programs and printouts are available for the asking from their originators.

To give a specific example, I spent several weeks 2 years ago studying listings and printouts from the General Problem Solver, and thus I can testify that it does in fact exist, even as you and I. Similarly, not only do chess machines exist, but at least one of them has played several complete and quite interesting games. Published descriptions of these games are available, and one such description, published in the May 1961 issue of *En Passant* (the monthly bulletin of the Pittsburgh Chess Club), includes annotations by Edward Lasker, the well-known chess master. Over and above such erroneous statements about "non-existence," I searched in vain for any reference in this book to the work of Feigenbaum, Gelernter, or half a hundred other investigators whose programs run and do what Taube asserts that no computer can do.

Some of the author's interesting speculations, his ideas about the construction of man-machine systems, and his sharp eye for exaggerations and sloppy work, make me wish I could recommend his book as a guide to, and as an antidote for, excesses that have appeared in the areas he deals with, as they will in any new area which has theoretical and practical promise. Anyone reading about developments in these areas doubtless could make good use of a reliable and responsible guide. The absence of a well-organized conceptual framework comparable to those which characterize many older and more settled fields makes it difficult to know what to attend to and what to take in conjunction with what. The reader must distinguish work completed from work proposed or work in progress; he must keep up-to-date on the current status of computer systems that undergo change and development from one published report to the next; and he must try to make provisional sense of the welter of assertions concerning the extent to which computer programs now can—or ultimately will be able to—serve as useful theoretical tools for those engaged in studies of biological, psychological, and sociological systems.

But Taube's book does none of these things, and as the examples given here and many others that could be adduced will testify, the book is neither reliable nor responsible. Taube is a hound after a fox, to use his own metaphor. Chomsky, Oettinger, Turing, Weaver, Wiener —if he can't get his quarry one way, another will do. Those working in any of these areas have at least some basis for evaluating Taube's charges. But this is a book for the general reader, who, for the most part, has no such basis for evaluation, and who is deliberately led to believe that this whole area, collectively labeled a "scientific aberration," is all one expensive and potentially dangerous nightmare, a colossal salesman's puff.

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