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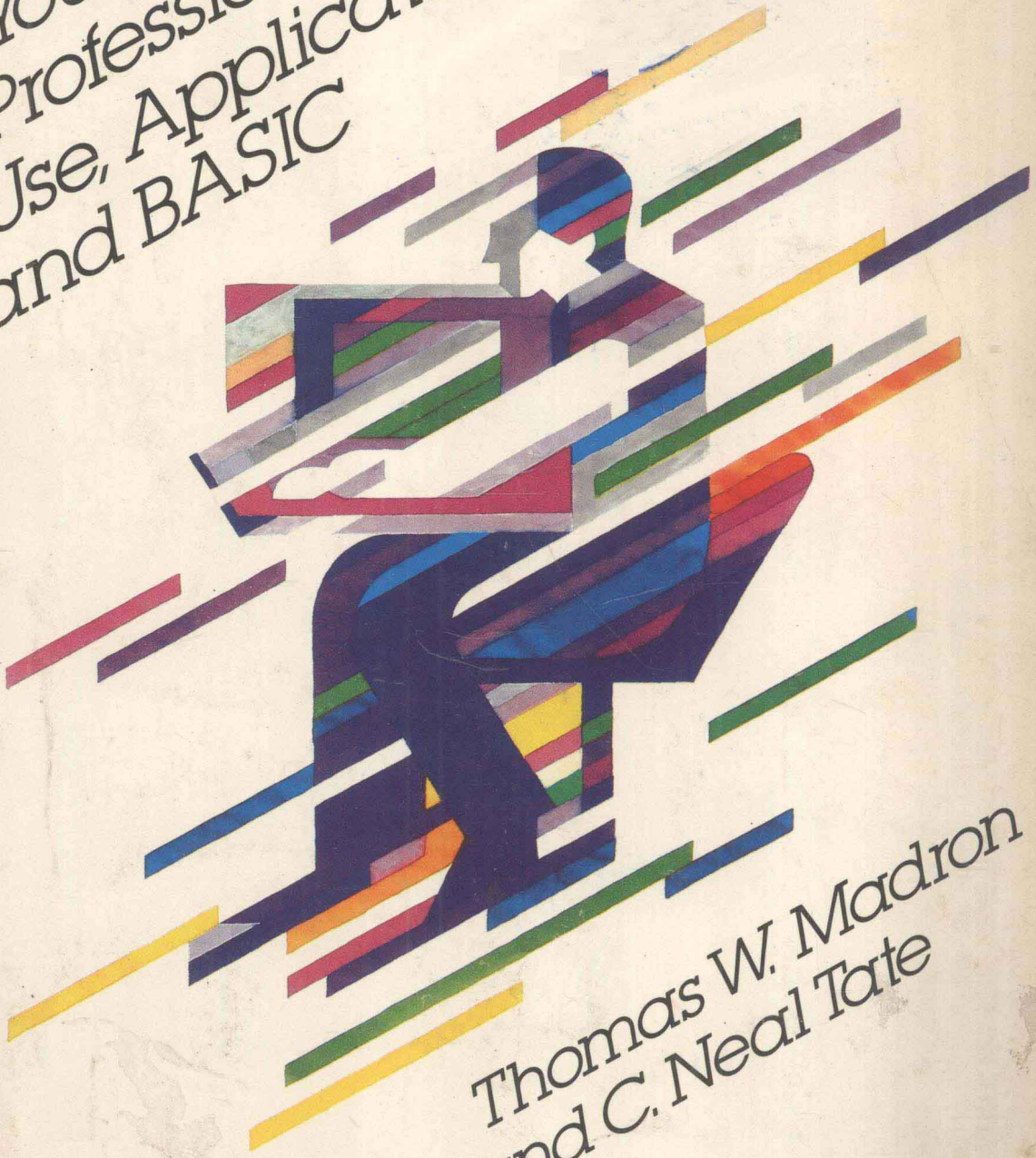
Your T.I. Professional Computer: Use, Applications and BASIC



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and C. Neal Tate

Your T.I. Professional Computer: Use, Applications and BASIC

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C. Neal Tate

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Your T.I. Professional Computer: Use, Applications and BASIC

This book is dedicated
by C. Neal Tate to
Carol and Erin
and by Thomas Wm. Madron
to Beverly

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Preface

This is a book about productivity improvement for professionals. While we have built the various chapters around a particular microcomputer product—the Texas Instruments Professional Computer (TIPC)—the subject matter is much broader.

If you are looking for something that will provide you with some flavor concerning the TIPC, we certainly give that kind of information. If, on the other hand, you are struggling with ways in which microcomputers can help you or your organization, regardless of the micro you ultimately end up buying, then we can give you some assistance as well. Too many books and articles are appearing that imply—especially to the new computer user—that brand ABC or brand XYZ is somehow entirely unique and magic. As you will find out, however, there are broad areas of overlap across a wide variety of microcomputer products, both hardware and software.

Especially with the coming of hardware independent "operating systems" (see Chapter 3), such as CP/M, MS-DOS, and UNIX, the capabilities of the modern microcomputer are far more alike than they are different from one manufacturer to another. True, each vendor will try to have one or more unique "bell and whistle" which will attract buyers, and the TIPC has its share, but most of the professionally oriented machines will provide the resources necessary to improve your productivity. Unlike most books slanted toward a particular machine, therefore, we do not limit outselves to a mere description of one manufacturer's products—rather, we extend our treatment to the broader issue of how microcomputers can help you do your everyday work more effectively.

In Chapter 1 we have provided an overview of the role of microcomputers in professional productivity. The most explicit chapter dealing with the TIPC is Chapter 2 in which the Texas Instruments hardware is described. Chapter 3 introduces the idea of an "operating system" and the choices the user has for the TIPC, although these are basically the same choices available on all machines of this class. Word processing is addressed in Chapter 4, numerical spreadsheet analysis in Chapter 5, and data management in Chapter 6.

Since one of the primary reasons people in organizations, as well as other professionals, buy microcomputers is to communicate with other computers, methods and means of communicating are addressed in Chapter 7. How we can structure a microcomputer based workstation to be really useful for productivity is evaluated in Chapter 8. Because one unique "bell and whistle" of the TIPC is its "Speech Command System," that system, along with the general issue of spoken input and output, is described in Chapter 9. Finally, in Chapter 10, we look at the costs of improving productivity along with the problems of measuring productivity improvement. The appendices provide some additional assistance including a glossary of terms, a table of operating system commands, and a brief tutorial on the computer language, BASIC. Assuming you will wish to do some additional reading, a list of references and information sources is also provided.

Regardless of whether you finally buy a TIPC or not, we believe this book will be of assistance to you. No book is entirely the product of its authors and this is no exception. We wish to thank the various readers for their informed judgments and suggestions. Texas Instruments was very helpful in making selected software and hardware available to us during the writing of this book. Our secretary, Ms. Carolyn Goodman, was especially helpful in helping us prepare Chapters 1 and 2 in a timely manner. And we extend our thanks to the moral support given us by our wives and families as the book was prepared. Any errors that may exist are, alas, our responsibility.

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1 Microcomputers in Professional Productivity

MICROCOMPUTERS ARE the fundamental building blocks of the information revolution. Part of the impact of that revolution will be that most of us are (or shortly will become) information workers. As information professionals, we *must* improve the level of our productivity or be overwhelmed by the information we *must* process. In the early 80s we could argue that micros were coming whether we liked it or not. By the mid-80s we must recognize that micros have arrived, and they're quickly becoming as common as typewriters for white-collar workers. This book concerns professional computing with microcomputers generally, and professional computing with the Texas Instruments Professional Computer (TIPC) in particular.

In addition to introducing the TIPC's hardware and operating environment (Chapters 2 and 3), we provide information on professional applications such as word processing, spreadsheet analysis, and data management (Chapters 4 through 6). An analysis of the problems and opportunities for data communications is presented in Chapter 7. Recommendations for structuring an "Executive Workstation" will be found in Chapter 8. In Chapter 9 we describe and evaluate the "Speech Command System," one of the TIPC's most interesting peripherals. Finally, in Chapter 10 we discuss the costs of productivity improvement and ways in which such improvement might be measured. Additional and supplemental information is provided in the appendixes, including a very brief introduction to the BASIC programming language.

Johann Gutenberg's rediscovery of the movable type in the mid 15th century brought about widespread literacy (and, therefore, improved personal productivity) by

making printed materials widely and cheaply available. And in the 1980s microcomputers enable us to better deal with the large quantities of information we all must confront. As competition in many areas between the United States and other nations becomes more intense, we'll find it increasingly important for American information workers to process information more efficiently. The key term in the context of improved efficiency is *professional productivity*. As early as 1980 or 1981 manufacturers of microcomputers had already targeted large organizations to advance to the forefront of the information revolution. These manufacturers clearly saw even then that such organizations and their professional employees were their primary markets for the mid-80s. If such professionals in these progressive organizations improve their productivity through microcomputers, professionals and managers in smaller organizations must do the same, if they are to keep pace.

That marketing effort answered the need to improve white collar productivity generally, and professional and managerial staff skills in particular. Except for minor cosmetic differences, the average office of the early 1980s differed little from its counterpart of 1900 or 1850, or even 1800. The one exception: the dedicated word processors that gained popularity in the late 70s and proliferated in large organizations. These word processors were mainly "stripped down" mini- or microcomputers; they were relatively expensive ($15,000–$30,000) and out of reach of the mass market.

Yet the amount of information processed by the modern office—as well as the rate at which that information had to be processed and digested—was immensely greater in the early 1980s than before. In the mid-1980s we entered an era in which the very nature of white-collar work is changing as a byproduct of the automation opportunities available in the modern office.

MICROCOMPUTERS IN PROFESSIONAL PRODUCTIVITY

Microcomputers are the cornerstone in improved professional productivity; they allow us to perform our tasks faster, neater, and more efficiently. Microcomputers are among the first of many personal productivity tools that will rapidly become available to us during the mid- to late-80s. Those personal productivity tools will allow us to do our jobs faster and more effectively, thus providing better service to our organizations and clients, as well as allowing us to make better use of our time. Microcomputers are an important part of developing office automation; they encourage us to write and communicate better and to make more sense of the information we must understand and distribute.

How is all this possible? Microcomputers are uniquely personal tools. They are single-user devices encouraging us to make better use of our time, as well as having the potential for making our work time more interesting and pleasant.

Although microcomputers come in small packages, they are by no means trivial machines. Today's models have the speed of many "mainframe" computers of the 1960s and 1970s. The large machines of that era are frequently dwarfed in volume, speed,

and efficiency by microcomputers hardly larger than an electronic typewriter. Modern microcomputers have memory capacity exceeding that of those earlier machines. They offer software options exceeding the choices available to users of the "large" mainframes of past decades—or, for that matter, even of the 80s. They have both the advantages and disadvantages of single-user systems, but the advantages clearly outweigh the disadvantages. Microcomputers are, in a way no other computers have ever been, "personal" computers.

Computers have been traditionally classed as "micros," "minis," or "mainframes," corresponding to small, medium, and large sizes. In earlier days, the distinctions were also based on the speed, word size, or power of the computers' central processing unit (see Chapter 2). By the mid-80s these distinctions had all but disappeared; the most powerful micros competed with minis, and the most powerful minis competed with mainframes. A more useful distinction is between dedicated, personal (micro)computers and centrally administered, multi-user systems (minis and mainframes). Even this distinction, as we will detail later, is somewhat false; micros can be configured as multi-user systems.

With these microcomputers, why do we need the big machines? Contemporary mainframes exceed the speed of micros—but not necessarily for long. Generally, the external storage capabilities of mainframe computer systems greatly exceed those of micros. Part of this book will be directed toward the capabilities provided by that technology. The time is not far off, however, when *very* large quantities of data will be accessed on local devices by single-user microcomputers. The technology is available now, and should be commercially available by 1986 or 1987.

It's true, nevertheless, that some data must be centrally managed and maintained and cannot be fully distributed to a large number of small machines. But, as we shall see, part of the solution to the need for centralized data lies in networking large numbers of microcomputers, perhaps in tandem with larger mainframe systems. This will make better use of the information our organization collects and maintains. Nor will the mainframe rapidly disappear in large organizations—although the way it's used will change considerably over the next few years, e.g., as a peripheral device for microcomputer workstations.

WHY USE MICROCOMPUTERS?

During the early 80s, microcomputers first appeared in large organizations by being carried through the back door under the arms of managers. It was not often very clear why such people wanted or needed microcomputers. But to overworked managers or their immediate staff, it was clear that to do their job properly they needed to process information more quickly and efficiently. At the same time many people found that while attempting to use centralized, large-scale computing services, the level of service acquired from such a facility frequently left something to be desired. Consequently, when we asked people why they wanted microcomputers in the workplace, a common response was that they wanted independence from central computing facilities.

One of the problems with such a facility is that computer applications important to an individual user often seem trivial to the managers of large scale central systems. Other problems have also arisen:

1. Reluctance of "systems people" to the invasion into their domain by "non-professionals";
2. The fear of management that scarce and expensive computer resources will be used in "trivial" ways;
3. High "funny-money charge-back" schemes requiring budgetary justification and control (even more "red tape").

Yet it's the needs and interests of just such a user which ultimately decide the required computer services.

Independence from the central computing facilities isn't viewed only in terms of displeasure with the quality or variety of services provided. Rather, some of the services being demanded aren't even available on central-site computers. Even when desired applications exist, it's frequently true that those applications aren't very user-friendly. Central computing staffers often do not admit the possibility that computer "novices" should be able to use the computing facilities too. Thus, such users see microcomputers as aiding and abetting their efforts toward better computer usage. In a wide range of applications, microcomputer software is typically easier to use than corresponding central mainframe software, if such corresponding services are even available. One of the best examples of this situation is the popularity of VISICALC and other similar spreadsheet programs as productivity tools for microcomputers.

Spreadsheet programs have been available for many years for large mainframe computers. But until now, those mainframe programs were very costly and often difficult to use. Even today many such systems far exceed the capacity of VISICALC, SUPERCALC, LOTUS 1-2-3, MULTIPLAN, or the many other spread-sheet programs for microcomputers. By the mid-80s, however, mainframe software manufacturers, taking their cue from the microcomputer software industry, recognized that better and more cost effective products must be provided if they were to sell any substantial number of programs.

Greater economy was another reason for the adoption of microcomputers by professionals and managers in large organizations. It may sound strange to suggest that a five or six thousand dollar microcomputer is more economical than a simple terminal. But you must recognize that many terminals used in large organizations are themselves expensive, and an inexpensive micro configuration is often more economical than a "smart" terminal. Being on-line with a large mainframe computer system 100 percent of the time isn't particularly cost effective either. Such an on-line terminal constantly monopolizes a certain minimum number of resources even when that terminal isn't in use—and most terminals are *not* in constant use. One great advantage in using microcomputers, especially in tandem with large central mainframes, is that the microcomputers can be used for those applications in which they specifically excel, while the mainframes can be used for those applications requiring larger, more extensive resources.

The microcomputer can be the means for communicating with the mainframe

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