

PROFILES

May 1985

The Magazine for Kaypro Users



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the future



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* Time in seconds

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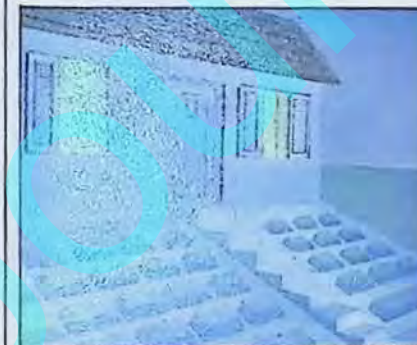
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Cover illustration by Everett Peck

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Introducing

PROFILES

PROFILES

A Magazine For Kaypro Users

If you own a Kaypro, six issues of **PROFILES** won't cost you a penny.



If you've purchased a Kaypro computer, the cost of a six-issue **PROFILES** subscription was included in the purchase price. If you sent in your warranty card, you should be on the mailing list. If you haven't received an issue in the mail, please fill out the form below and send it in. We must have accurate serial numbers and zip codes for subscriptions to go through, so be thorough. Please allow 10-12 weeks for delivery. Note: the

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CODE SIZE	12 K	12 K	35 K
BUILT-IN INTERACTIVE EDITOR	YES	YES	NO
ONE-STEP COMPILE (NO LINKING NECESSARY)	YES	YES	NO
COMPILER SIZE	35K	NO	300K+
TURTLE GRAPHICS	YES	NO	NO
BCD OPTION	YES	\$5495	\$29500
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(* Benchmark run on an IBM PC using MS Pascal version 3.2 and the DOS linker version 2.6. The 179 line program used is the "Gauss-Seidel" program out of Alan R. Miller's book: *Pascal programs for scientists and engineers* (Sybex, page 128) with a 3 dimensional non-singular matrix and a relaxation coefficient of 1.0.

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Howard Glosser, *Softalk for the IBM Personal Computer* July '84, pp 120-121

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Jerry Pournelle, *Byte Magazine* April '83, p 234

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Thomas Bonoma, *Microcomputing*, Dec. '83, p 22

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Susan Glinert-Cole, *Creative Computing*, July '84, p 210

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Letters

KBAR controversy

We are displeased with the inaccuracy of PROFILES' backup time comparisons ("Hard Disk Backup Programs," February 1985) due to the impression left by author David Chown that you had to format the diskettes each time you performed a copy.

Since the last issue of PROFILES, we have noticed a drop in KBAR sales, which is understandable. Why would you want to buy a copy program that would require that you format the diskettes each time you want to back up your data?

We would appreciate a correction in your next issue—that is, an article or very noticeable correction that more truly compares KBAR with FASTBACK.

Also, the ZCPR3 incompatibility problem that was reported with KBAR is not true. We have users that are "hackers" using ZCPR3 and KBAR with no problems. Since ZCPR3 can be configured in more than one way, I suspect that Mr. Chown's version may not be installed properly. We certainly can prove this if necessary.

George Luyet
Data Decisions, Inc.

Author David Chown replies:

With a witness who has more than eight years of micro-computer industry experience, I re-ran my KBAR test on a brand-new Kaypro 10.

The backup operation took 11:58 (minutes:seconds) and restore took 15:32. Neither of these times is as fast as their advertised claim. Both FAST-

BACK and KBAR were timed on the same machine for the article, so neither product could possibly have gotten an unfair advantage.

The witness of the latest test reports that my average disk-swap time was barely over two seconds from the time of the "beep" to my hitting return. I challenge anyone to do it faster.

Mr. Luyet suggests that my ZCPR3 is installed improperly and offers proof in the fact that they have run KBAR successfully on other machines running ZCPR3. That may be, but mine is the version specifically assembled for the K-10 by John Smith of Manlius, New York, and distributed by Steve Sanders and

others through the Kaypro Network of RCP/M systems.

The most serious allegation is that I said one must re-format the 12 diskettes (24 for the whole hard drive) each time a backup is done. I didn't say that, nor did I mean to imply it. As the KBAR manual points out, you must have 24 formatted diskettes to back up both A: and B: of the hard drive. Few K-10 users will be so naive as to later put the same set of formatted floppies back in the machine to do the update backup. Most of us will format another set of 24 floppies and do another backup (the "father-son" approach). Some will go so far as to do 64 floppies in all ("father-

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son-grandson").

Most objective observers would admit that formatting 48 or 64 floppies to allow good protection is a pain. Very few K-10

owners, once they have "everything" protected in a couple of sets of backups, will feel the urge to frequently back up everything repeatedly, using the same dis-

kettes over again. But yes, KBAR is faster than FASTBACK on these repeat backups, and my chart in the article showed that.

To sum up, in all fairness, I should have said "some versions of ZCPR3 running on some K-10s may have the problem with the KBAR copy protection scheme that mine did." And I regret my use of the word "unlimited" in referring to the supply of formatted diskettes one should have. I should have said an "ample" supply of formatted diskettes. I did not say formatted diskettes have to be reformatted to do another backup with KBAR.

I said both KBAR and FASTBACK are good programs and function as promised, except that I could not—and still haven't—reached KBAR's advertised speeds.

Most importantly, I feel the readers of *PROFILES*, not a software vendor, are the people whose interests must be served by articles presented. I feel they have been served well.

They like us...

The March issue was superb. It was informative to the novice Kaypro owner. "Life at 300 Baud," "Statistical Smorgasbord," the analog-to-digital technology article ("Controlling the Real World") and "Technical Forum" were written at a level I could understand and benefit from. Keep it up!

Alvin Deibert
(no city given)

I have just read through the entire March issue and found it the most helpful yet. Most helpful were the source guide to agri-

cultural software, the comparison of statistical programs and the analog-to-digital conversion article. The latter contained the clearest explanations I have ever read on parity and bit values in status port 6.

Galen Currah
Portland, Oregon

I enjoyed the articles in your March issue. I definitely take exception to the readers who expressed the opinion that such articles do not belong in *PROFILES*. If these types of general-interest stories don't belong in *PROFILES*, how else would we know all the exciting and innovative ways Kaypros are being used? Articles like these stimulate the ideas of new Kaypro users and implore the more advanced user to explore new avenues. It's time you let everyone else know that Kaypros are more than "obscure, portable, completely business-oriented computers." They're fun!

Karen Olmsted
Suttons Bay, Michigan

I enjoyed your "Tales of the Unexpected" (unusual applications of Kaypros) immensely. We disseminate information throughout the world in a newsletter about management applications of microcomputers, especially in less developed countries. I'd like to expand on some of your vignettes in our next issue.

Patti Lowery
Editor, Thunder and Associates
Alexandria, Virginia

I enjoyed your article on Kaypro users throughout the world. My application is unique also. As a professional recruiter dealing with engineers and scientists, I get very specific requests for searches from client companies. My Kaypro 2 is my file cabinet! By doing these jobs with my Kaypro, I could find an electronics engineer with a BSEE and MBA with six years' experience living in Santa Rosa making \$40,000 a year who is left-handed and raises kumquats as a hobby. The possibilities are unlimited!

Tom Boring
Portland, Oregon

They don't like us...

You outdid yourselves in March. How many of your readers track whales? "Tales of the Unexpected" clearly supports the fact that data can be filed and sorted by computer, a fact that is known to most of your readers. Data is data, whether it is the ear tag numbers of reindeer or the costs of construction in Williamsburg.

You mention that future issues include "Tools for Writers" and "Business Applications." Good! Certainly many will be interested in "Programming Languages," although I am not one of them. That's all right, but "Education, Teaching and Kids"? If there is one subject that has been done to death, that is it.

At least you decided to replace the topic of "The Future of Microcomputing." There is still hope.

Lyle S. Wall
Metairie, Louisiana

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Q & A

by Tom Enright

We welcome and read all your letters. Some letters of general interest are printed in the Letters column; others are pleas for technical help. Questions that lend themselves to simple, concise answers are dealt with here. More advanced topics develop into articles or discussions in the Technical Forum.

Due to the volume of mail we receive, we can't respond personally to every request for assistance. If you need immediate help, you should contact your dealer. Kaypro Technical Support (619/481-3920) is now giving dealer calls priority, so it may be difficult to reach them by phone, but you can write to Kaypro Software Technical Support, P.O. Box N, Del Mar, CA., 92014. Please include a daytime phone number.

8-bit/16-bit

Is there any possibility that Kaypro will be selling upgrade packages to convert my Kaypro 2 to a Kaypro 16? If Kaypro won't be selling these conversion/upgrade kits, could you recommend a manufacturer who comes closest to providing such a board?

If I converted, would it be possible to toggle back and forth from 8-bit to 16-bit? What kind of software is available for the Kaypro 16? I would also like to see an article comparing the advantages and disadvantages of 8- and 16-bit machines. Is 16-bit necessarily better than 8-bit?

Also, I'd like to know if it's possible to run CP/M-80 software on the Kaypro II.

Stasha Smaka
Brooklyn, New York

Unfortunately, such a conversion isn't practical. There isn't enough room in the Kaypro chassis for enough hardware to perform both functions. The Kaypro 16 is an entirely different machine. The only part in the K16 that was transported from the 8-bit machines is the hard disk controller card. And it came from the Kaypro 10.

To my knowledge, there is nothing on the market that will fully emulate both machines. The closest you will get is something like the Co-Processor board from Legacy or SWP. Neither of them provides much more than limited IBM or Kaypro 16 compatibility.

So far, if a piece of software runs on an IBM PC, it will run on the Kaypro 16. And no, 16-bit is not necessarily better than 8-bit. It depends on your needs. For the majority of personal uses, 8-bit is more cost-effective and sometimes faster.

CP/M-80 is a generic term for 8-bit CP/M software. The term is used to differentiate between the 8-bit and 16-bit versions of CP/M. Your Kaypro II uses CP/M-80 version 2.2, so CP/M-80 software is what you already use.

Expensive advice

I own a Kaypro 10 and find that most of the information in PROFILES is geared towards the Kaypro 2 and Kaypro 4. Could you add some more information on the 10 in future issues? At this time I am looking for a typing tutor program and some graphics ability to be used on the Kaypro 10 and printed on the Epson FX-80. The dealer in this area has not been too helpful

unless I pay \$35 an hour for advice.

Klaus Schmitt

The only real difference between the Kaypro 10 and other models is the amount of disk space available. Where other users have to switch diskettes, on the Kaypro 10 you merely change user areas. Other than that, anything that runs on other CP/M Kaypros will run just the same on your Kaypro 10.

You will be able to find advertisements for a couple of graphics-related programs in PROFILES.

Micro Cornucopia markets a typing tutorial along with its other Kaypro disks.

As to your dealer, the situation seems a little unusual. If he charges a fee to recommend software that you would be purchasing from him, I would take all my business elsewhere.

For help you should try a local users' group or some of the newsletters from other users' groups. A list of users' groups was published in the February 1985 issue of PROFILES or can be requested by writing to the Kaypro Users' Group Manager at Kaypro Corporation.

Kaypro II or 2

In the February issue there was a question that came close to one that has been nagging me for the past several months, the "Kaypro II and Kaypro 2" query. Are the designations Kaypro II and Kaypro 2 synonymous and, if not, what are the differences?

I have a Kaypro II purchased a little over two years ago, and

when I read ads or commentaries that use the term Kaypro 2, I'm left guessing as to whether or not what I've read pertains to my computer. It's rather frustrating.

Also, can you offer any advice as to how long to leave my Kaypro turned on between intermittent uses?

Richard Vetter
Arlington, Virginia

The change from Kaypro II to Kaypro 2 was strictly cosmetic. The term Kaypro 2 usually refers to a 2'84 machine. Most software packages can be installed for either the Kaypro II or the 2'84. See this month's Technical Forum for more on this subject. When an ad is referring to disk formats, it makes no difference.

Unless the ambient temperature in the room is above 80 or 85 degrees, I don't turn my machine off unless I'll be gone more than a half-hour.

Manual problems

I purchased a Kaypro 2X Business Pak with the letter-quality printer. I love it.

But there was no instruction book with the printer and the Kaypro Guide was written for a Kaypro 2.

I would like to know just what a Kaypro 2X is, besides an expansion of disk capacity. For example, if I'm buying peripherals, do I buy what's made for a 2 or a 4? I've already found that it's not consistent in the least!

So, I'm a little puzzled as to just what I've got here. What do I buy if I want to speed up the

board, etc.?

Burt Wilson
Thousand Oaks, California

We, too, are a little confused about exactly what machine you have. Your letter didn't mention how long ago you purchased it. The current 2X computer is shipped with two double-sided drives and is essentially a Kaypro 4'84 with a new name.

The early 2Xs were shipped with single-sided drives; later ones had double-sided drives.

What you'll need to do is borrow a diskette that's been formatted for a Kaypro 4. Put that diskette in drive B and your CP/M disk in drive A. Then warm boot the computer and type DIR B: followed by pressing RETURN. If your computer can read the disk from a Kaypro 4, you have double-sided drives. If your drives are single-sided, the computer will lock up for a minute and then give you a BDOS ERROR.

Whether your drives are single- or double-sided will determine what kind of peripherals you should buy. Single-sided drives need Kaypro 2 accessories; if they're double-sided it's the same as Kaypro 4'84. The system clock on the 2X already runs at 4 MHz, so the 5 MHz speed-up kit won't fit.

You should be able to obtain updated manuals from your dealer at no cost, or from the Kaypro Publications Dept., 533 Stevens, Solana Beach, CA, 92075.



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Editor's Notes

Hurling PCs, swinging hammers, and musing on the source of our addiction

structures, international relations—indeed the future and quality of life worldwide. Or as Toffler says "... in traditional industrial society, the dominant technologies worked against individualism and toward the massification of society, of lifestyles, and of political views. I welcome technologies that help break up that mass society. I think the PC is one of the most powerful rocks ever hurled at the plate-glass window of society as we know it today."

Though most of the commentary bodes well for our futures, some—that about the AFL-CIO's efforts to ban electronic homework; or Toffler's remark that he thinks the *War Games* scenario is not totally crazy—is disturbing.

To be sure, there's much here to provoke you—and that is our intent.

Programming us?

This issue's theme reminds me of the story about the policeman who, late at night, comes upon a man on hands and knees worriedly patting the ground, crying "My glasses! My glasses!"

"Where did you drop them?" the policeman asks.

"Two blocks down the street," the man responds.

The disbelieving policeman asks, "Why, then, are you looking for them here?" only to hear:

"Because this corner has the

street light."

Abraham Maslow said much the same with words to the effect that "When you begin swinging a hammer, everything looks like a nail."

The point is that infatuation with tools can divert us from solving our highest priority problems.

Much as I find my Kaypro 10 indispensable to my work, I confess the glasses-and-hammer imagery often applies to me—and to everyone else I've ever seen work with computers. Now and then, my microcomputer—coupled with my infatuation and drive to respond to its every whim and error message—can and does end up programming me, diverting my attention from far more pressing problems.

Steve Wozniak, co-founder of Apple Computers, goes much further, claiming that "computers are used today where they are not useful, and they cost resources instead of saving them. People believe that because computers do things differently, they do them better. It takes a few years of playing with them to find out that isn't true ... I spent more time on my courses because I was trying to do all the neat things a computer can do, like beautiful graphs and nice spreadsheets. Everybody else went to bed at midnight, and I was still working at 6 a.m. ... I spent all my time

(continued on page 64)

by Tom Foote

Beyond the usual product reviews (ZCPR3, Kaypro's 286i), and computing tips (redefining keys, crunching loan numbers, and patching WordStar to log on to drive B) this issue explores a bigger picture.

Spurring the commentary of futurist Alvin Toffler (*Future Shock*, *The Third Wave*), telecommuting experts Gil Gordon and Tammara Wolfgram, and AFL-CIO representative Dennis Chamot are fundamental questions: Where is microcomputing headed? And, more important, where is it taking us?

Their informed responses to these and similar queries offer a provocative picture of microcomputing's present and future effects on us—effects permeating our work, personal relationships, social, political, and economic



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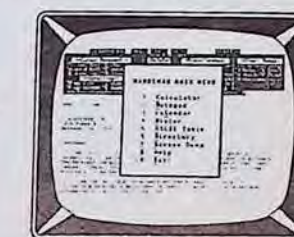
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Up and Running

Getting the most out of CP/M with ZCPR3

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ZCPR3 works by replacing the top level—the Command Control Processor—of your CP/M operating system with a much more powerful and sophisticated set of routines. Once installed, your CP/M-ZCPR3 system runs almost exactly as before—only now, in addition to all of its previous functions, it also has a whole new set of abilities.

Using ZCPR3

First off, where CP/M gives you separate user areas on a disk—this is a real necessity on for hard disk users—ZCPR3 allows you to name those user areas. You don't have to remember that your Turbo Pascal workfiles are in user area B6 while your catalog of erotic videodiscs is in A9. You can specify names for these areas and go directly to them by typing PASCAL or DISKS.

If you want to, you can install passwords for each of those areas, too, so you can protect your private files from the casually curious. (This system is not foolproof, however. If you were to boot your Kaypro 10 off the floppy disk with standard CP/M, you could then access any user area on the hard disk. If you really need file security, you'd be better off with the public domain scramble utility available from most bulletin board systems, or as part of the Peopletalk package.)

ZCPR3 also has a built-in "HELP" feature; it's one of the best parts of the system. There

are about 400 kilobytes of help files, identified as .HLP on the disk directory. You can store these files in user area 15 of your hard disk; then, whenever you need help with this or that feature of ZCPR3 (and you will need a lot of it at first), all you have to do is type HELP <feature>.

The search path

But, wait—how does ZCPR3 know that the help files are off in, let's say, B15? Well, you can tell it to follow a search path. Suppose you give it the command "PATH A0: B0: B15:" This tells the system that if the desired program or file is not in the current user area, then it should look for it first on A0, then on B0, and finally on B15. When the system finds the appropriate help file, it lets you page through it with a vastly improved TYPE command. Your keyboard arrow keys let you move forward or back one page at a time through the text file. (You can't edit it, of course, but it's a lot easier to examine a file than the old way of scrolling madly along until you hit a ^S to stop.)

This search-path feature should also make it unnecessary to keep more than one copy of a program on your hard disk. Supposedly, you will be able to access it from any other user area—as long it's somewhere on ZCPR3's search path. Unfortunately, this is only true for programs that do not have overlays. As useful as the path feature is, it doesn't help you with WordStar or NewWord. The

search path will find a program, but it won't find any overlays the program might need to run. On the other hand, NewWord itself will let you log onto other user areas and it will keep track of where its overlays are stored, so you only need one copy of NewWord on your system whether you use ZCPR3 or not.

Deleting files

Should you want to delete a file using the ERA command, ZCPR3 will echo the filename to confirm its erasure. This is very helpful when you use the wildcard asterisk. ZCPR3 lists all the files it has erased—so you get to see if you've accidentally erased something you wanted to save.

Fortunately ZCPR3 also comes with an UNERASE program. In fact, ZCPR3 comes with more than 50 utility programs. Some are simple, like CLEANDIR, which reads the disk directory, sorts it, and rewrites it back onto the disk. Some are more sophisticated, like UNERASE (see "Free Lunch," April 1985), which brings back deleted files. If you use CLEANDIR regularly, UNERASE won't have to worry about files with duplicate names.

One of the most interesting features of ZCPR3 is that it gives you 16 more user areas, numbered 16 through 31. You can't actually log onto these areas, but you can copy files to and from them. (NewWord can access these areas, too, so you can work on those files without having to move them out of that user area.)

ZCPR3 also lets you type multiple commands on one line. Suppose you want to compile a long program, link it, save a copy on disk, and then run it. Instead of having to sit at the machine to type in each command at the conclusion of each step, you could type in all the commands on a single line, hit the return and go have a cup of tea and catch up on the latest issue of PROFILES.

Automatic startup

ZCPR3 also has extensive—excuse me, *EXTENSIVE*—facilities for automatic startup. You can establish unique startup procedures for each user so that the typing of a single word—the user's name, say—will automatically take that user to his or her own user area and then load in whatever programs or menus are desired. This can also include a keyboard redefinition program like Smartkey II or Xtra-key.

You can also use this "synonym" function to trigger whole sets of operations, like backing up a hard disk onto floppies. ZCPR3 also lets you create your own menus. With a little careful thought, it's possible to configure a Kaypro computer so that a novice user need never have to deal with CP/M at all.

And there's more...

There is a lot more to ZCPR3 than this. I haven't even begun to scratch the surface here. ZCPR3 has capabilities—particularly when you use its various functions in combination to create macros and shells—that trans-

siastic advocate named Frank Gaude. If Gaude were any more dedicated to ZCPR3, he could be accused of trying to start a cult; but it's clear that he knows his subject, and that makes him one of the most valuable resources available to the ZCPR3 user.

Filling the need

It seems clear to me that Richard Conn, the author of ZCPR3 (versions 1-3) wrote ZCPR3 to address his own needs as a hacker. Obviously, the man was frustrated by what he *couldn't* do on his CP/M-based machine, and this is his solution. If you're doing the same kind of work, if you have the same problems and the same frustrations, ZCPR3 is going to be a very valuable tool for you.

On the other hand, the average user may not need all the capabilities of ZCPR3.

Case in point: I use my machine mostly for writing, maintaining my idea files and tape catalogs, balancing my checkbook, playing a few games, and hacking in Turbo Pascal. I don't feel much need for macros

*ZCPR3 has a built-in
HELP feature; it's
one of the best
parts of the system.*

form your modest little CP/M-based system into something with UNIX-like capabilities. It's obvious from reading the manual that many of its most powerful features are designed with the assembly-language hacker in mind and not the lay user. I'm not an assembly-language hacker, so I can't really comment on the strength of these latter features. I do know that those who have used them find them invaluable.

ZCPR3 also has this going for it: a dedicated users' group, a regular newsletter, and a very enthu-

or shells or batch commands. Nor do I need to construct a set of menus so that someone else can use my machine; nor is file security a major concern. I don't need passwords or cold-boot startups. (Well, not on user-areas anyway. I do have a cold-boot I.D. program on my Kaypro that requires a password before it will release the user into the operating system, but that's only to make the machine totally useless to anyone if it's stolen; more about GOTCHA another time.)

The fact is that I really don't

by David Gerrold

It came in the mail, arriving like Godzilla for a lunch date in Tokyo. It came from Echelon, Inc., and in it was the single most *intimidating* collection of software I have ever received.

The software is called ZCPR3, and it's an enhancement/replacement for the CP/M operating system in the Kaypro computer. It comes with an assortment of utilities, conveniences and help files large enough to stagger a mainframe. It's no accident that Echelon, Inc., also offers DISCAT, a sophisticated disk cataloging program. You'll need it just to keep track of your ZCPR3 utilities.

The easy version of ZCPR3 (called Z3-DOTCOM) comes as six disks and a thick manual. The hacker's package consists of 12 disks and an even *thicker* manual. Clearly, Echelon is a

have much need for most of ZCPR3's capabilities. Other users might; I don't.

On the other hand, I did expect to grow into ZCPR3 over a period of time, so I kept it on my system and explored its features a little bit at a time.

Program crashes

Unfortunately, within a week I discovered that three of my most frequently used pieces of software were not happy with the ZCPR3 enhancement. Checks and Balances refused to load; it hung up the machine—I had to reboot. MultiPlan loaded, but announced that there was insufficient memory for previously defined spreadsheets. And Turbo Pascal began to hang up on compilation—not every time, but just often enough to be exquisitely frustrating.

Plan. If I wanted to make the phone calls, I didn't.

It might have been worth the trouble to someone else to find the fixes. ZCPR3 is a very powerful system, but its conveniences aren't the conveniences I need.

So, I took ZCPR3 off my system and went back to plain vanilla.

The essential question

None of this is meant to discredit the usefulness of the ZCPR3 enhancement, but I do think the above is a perfect demonstration of the essential question that any computer user must answer:

Just what do I want to use my computer for?

Do I want to have this on my machine so I can have a state-of-the-art system? Or will I get real value out of this product?

Software doesn't exist in a vacuum; it exists as a tool for the

machine; even the easy version (Z3-DOT-COM) requires some understanding of what's going on inside the machine.

On the other hand, I do recommend that experienced users take a good long look at ZCPR3 and see what's available. Experienced programmers—especially those who do a lot of work in assembly language—will probably find the system very useful. Those who have to set up turnkey systems for the computer illiterate should also investigate ZCPR3's abilities to run shells and menus.

ZCPR3 (versions 1-3) are in the public domain. If you have a modem, you can probably download it from a local RCP/M bulletin board system. It's also in the SIG/M catalog, which can be obtained for \$3 from SIG/M, Box 97, Iselin, NJ 08830.

You can also order ZCPR3 from its official distributor, Echelon, Inc. at 101 First Street, Los Altos, CA 94022. At this writing, they have several different packages from \$49 to \$149; your best bet is to send for information and see what interests you. But, be clear, ZCPR3 is not one of those "everybody should have this right now" pieces of software. It's a very specialized, and in the right hands, very useful tool. □

The average user may not need all of ZCPR3's capabilities.

The reason for it is that some of ZCPR3's modules help themselves to a couple of blocks of extra memory that these three programs expect to find empty. Finding the blocks full, the programs crash or hang up.

I had a choice: I could keep ZCPR3 on my hard disk and boot plain vanilla CP/M off a floppy whenever I wanted to run Checks and Balances, MultiPlan, or Turbo Pascal, or I could go back to plain vanilla CP/M on my hard disk, or I could begin the probably long, probably arduous task of finding fixes so I could run these three programs under ZCPR3. My local wizard says it shouldn't be too hard to reconfigure Turbo Pascal, and I know that Pat Lajko would fix Checks and Balances if I asked, and I suppose someone at Echelon or at Microsoft would probably be able to offer some support with Multi-

user. If you don't have a use for the specific tool, it doesn't matter how good it is. And that's no judgment of the tool, either. It's merely a condition of applicability.

That I found ZCPR3 incompatible with my primary uses certainly does not imply that ZCPR3 is going to be inappropriate for the next guy. The ZCPR3 enhancement and its utilities might be just what he was wishing for—but he's going to have to determine that for himself.

Recommendations

For my part, I don't recommend ZCPR3 for the casual or the lay user—unless he or she is willing to invest a significant amount of time in learning the strengths of the system, and it may be that the learning is too much effort for the result achieved. Certainly, a beginner is going to need a lot of help installing ZCPR3 on his



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Flea Market

Turning up treasures in the CP/M bazaar

while I think in terms of words, sentences, and paragraphs.

I used to think I had only two choices—put up with WordStar as it is or get another word processing program (and learn a whole new set of commands). Then I found out about key-redefinition programs: XtraKey, SmartKey II, Backgrounder, and the others. These programs let me redefine a key on my keyboard so that one or two keystrokes will send out a string of characters, either plain text (like my name, address, and phone number) or a program command (like ^Q^Q^B for WordStar). When I load a set of these key-redefinitions into my computer and then run WordStar, nothing special happens—until I hit one of the redefined keys. At that point, the computer spits out the stored string of characters as if I'd just typed it in, only much faster.

This new trick is more than just handy—I've found I can use it to make WordStar think more like I do. I can create new features for WordStar by redefining one key to send a whole sequence of commands that would otherwise be too complicated to remember and too awkward to type. And as a bonus, these commands run faster than normal, because when WordStar receives a string of commands in one burst, it doesn't stop to redisplay the screen after every command.

The one drawback I've found so far is that many of the new features I like only work if I use a consistent text format. I usually

do—a one-tab indent (five spaces) at the beginning of every paragraph and two spaces after each sentence—but even so, I have to use two different sets of definitions, one for double-spaced text and one for single-spaced.

Below are some of my favorite new features for WordStar. In the key definitions, <SP> means "hit the space bar," <CR> means "hit key marked RETURN," and <ESC> means "hit the key marked ESC." I'll point out the tricky spots as I go so you can adjust my definitions to your own style.

Save file and resume place

This new feature pleases me out of all proportion to its complexity. It saves the file I'm working on and returns me to my previous position in the file. I set one key to send the sequence ^KS^QP.

Of course, all WordStar users know these keystrokes by heart, so you might think that assigning them to a single key isn't worth the effort. But since I can now save-and-resume with one keystroke instead of four, I do it more often and run less risk of losing my work to gremlins.

Delete word to left of cursor

In WordStar, I can delete the word to the right of the cursor with a single ^T. But often I want to delete the words I've just typed, the words to the left of the cursor. I can use the DEL key to delete backward character by character, or I can use ^A to move back past the words I want to delete

and then use ^T to delete them, but both these methods feel clumsy. So I've set one key to send out the command sequence: ^A^T.

Now I can delete the word to the left of the cursor with a single keystroke. With repeated strokes, I can chew backward through a sentence, deleting mistakes a word at a time. Like the save-and-resume command, this command is simple but very satisfying.

Move one page forward

WordStar lets you move by screens but not by pages. So here's a command that moves you from your present position on one page to the same position on the next page (from line 12 of page 2 to line 12 of page 3, for example) and leaves your cursor on the same line of the screen. The command is: ^C^C^C^X^X^X^X^Z^Z^Z^Z^Z.

This command works fine if you're using the standard WordStar page of 55 lines (not counting headings and footings) and have a help level of 2 or lower (no menus showing on the screen). If you're using a different length page or a help level of 3, you'll have to adjust the number of ^Cs, ^Xs, and ^Zs.

You can get almost the same effect by using ^QF^N<CR>55<CR>. This sequence searches for the carriage return (represented by ^N) that ends every WordStar line; it takes you to the next page by repeating the search 55 times (for 55 lines). It moves a little more slowly than the first command and always leaves your cursor in the middle of the screen.

Move one page backward

This command moves you from your present page position to the same position on the previous page. As with the page-forward command, you can do it two ways. The faster way is ^R^R^R^W^W^W^W^W^E^E^E^E^E.

Notice that this command isn't quite the reverse of the page-forward command—I don't know why it shouldn't be exactly the reverse, but it isn't. And the order of the commands is important, too—if you put the ^Es before the ^Ws, the command won't position you properly in all cases.

You can also use the search command to move one page backward. The sequence is ^QF^N<CR>B55<CR>. Again, this method seems slightly slower than the first, and your cursor always ends up in the middle of the screen.

Move to the beginning of a sentence

As I said, I think in sentences, but WordStar thinks in lines. That makes it awkward to get to the beginning of a sentence that falls in mid-line, so I set up one key with the following sequence: ^QF<SP><SP><CR>B<CR>^D^D.

It works like a charm, if you consistently put two spaces after every sentence and indent the beginning of every paragraph with a TAB (or at least two spaces). If you put only one space between sentences, you'll have to think up another method—a search for just one space will stop at every word. (Two spaces after the end of a sentence is standard for manuscripts, and such.)

Move to end of sentence

To move to the end of a sentence, I use ^QF<SP><SP><ESC>.

As long as you use two spaces between sentences, this command works fine, with one possible exception—the last sentence in a paragraph. Most people don't put two spaces after the last sentence; they just hit a carriage return and move on to the next paragraph. In that case, the command will pass the end of the last sentence and search until it finds two spaces, usually at the indent beginning the next paragraph. Just hit ^A once or twice to get

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by Ted Silveira

The world of CP/M computers often seems like a flea market to me, a parking-lot bazaar with junk, closeout specials, and the contents of someone's garage all jumbled together. I like it, because every now and then, while poking through the magazines, bulletin boards, and users' groups, I find a new trick, something that will make my computer do a little more, run a little faster, last a little longer.

Just recently, I found a neat trick for WordStar. Because I write a lot, I barely have to think about the basic WordStar commands. I've even dreamed about control-key commands. But sometimes I want to do things that WordStar can't do or can only do awkwardly, usually because it thinks in terms of characters, lines, and screens,



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back to where you want to be.

Special Note: This command must be altered for WordStar version 3.0. When you search forward for a string of characters, WordStar 3.3 leaves you at the beginning of the string it finds, but WordStar 3.0 leaves you at the end of the string. If you're using WordStar 3.0, the sequence is `^GF<SP><SP><ESC>^S^S`. The `^S`s move you back two spaces to the actual end of the sentence.

Mark a sentence as a block

This command sequence marks the sentence your cursor is in as a block so that you can do a block move, copy, or delete. It really just combines the previous two commands with the block marking commands. Again, because of the way the search command works, there's a difference between WordStar 3.3 and WordStar 3.0. For WordStar 3.3, which most of you have, the sequence is `^GF<SP><SP><CR>B<CR>^D^D^KB^GF<SP><SP><ESC>^D^D^KK`.

This command puts the beginning block marker just before the first letter of the sentence, excluding the two preceding spaces, and puts the ending block marker just after the two spaces ending the sentence. You have to include either the leading or the trailing spaces in the marked block, or you'll be left with four spaces remaining between sentences after your marked sentence is gone.

For WordStar 3.0, the sequence is `^GF<SP><SP><CR>B<CR>^D^D^KB^GF<SP><SP><ESC>^KK`. It's just like the WordStar 3.3 command except that you omit the last two `^D`s because 3.0 will automatically move to a point after the two trailing spaces.

Delete a sentence

This command deletes the sentence that your cursor is in. It's exactly like the previous com-

mand, with the addition of a `^KY` at the end. For WordStar 3.3, the sequence is `^GF<SP><SP><CR>B<CR>^D^D^KB^GF<SP><SP><ESC>^D^D^KK^KY`.

And for WordStar 3.0, it's `^GF<SP><SP><CR>B<CR>^D^D^KB^GF<SP><SP><ESC>^KK^KY`.

I don't really recommend this command; it's too easy to delete more than one sentence if you accidentally leave only one space between sentences or have a format that confuses the search command.

Delete from cursor to end of sentence

This command may seem like an odd one to want, but I find it very useful. When I'm revising sentences, I often want to change the ending but leave the opening alone. So I move my cursor to the point at which I want to start my changes and type in my new ending. Because I always use the insert mode (rather than overtype), I'm left with the old sentence-ending still hanging on after the new one. Instead of deleting it word by word, I created a command to delete the leftover chunk in one keystroke. For WordStar 3.3, it's `^KB^GF<SP><SP><ESC>^KK^KY`.

And for WordStar 3.0, it's `^KB^GF<SP><SP><ESC>^S^S^KK^KY`.

As always, this command depends on your having placed two spaces at the end of each sentence. You may want to play it safe by removing the `^KY` so that the command will just mark the remainder of the sentence as a block. Then you can give the delete command yourself.

No one of these new features is revolutionary by itself, but taken together, they make WordStar a much friendlier, more adaptable creature. And there's more. Next month I'll show you how to zip around paragraphs, print a snapshot of your screen while editing, and other fancy tricks. □

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Micro Futures

Microcomputing's outlook and its effects on us: An interview with Alvin Toffler

by Gil Gordon

Editor's Note: Most microcomputing magazines, including PROFILES, devote most of their space to readers' immediate needs—for product information, microcomputing news, and so on. We sensed a need, however, to devote some space to a bigger picture: Where is this microcomputer movement going? And where is it taking us? To answer these and other questions, we could think of no one better than Alvin Toffler, one of the world's most respected and insightful futurists.

To be sure, the label "futurist" suggests the image of an eccentric stargazer—someone who is so concerned with the future that he is completely out of touch with today. Not so with Toffler. Though Toffler is a futurist with exciting views and well-known books about the future (*Future Shock* and *The Third Wave*), he also has a firm grasp on today's events and their history. This unique blend of perspectives (plus much first-hand experience with PCs) more than qualifies him to comment on the impact of microcomputing on our lives. In the above books and in his latest work, *The Adaptive Corporation*, Toffler at once challenges, provokes, and stimulates. We think his comments here will have the same effect.

Interviewer Gil Gordon, president of Gil Gordon Associates, a consulting firm specializing in implementation of telecommuting, came highly recommended in his own right as one of the world's leading experts on telecommuting (Gordon's feature story on that subject follows this interview).

Toffler's own experience with micros

GORDON: Do you own a microcomputer yourself or use one frequently?

TOFFLER: I've been using a PC at least since 1977; we now have six of them and have a portable

as well.

GORDON: What are your reactions to PCs as you've seen them develop over the years?

TOFFLER: I got one in the first place in the prehistoric period because I was writing *The Third Wave* and I thought this was going to be an extremely important phenomenon. I thought I'd be writing about it and figured I should know what I was writing about.

We bought a machine—a SOL 20—and subsequently Steve Jobs of Apple saw it. He said, "Don't ever sell it—keep it, because it's a museum piece." We've kept that faithful old machine on which the latter half of the book was written.

As a writer, most of my use is word processing, but I use it also for electronic information exchange and for Telex. I was a member some years back of a National Science Foundation-sponsored network called the Electronic Information Exchange System. There were six or seven hundred of us in the network broken down into various groups according to interests. That was our first experience with electronic mail of one kind. We now use it for that, for Telex, and we do some database research. That has not been a very useful resource until recently.

GORDON: Why is that?

TOFFLER: Many years ago I was an early user of DIALOG and even went to a training class to learn to use it. But I found that our searches were intermittent and used different databases, so it was very hard to stay proficient. It meant I had to go back to the books each time, and eventually it just wasn't worth the sweat.

Design, ease of use, and effects on users

GORDON: Based on almost eight years of experience with microcomputers, plus what you read and hear, what advice might you give to the

manufacturers about designing them for the future?

TOFFLER: There are some obvious things—make them cheaper, make them better, make them smaller—but I think they know that. Both the hardware and software are far too complicated. The average non-computer-literate adult faces an enormous barrier to begin to make use of them. It's evident that in a few years we'll have cheap optical scanners and cheap speech control systems that will make these machines much simpler to operate.

One of the most interesting philosophical implications of the whole thing is that the smarter the machines become, the dumber we can be. We're going to see the inclusion of more and more intelligence in the machines and less and less of a barrier between us and the machines, so they'll become more user-friendly, to use the awful jargon.

Right now, I use a very fine integrated database and word processing program, and it can do all kinds of wonderful things for me. But it's an illusion to think that it's really very simple.

GORDON: Can you identify one major impact of microcomputers on society between now and the year 2000 that most people aren't thinking about?

TOFFLER: These machines are teaching us a different way of thinking about problems. They're making it possible for millions of people to simulate and model problems and therefore to examine more alternative futures.

In this sense, they're easing people into the future; they're making it possible for us to expand the number of options beyond that which we can hold in our heads at the same time. With the help of the PC we can look at a variety of situations and look at dozens and dozens of alternatives. I think that's a fundamental cultural tool which will have a positive impact on the way we think.

Current micro usage and future uses

GORDON: Some recent figures indicate that only about five percent of U.S. households have microcomputers, despite all the advertising and media coverage. Does that number surprise you?



Author Alvin Toffler

"We need a mental version of the opposable thumb."

TOFFLER: No, because we're still in the primitive age. What we have are powerful tools, but they are in the paleolithic age of computers.

Consequently, it doesn't surprise me that (a) it's complicated to use this peculiar stone ax, (b) we haven't yet developed the mental version of the opposable thumb that would make it easier for us to use it, (c) we haven't figured out all the things to do with this stone ax, alone or linked with others, (d) we're so clumsy in making them that they're still expensive, and, finally, that we still think a stone ax has to be made out of stone.

A friend of mine said some years back that the whole idea that computers have to be cold and metallic, or made of plastic and

glass, is a vivid indication of how primitive our thinking is. I think the PCs of tomorrow will be covered with fur and will be cozy and homey. They may even be made out of materials that will fit themselves to our particular ergonomic requirements, customized to the individual. The fact that only five percent of the homes have them today is a tribute to our ignorance.

GORDON: If we look at even today's machines and assume that overnight they dropped to one-tenth of their price and became as easy to use as a common appliance like a microwave or VCR, do you think this would change the way we're using them today?

TOFFLER: No, I think that by dropping the price to one-tenth and multiplying the friendliness by ten you would gain a marginal increase in the use of the PC in the home. But if you had really intelligent software that permitted you to use the PC for other kinds of non-trivial functions, I think the use would rise rapidly.

GORDON: For instance?

TOFFLER: I don't believe managing the light bulbs in my house, turning on the microwave, or controlling the temperature of my shower are very significant functions. Even if it's cheap it's not worth bothering with. It seems to me that the sale of computers for home use for those purposes is aiming in the wrong direction.

If you said that this is a machine that can help me find friends, or that can help solve problems of loneliness or divorce, or help me improve my

relationship with my spouse or child, or help me work at home if I choose to do so, or help me think better, or give me *real* entertainment—not schematic drawings, but full-color video and with other sensory inputs—then I begin to look upon the machine in a different way. What it does now is attack a series of essentially simple-minded functions.

Policy implications

GORDON: What role if any do you see for government policy-makers in helping us take advantage of this developing technology?

TOFFLER: I have a friend in Congress who introduced a bill some years ago to provide investment tax credit to families that buy a PC for education or work in the home. I thought that was a good idea.

A better idea is to see that there are PCs or computer stores in every ghetto in this country—every place where kids are maleducated, which is almost everywhere, and wherever we have significant numbers of people who are untrained for today's jobs.

Even in cases where jobs openings do exist today, there is such a cultural and educational gap between what the job market requires and where these teenagers are [that] anything that can help close that gap is of extreme importance for the society. When I've spoken to the policy people in the White House, I've said that we should see to it that there are PCs in storefronts in the ghettos of America.

Social impacts of the PC vs. the telephone

GORDON: Some people have drawn a parallel between the introduction of the telephone and that of the microcomputer. What similarities and differences do you see between the two?

TOFFLER: If you're talking about a stand-alone PC, it's one thing; if you're talking about a PC that's hooked into a network it's something else. In general, I think the introduction of PCs is another order of magnitude.

The telephone system was one of the great advances in human communications history because it was a democratic technology. There are people who hate technology out there, who are ter-



Interviewer Gil Gordon

"What role do you see for government policy-makers?"

rified about it and don't make distinctions between one technology and another. There are people who hate nuclear reactors and computers in the same breath, even though PCs and reactors might have opposite effects on the society, quite apart from the environmental effects. The nuclear reactor is a centralized technology that requires further centralization in the social systems around it, but the PC has quite the reverse effect.

The telephone was a democratic technology because it was not activated centrally—we who use it decide how many phones are in use at any moment or what they're used for. The same thing is true of the PC, but it's not true of the broad-

cast networks or other centralized tools, for example. So, I believe that the spread of PCs and their fusion with the communications system is an order of magnitude leap in the direction of democratic technology.

Like anything else, these, too, have their dangers. I don't think the War Games scenario is totally crazy. It's clear that we're producing a new kind of civilization, a new kind of social structure, which has all kinds of new vulnerabilities built into it that we're culturally and intellectually unprepared to cope with.

We're going to have to learn our way and deal with some of these dangers. I guess my optimism about things is a bittersweet, guarded kind of optimism. It grows from the fact that in what I called the Second Wave period of traditional industrial society, the dominant technologies worked against individualism and toward the massification of society, of lifestyles, and of political views. I welcome technologies that help break up that mass society. I think the PC is one of the most powerful rocks ever hurled at the plate-glass window of society as we know it today.

The PC and world society

Another very important characteristic of a PC is its small size and relative cheapness. This means that not only can relatively poor people or civic organizations afford their own (not just giant corporations), but also that throughout the developing countries

all sorts of groups can have their own. This is village-scale technology. I think this has enormous potential implications for the political future of the planet.

When I was in China some time ago, I discussed the use of PCs with the Chinese in agricultural production and other economic applications. We visited a computer factory outside Beijing, a genetic engineering laboratory, and a fiber-optics plant. Since then, I'm both delighted and somewhat awed to say that *The Third Wave* has become the second-best selling book in China after the speeches of Deng Xiaoping.

The question raised by the book is: Can you skip a stage in economic development, or do you have to go through all the traditional steps that the smoke-stack societies went through? Can you creatively apply what I'd call Third Wave technology (of which the PC is an outstanding example) to decentralized production, to agriculture, to village life, and so on, in ways that make it possible for countries like China to leapfrog into the future? I believe that the current Chinese government has placed a gigantic bet that it can. The PC is potentially a symbol of hope for people who otherwise would be locked out of the future.

The PC and big business

GORDON: The American corporate structure as we know it seems to be amazingly stable—big companies don't look very different than they did 50 years ago, although there are some exceptions. How do you think widespread PC use will affect how companies look and act in the next 30 to 40 years?

TOFFLER: First, there's going to be considerable change within the corporation in authority and hierarchy to begin with—the pecking orders will change. The old data processing priesthood has already lost a lot of its internal clout, although they're trying to reassert their control through standardized policies for buying PCs and for what information can be fed into and taken out of the mainframe.

The idea that information is a monopoly of a white-coated priesthood is dead. That was the second-wave computer of the smokestack era. Distributed processing, followed by the PC and the creation of information networks, breaks up that power center.

Telecommuting and the decentralization of work

Second, the PC contributes to the decentralization of organizations and the movement of a good deal of decision-making down to semi-autonomous units.

Also, it makes it possible for significant numbers of people to work at home.

I'm identified with the phrase "electronic cottage," and it's been a matter of controversy as to whether this is likely to happen. I believe it's already happening. I've never said, nor do I believe, that everybody will work at home. But I do believe that a large number of tasks now done centrally will be decentralized, many of them to the home.

I also don't believe that the model of this is 10,000 employees of one large corporation all working at home, plugged into that firm's switchboard. Rather, I see small groups of employees using PCs and telecommunications technology forming themselves into enterprises or co-ops or guilds of some sort.

They may work as individuals supervised by intermediaries or facilitator organizations of some kind that contract out functions from the main corporation, thereby reducing the size of its workforce and increasing the number of people in these smaller groups. This approach has enormous potential for breaking up these bureaucratic dinosaurs and making the entire system more flexible.

Thoughts on union opposition

GORDON: Some labor union leaders are strongly opposed to telecommuting because they think it's going to lead to all kinds of abuses. What's your reaction to that?

TOFFLER: As a person who used to work for the trade union movement and carried a union card, and who not long ago gave the keynote speech at the Communications Workers convention, I am obviously opposed to the reinstitution of sweatshops.

But I think it is criminally absurd for the AFL-CIO to oppose work at home on the grounds that it's a new form of the "putting-out" system that emerged at the start of the Industrial Revolution. It is an insult to think of today's workers as if they were ignorant peasants forced off the farms of Great Britain two or three hundred years ago. It is a self-serving, short-sighted policy by the trade unions to oppose telecommuting.

Having said that, there is some cause for concern that some employers might use this new technology in an exploitative way. The answer to that is for the unions to be far more imaginative than they ever have been in organizing home work.

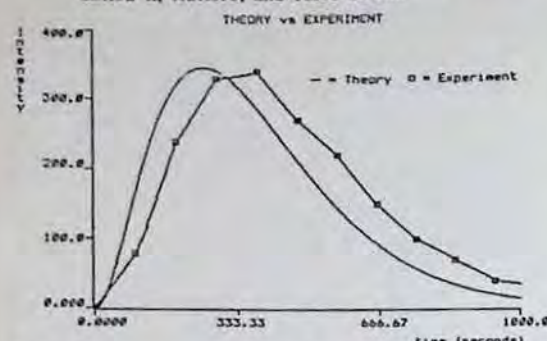
But I think they'll fail at that; more likely, home workers, through their own guilds and associations, will protect themselves. They're not just going to sit there like patsies and get kicked around the way workers were in the past. I think the AFL-CIO's

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MICRO FUTURES

response to telecommuting has been neanderthal. (See AFL-CIO's position in the article on page 36.)

Managing and organizing remote work

GORDON: One of the obstacles that's always thrown up by firms considering telecommuting is the individual manager. You can talk about the PC, the job, the benefits, and so on, but the problem often comes down to the manager who is uneasy or perhaps threatened by the prospects of supervising the remote worker. Do you think we'll see this problem go away?

TOFFLER: That depends on the specific task and on whether the workers are independent contractors, on their own or in small associations. I can understand the hesitation of some managers. If the job is just entering keystrokes, you can have a simple measure: Did the person type that many strokes or not? That work can be monitored easily, but that's also what I meant earlier about a potentially exploitative situation. The other extreme is where the job is so vague and undefined that it's hard to quantify it—and this more creative work is what is frequently done at home.

When I talk to companies about telecommuting, they often listen dubiously. I try to say there will be many different patterns: some people at home two or three days a week, or two weeks in and two weeks out, and so on. And then I say there will be people who work at the office three weeks of the month and then take the work home to finish the report because they couldn't get it done in the office. At that point there's always a laugh of recognition in the audience, because everybody knows that the office is not a productive place to get certain kinds of work done.

I think one has to look carefully at the nature of the work and at the degree of commitment, motivation, involvement, and reward offered the employees. If the employee has bought in, feels the task is important, and has a piece of the action, he or she is going to respond very differently. These people might not need the kind of monitoring that others would. If you have motivation you don't need monitoring.

I think that little groups of employees are going to say, "Why are the six of us driving in every morning to do this dumb work in department X? Why don't we form our own little company; we'll all stay home and meet once a week to decide who does what and to socialize, and we'll contract the whole function out of the company."

I wouldn't be surprised to see church groups or other kinds of social groups do this. I think we're

(continued on page 72)

"NEXT TO MY SOFTWARE, NOTHING'S MORE USER FRIENDLY THAN THE WALL STREET JOURNAL."

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Telecommuting

What happens when we stop going to work

by Gil Gordon

If you remember any of the family-oriented situation comedies on TV in the 1950s and '60s, you can easily picture the scene where Dad walks into the house and says "Hi, honey—I'm home!" Those four simple words speak volumes about family life and the nature of work as most of us know it. The "honey" was almost always the wife, who was at home all day with the kids, and the "I'm home" signaled a return from the office or factory, quite often involving a tiring and wearing commute.

That scene might become a relic of the past if telecommuting takes hold and grows as it is starting to do now. It is at once a result of and the cause of some profound changes in family structures and organizations, especially for office workers. Telecommuting is a way to bring the work to the workers—often electronically—so they can work at a remote location. These remote sites are often the employees' homes, but they may also include other kinds of alternative sites that are just around the corner.

In its fairly short history telecommuting has developed some supporters, some detractors, and a good many myths. In this article you'll see what's behind this new way to work at home and learn why it may well change the way many people live and work. We'll examine the concept itself and its implications for employers, families, and communities between now and the end of the century.

Telecommuting: what it is and how it works

There's really nothing new about people working in their homes; they've been doing it for years, and before the Industrial Revolution it was practically the only way to work. What's changed in the last five to ten years is a number of factors that now make work at home and elsewhere off-site more attractive and more practical for many job types, employees,

and employers.

Before looking at those factors, a definition is in order. In my view telecommuting is concerned with people who normally work in a central office location and now are able to work somewhere off-site. This excludes people who have always worked at or from home—the self-employed person or the sales representative, for instance. Though much of this article applies to them as well, the challenge of telecommuting is to shift some of the work out of those central locations for people who normally spend five days a week in an office.

Three key background factors

Here's what's behind the growth and interest in telecommuting today:

Changes in technology. It's no secret that computers today pack more power in smaller packages than ever before. We've also seen big gains in the area of telecommunications, the "glue" that will hold the remote sites together—though in some cases that glue doesn't stick as well as we'd like. Finally, the range of online databases has grown to the point where many tasks that were bound to a file cabinet or library shelf are now more portable because the relevant facts can be accessed from wherever there's a PC and a telephone.

These certainly aren't the only changes, but they're the most relevant ones. Coupled with the explosive growth in PC purchase and use in corporations, we have a situation today where more people can do their full jobs remotely—at least from a technical standpoint.

Changes in organizations. Most organizations today are watching expenses like never before. This follows from recent years of inflation and recession and, in some cases, growing worldwide competition.



ILLUSTRATION BY DAVE GRIMM

Cost control is a must, and the gold stars go to the managers who can make do with less.

Changes in the workforce. The typical family pictured in those TV shows of the past is fading away like the shows themselves. Statistics indicate that only about 20 percent of the population lives in a home with Dad going out to work and Mom at home with the kids. The growth in the ranks of working women, single parents, and dual-career couples means that more people have to find ways to balance work and home life. For most, this has been a precarious balancing act at best.

Telecommuting is a way to bring the work to the workers—electronically.

Also, there's a small but growing number of employees who want more flexibility in their work and in their relationships with employers. The growing interest in flexible work hours, job-sharing, part-time work and other alternate schedules is one example. Another is the isolated but significant cases where skilled professionals—often in computer-related jobs—can pressure employers to offer telecommuting as an option because their talents are so much in demand.

These are three main driving forces behind telecommuting. It is still a fairly limited phenomenon; it's hard to get an accurate count, but only about 300 firms have some kind of program, and these range from one or two people to under 100 in most cases—if we define telecommuters as specified earlier. The growth of telecommuting has been limited by its novelty and the (mis)perception that it's a very radical, risky idea.

Telecommuting myths

A number of myths that have developed also work to limit telecommuting's growth. For example:

—"It's just for programmers and others in keyboard-type jobs." In fact, the applications extend to economists, writers, telephone salespeople, researchers, and many, many others.

—"It's just for women with young children." In fact, it is not a substitute for child care; it's almost impossible to do your job with one hand and feed the baby with the other.

—"It's working at home five days a week." In fact, it's not always at home; satellite offices and other

remote sites are also effective (see later section). And it's not (and shouldn't be) five days a week away from the office. It's too easy for the telecommuter to lose touch and for his/her work to suffer.

Hidden benefits, hasty implementation

There are two more reasons why organizations have been slow to adopt telecommuting. First is a *poor understanding of benefits* such as improved recruiting and retention of employees, reduced office space costs, and higher productivity.

Second, *poorly planned implementation* with too much emphasis on the technical side and not enough on the critical human resource management issues is a problem. Some of these issues are: selecting the right tasks, selecting the right people, training managers to manage from a distance, and setting up ways to keep the telecommuter linked (for information and social purposes) to the office. When telecommuting is seen as a business solution to a business problem and when it's implemented with careful attention to the supervisory issues it becomes a very effective tool. It's not for all jobs, all employees, and all employers—but nothing is.

Telecommuting's implications for business

Three things will determine how widespread an effect telecommuting will have on most major employers:

Number of telecommuters. There's no reason why five percent of the office workers in almost every firm couldn't begin telecommuting right now. In some of the information-intensive businesses (such as banking, insurance, and financial services) the potential number of remote workers might be as high as 30 to 50 percent of today's office workforce.

Remote work schedules. Early trends seem to suggest that the actual amount of time out of the office will vary by job type and level and personal preference of manager and employee. Clerical-level workers might work remotely for a fixed three or four days a week while managerial workers might be on this schedule or a more flexible one—two days away one week, four days the next, and so on.

Reasons for using telecommuters. The firm that allows some people to work at home because of its interest in experimenting with new policies will be affected very differently from one that uses telecommuting because it's cramped for office space or because not enough of the right kinds of workers can be recruited into its center-city location.

Depending on the mix of these three factors, there will be anything from a very subtle to a very widespread (and in part unpredictable) impact in these

areas, among others:

Work methods. How well will work groups be able to supplement face-to-face contact with electronic communications?

Personnel policies. Will telecommuters be eligible for new or different kinds of benefits—and is telecommuting a benefit in itself? (Note: some union observers see a dark side to telecommuting and are strongly opposed to its growth; see accompanying article for this viewpoint.)

Career mobility. How easy will it be to prevent the "out of sight, out of mind" problem; will telecommuters get fewer promotions, and if so, will they care? Some early research indicates that some will gladly trade off the risk of slower progress for the personal benefits of working at home.

Office design. Today's office is designed for people who work at the same desks five days a week and have all their resources nearby. What happens when some of them become "transients" who drop in only one or two days a week, perhaps for meetings?

Management practices. Many feel this is the number-one issue in telecommuting. Managers will have to adjust to monitoring outputs and results instead of inputs and activities—a big jump, perhaps, for the manager who's used to having frequent, close access to the staff.

We've learned a lot already about these and other issues, and about how to head off many potential problems. Without the motivation of another oil embargo (heaven forbid), the adoption of telecommuting is likely to be a very gradual process in which there will be plenty of chances for controlled pilot programs in which these and related issues can be tackled.

Implications for families and communities

Here's where the real fun begins: What's going to happen in our homes and neighborhoods if fairly large numbers of workers begin telecommuting? Let's assume that by the century's end 20 percent of the workforce is working remotely for three days a week on average; assuming no growth in the workforce, this converts to roughly 20 million people.

Here's an abbreviated A-Z list of some of the things that will be affected by this decentralization of work:

Architecture. Today's homes are designed for living, not working. A unique housing development (Eaglecrest, near Sacramento, California) and a fully-wired home office option (in Southampton Corp.-developed homes near San Francisco) give us a glimpse at what an "electronic cottage" might look like, but we really don't know what's in store.

It's a question of total space, layout of a home work area, and a challenge to the assumptions of what activities happen where in the home. For example, if a telecommuter is home three or four days a week, doesn't it make sense to put the work area in a space other than the spare bedroom or den—especially if it's downstairs or doesn't have a window with a view? Why not build a convertible office/dining room module (how often do most people use a formal dining room?) or other kind of mixed-use space?

And what about furniture? Neither the dining room table nor most standard desks in the home are suited for office work, especially work involving a PC or terminal. We're now beginning to see workstation furniture designed with some (but not full) ergonomic features in styles that fit in with home decor. Perhaps what will be needed is a new approach to furniture design—some kind of dual-purpose units or even a "Murphy bed" type of fold-away desk unit.

Career mobility and relocation. The disruption and costs of relocating to take a new job or promotion might be a thing of the past. Within reasonable distances it might be feasible to bring the new job to the employee in the old location. This could have a big impact on all the industries that are part of

Telecommuting must be seen as a business solution to a business problem.

corporate relocations—movers, real estate brokers, and even the Welcome Wagon. Maybe our relocated telecommuters will access an electronic Welcome Wagon, logging on to get information on their new jobs or new employers.

Relocation is usually a hardship for the family, and this problem might disappear. The aggravation of moving ("I thought you packed the can opener") and of resettling ("Where am I going to find a good auto mechanic?") has taken its toll on many families and, indirectly, on the transferred employee. Few families would miss the transfer experience.

Child care. There is an abysmal lack of high-quality, reasonably-priced child care facilities today, and there's every indication that growing demand will continue to outpace meager growth in supply. The in-home form of telecommuting really isn't an answer unless the person is working only part-time and/or can trade off caretaking duties

with a spouse or someone else.

Two promising possibilities here are the growth of part-time jobs (because electronic tasks can often be more easily broken down into smaller time units) and the growth of other remote work sites (see "neighborhood office centers" below). With these and similar options single parents and couples will be able to obtain or provide good child care and pursue their careers instead of having to sacrifice one or the other.

Telecommuting isn't an answer for child care.

Families and marriages in the electronic cottage. Some marriages survive in spite of—and others because of—the fact that both partners are away from each other all day long. It's only an educated guess, but we might see that strong marriages involving telecommuters get stronger, weak ones split up, and those in the middle soon get better or worse. For some couples, proximity may be welcomed; for others, proximity may breed contempt.

We may also see a period of "storm before the calm" in families of telecommuters as they adjust to the new at-home relationships. One risk for people working at home is that they won't be taken seriously by family members—telecommuters sometimes report that they're asked to do chores or run errands (just because they're at home) that interfere with their work. If this leads to a more equitable sharing of household duties it's not all bad, but it won't always happen smoothly. Families may need to be guided through a transition period as everyone comes to grips with the changes.

Neighborhood office centers. It's entirely likely that many telecommuters will spend part or most of their remote time at mini-offices in their neighborhoods. These might be vacant elementary schools or shopping centers converted for multi-employer offices, perhaps including cafeterias, child care centers, and even exercise facilities.

These centers cut down on commuting and prevent the isolation some fear in at-home telecommuting; from the employer's viewpoint they allow for on-site supervision and shared use of equipment and services, such as copiers and teleconferencing, not feasible for the home.

These centers might be among several office locations at which tomorrow's employees will work. A manager might spend one day at home, two in the

neighborhood center, and two in the downtown office this week; next week the schedule might be four days at home and one downtown, and the next week yet another pattern. As technology advances so that the office can, in effect, be wherever the person is, a much more fluid and variable mix of work schedules and locations is likely to emerge.

Self-employment growth. As work becomes more portable it's easier for people to work as contractors instead of employees; some of today's telecommuting programs are structured that way. One reason why the temporary-help industry exists is that some people want the luxury of job-hopping and will trade total income and security for that luxury. There's no reason why tomorrow's workers all have to be employees—and there's no reason why they'll have to settle for lower pay.

Alvin Toffler cites the role of guilds or associations in helping the growth of telecommuting (see accompanying interview). We may well see a whole range of employment relationships spurred by a growing interest in self-employment and/or a "small is beautiful" philosophy about organizations.

Urban structure and development. Our towns and cities were laid out with centralized work areas and the assumption that many people would commute to those areas from great distances. With telecommuting it's possible that we'll see a more balanced distribution of commercial and residential space, because more work will take place in what had been "residential" areas, and more people will live in what had been "commercial" areas. We might also see more efforts to revitalize downtown areas to include upscale residential and retail sections, as has been done in Boston and Baltimore, for example. Today's fairly rigid boundaries between residential and office areas might fade away.

Also, put yourself in the shoes of the mass transit and highway directors in a major city where telecommuting has taken hold. Will maintenance and construction costs drop as fewer people use these systems? If so, how will these costs be offset by the need to maintain an infrastructure that's built and staffed to carry the pre-telecommuting loads?

Telecommuting becomes an interesting urban and regional planning issue for the next 10 to 20 years. For example, the Southern California Association of Governments, a group of more than 200 cities and counties, is building its regional plan with the assumption that 12 percent of the workforce will be telecommuting by the year 2000.

Weekday/weekend and day/night: artificial distinctions Just as telecommuting frees people from

(continued on page 76)

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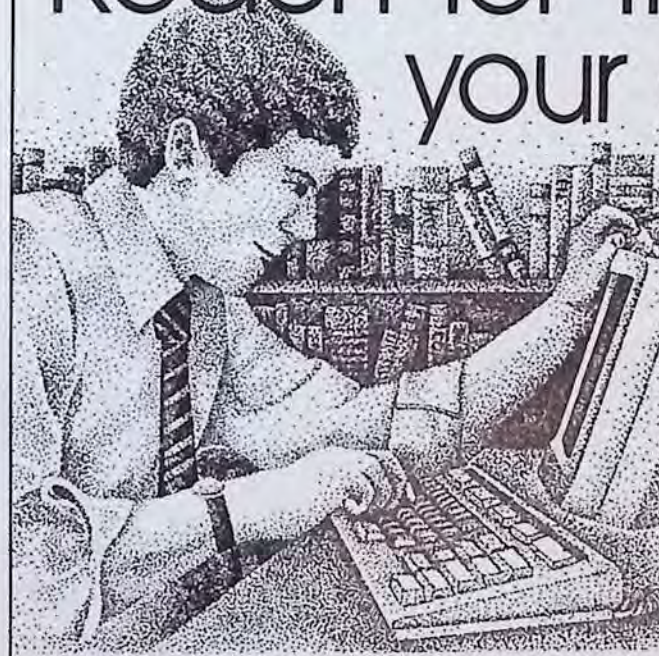
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AFL-CIO: Ban Electronic Homework

(Ed. note: This article originally appeared in the December 1984 issue of "Telecommuting Review," edited by Gil Gordon.)

Many of our readers may be aware that several unions have been actively lobbying to maintain or expand current restrictions on work at home under the Fair Labor Standards Act. The union position on work at home has generally not been well received by those supporting the growth of telecommuting.

Despite this, we at "Telecommuting Review" felt that it is important for everyone to understand the union position, so we invited a leading union spokesman to write the following article. Dennis Chamot, Ph.D., is associate director of the Department for Professional Employees of the AFL-CIO; here are his observations on telecommuting:

Some thoughts on electronic homework

In October 1983, a resolution was passed at the national convention of the AFL-CIO which called for a ban of electronic homework. Such a ban, if instituted by the U.S. Department of Labor, would join others involving various forms of industrial homework which have been in effect for several decades (only the ban on home knitting has been lifted by the Reagan Administration, and even this may be challenged).

Why have these other forms of homework been banned, and why the call for elimination of computer homework even before it has become widely established? Are there similarities between workers involved in button making or sewing and computer work?

There were two reasons for the establishment of the original bans. In the first place, abuse and exploitation were widespread. Many homeworkers toiled long hours for minimal pay, often under unhealthy conditions, and child labor was not uncommon. An initial approach toward alleviating these problems involved the establishment of regulations, primarily at the state level. However, experience proved that it was impossible to enforce regulations for a workforce that was so dispersed. The lack of ability to enforce protective regulations

designed to help large numbers of exploited people led to the strong belief that the only way to eliminate the widespread evils of industrial homework was through a total ban.

The inability to police workplaces that essentially are people's homes is still with us. The question to be answered, then, is whether clerical workers using terminals online in their homes will be subject to the same kinds of problems as earlier industrial homeworkers.

This question cannot be answered completely on the basis of today's homeworkers simply because their numbers are so incredibly small (the most generous estimate of which I am aware is 20,000, not all of whom are clericals). Many who are involved in current programs do so by choice, and some seem to be well treated, as befits volunteers in experimental programs. Yet many of the factors which characterized the earlier abusive experiences are present, or potentially present—a large available workforce with appropriate tools and skills; strong competitive pressures on employers; lack of bargaining power by the highly dispersed workforce; inability to adequately enforce regulations (some already exist, e.g., minimum wage requirements), and so forth.

Cynics would charge that the unions' interest in this issue stems solely from a fear that homeworkers would be difficult to organize. I would like to assure you that this is not the case. There are more than enough unorganized clerical workers in traditional work places to keep interested unions busy for a long time. No, the largest opposition comes from precisely those unions which have the most vivid memories of past abuses of homeworkers.

If history is any guide, we can say with certainty that abuse of electronic homeworkers is inevitable (some cases have already surfaced). An early ban would try to prevent a repeat of past experiences in a new guise.

A ban on computer homework is not now in effect. Those who desire to see the spread of this kind of work have the burden of proving that adequate safeguards can be developed short of an outright ban, for a time when telecommuting routinely involves large numbers of clerical workers who have no other work available.

The American labor movement is not, and never has been, anti-technology per se. Our concern is with the application of new technologies and their effects on people's work lives. We know our history, and we understand human nature. We will work to see that history does not repeat itself. □

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The Right to Choose Where You Work

by Tammara H. Wolfgram

Aside from an undying interest in whatever is new in the computer world, what do thousands of personal computer owners have in common? They work from home. If your Kaypro resides in some part of your house, chances are that you, too, earn money working at home.

Though they may be employed full-time outside the home, the majority of personal computer owners do at least some business on their computers. They may be moonlighting, tying into the main computer at work, or writing their first novel. Whatever type of work they are doing, they are part of a rapidly expanding group of people who work from home.

United States Chamber of Commerce statistics show that 10 million businesses filing tax returns list a home address as their place of business. This represents a 50 percent increase over figures from just ten years ago. Experts estimate that by 1990 the number of people working from home will increase to 15 million. This increase is due, in large part, to the rapid proliferation of home computers.

Telecommuting is the topic of the day. While only 15,000 people are now estimated to be telecommuting in the United States, Jack Nilles, a director at the University of Southern California's Center for Futures Research, predicts that by the 1990s 10 million people will be telecommuting, at least part-time.

Personal computers have also opened up opportunities for many types of home business that have not existed before. Word processing services, data base research firms, software writing, and program consulting are only a few of the computer services being offered out of people's homes today.

In addition to computer-oriented businesses, many traditional home enterprises have incorporated personal computers into their operation. These home entrepreneurs find that personal computers make useful tools in the efficient running of their businesses, freeing their owners for more creative endeavors.

The right to choose your workplace

In response to the rapid growth in the number of home business entrepreneurs, an assortment of professional and trade associations are springing up across the country.

Coralee Kern, probably the first and most widely heard spokesperson for the work-at-home movement, started the National Association for the Cottage Industry to serve the unique needs of the expanding number of home business owners.

Perhaps most important, NACI (P.O. Box 14850, Chicago, IL 60614) serves as an advocate to represent the unique interests of the home worker. By serving as a clearinghouse of home business information, NACI hopes it can do its part in protecting the rights of all people to choose their workplace—whether it be in the home or in a traditional business setting. To this end, Kern gave testimony at a Senate hearing on home businesses in Washington, D.C. in November 1983. She also has appeared on numerous national and local television talk shows, including the *Phil Donahue Show* and ABC's *Nightline* with Ted Koppel and union leader Sol Chaiken.

Having operated several businesses from her Chicago apartment during the past 13 years, Kern has personally bumped into zoning laws several times. Recently she began to seek public support of her position that all self-employed people should have the right to choose their workplace.

Model zoning ordinance developed

The National Alliance of Home-Based Businesswomen (P.O. Box 95, Norwood, NJ 07648) is another organization founded to serve the needs of those who work at home. Frances Gildea O'Neill, vice president of the organization, says the largest single issue facing home business people today is discriminatory laws. While she admits that some of these laws were sound at the time they were written, O'Neill points out that officials could not envision the revolutionary changes brought about by microcomputers and other technological advances.

Like NACI, NAHBB is actively concerned with the legal issues of working from home. The association has written a model zoning ordinance, intended to protect both the home business and the residential neighborhood, to serve as an example for cities nationwide wishing to update their zoning laws.

Electronic cottage bill of rights

A relatively new organization, the Association of Electronic Cottagers, founded by Paul and Sarah Edwards, caters to the growing number of people who work in their homes with personal computers. The AEC (677 Canyon Crest Dr., Sierra Madre, CA 91024) provides business services to computer entrepreneurs and telecommuters as well. Many of their services are provided to members through CompuServe Information Service. Members can access current news about local, state, national, and international developments affecting their interests

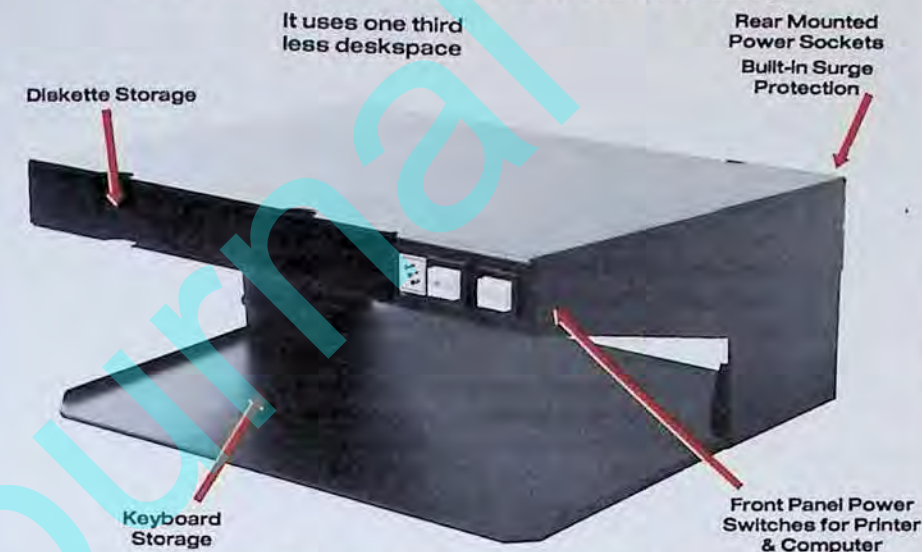
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Here's to Your 26-Pound Pocket Calculator!

Let your computer make you a mathematical marvel

by Darrell Huff

Whether from Fear of Figuring or the Perils of Programming, if you're not using your Kaypro as the especially potent desk calculator it is—you're missing a great bet.

Your computer, any computer, will do plain arithmetic in a trice, even when faced with pretty staggering numbers. All right, so will a pocket calculator weighing about 26 pounds less...

But your Kaypro came bundled with programs for handling complex scientific and financial figuring of a kind that would demand an expensive specialized calculator. On top of that, your Kaypro and a printer can combine to hand you the results spread out on paper in whatever format you fancy. This is especially nice if you're working with something like a bulky table of mortgage payments. To accomplish as much by calculator you'd have to invest in an expensive programmable model and hitch it to several hundred dollars worth of hefty, page-sized printer.

One particularly nice aspect of doing your calculating by computer is that you already own the darned thing. Making use of this fabulous capacity won't nick you one dime. You're just using a little of the potential for which the computer was dreamed up in the first place: number juggling. It's a talent too easily overlooked in the maze of spreadsheeting, databasing, and word processing most of us were thinking of when we acquired our computers.

If up until now you haven't taken even Step One toward letting your computer turn you into a mathematical marvel, perhaps what you need first is to be suitably impressed.

Showing off

Try this. First summon up BASIC. If you've never done so, note that with Kaypro that can mean sim-

ply feeding into drive A the disk marked Microsoft BASIC-80, then typing **MBASIC** and a return.

Having done this and been greeted by an "ok" (MBASIC's prompt) type the following, ending each line with the usual return.

```
10 FOR N=1 TO 15
20 PRINT N,N^2,N^3,N^4,N^5
30 NEXT N
RUN
```

This should give you a lovely screenful of table. For the numbers 1 through 15 you have all but instantaneously compiled a table of squares, cubes, and fourth and fifth powers (because the "A" tells the computer to compute N "raised to the power" of X, where X in this case is 2, 3, 4, and 5). Think what would have happened if, instead of 15, you'd typed 150! (And stop a moment for respectful contemplation in honor of the fellow who first ground out any halfway comparable table with pencil and paper or—for all I know—sharp stick and clay tablet.)

Now, if you have a printer hooked up to your computer, write that tiny program all over again. But this time instead of PRINT in the second line type **LPRINT**.

Don't be put off while you're doing this by what may seem the eccentricity of numbering program lines by the tens. That's so you'll have unused numbers galore if you want to insert more lines later. As for **LPRINT**, that's just BASIC's odd way of telling the computer not to put stuff on the screen but to feed it to the printer instead.

The ground rules

If you're suitably impressed we can move on to some useful calculations—as soon as we've set down a handful of ground rules. Some of these are the



established language of math, but a couple are pure computerese.

1. If a statement contains parentheses, you're supposed to deal with what's inside them first. If there's more than one set of parentheses or brackets, work from the inner ones out.

2. If there's anything to be raised to a power, that operation comes ahead of the ordinary arithmetic. Then My Dear Aunt Sally, the schoolkid's memory aid, takes over to remind you that—working from the left—you Multiply and Divide first, then Add and Subtract.

3. Use the familiar plus (+) and minus (-) signs to add and subtract. But note that BASIC avoids confusion with the letter "x" by using the asterisk (*) instead of the usual times sign for multiplying. The slash (/) says divide. As we saw earlier, the up-caret that shares a key with the number 6 says "raise to the power of" and is used to get squares, cubes, cube roots and so on.

Your computer can do one-time calculations in much the same manner that a pocket calculator does. Although you'll probably find that the bulk of math operations worthy of your computer are most easily handled by writing a program, you'll still want to start by practicing some typical maneuvers right from the keyboard without programming.

The whole dread subject of interest compounding comes down to one expression.

How much is 3 times 75? With MBASIC's ok on the screen, type PRINT 3*75 and a return. You'll be rewarded by the answer.

If the form of BASIC you're using is MBASIC, try using a question mark instead of PRINT. Works just the same. If you use this timesaver in programs and play them back with MBASIC's LIST command, you'll note that MBASIC kindly converts each "?" to the word "PRINT."

With your printer online and LPRINT substituted for just plain PRINT, the answer will be typed out for you instead of displayed on your screen.

Sometimes you'll want to record the problem as well as the answer. Use quotation marks: LPRINT "3*75="3*75 or, to demonstrate that what's between quotes doesn't function but merely prints, type PRINT or LPRINT followed by "3 X 75

= "3*75.

You've probably found by now that until you've left a line by typing a return you can correct mistyping by using backspace to delete. This works the same whether you're in direct mode or writing a program, but when you've finished a line there's a new problem: you can't get back to change it no matter how much you bang the cursor keys.

What to do in that case is just type in the whole line all over again, including the original number, wherever you happen to be. The erroneous line will still show on the screen, but in fact it will be as dead as a dodo and the corrected line will function in its place. If you then view the program by typing LIST and a return, you'll find things nicely in order with your new line substituted for the old. To cancel a line at any time, type in a new line using just the old number and a return.

Applying what you've learned

With all this under your belt you're ready to write a distinctly useful program. In a world in which interest rates have recently become almost life-and-death matters in our personal lives as well as in world affairs, it makes sense to tackle the intricacies of compound interest.

You may be relieved to find that this whole dread subject of interest compounding comes down to variations of one nasty—but short—expression by which the amount of money you start with (called PV, for present value) must be multiplied to discover how much you'll end up with (called FV, naturally, for future value).

Interest, it seems, can be compounded at any interval and at any interest rate the market will bear and the law will allow, and for just about any period of time.

Let's make our example a \$1749.45 savings deposit to be compounded daily at 8.75 percent. What will that amount to after 27.5 years? And, for comparison with other opportunities, what effective annual rate results from the 8.75 percent when compounded daily? To begin, examine that nasty-but-short multiplier mentioned a few paragraphs back. Its formula tells you to express the interest rate per period as a decimal fraction, add 1, and then raise this sum to the power of the total number of periods.

Sounds like a chore? Have no fear. Kaypro is here.

If you were interested in making this kind of calculation only once, you could do it directly and forget programming. But you'll save time in the long run if you'll write a neat program you can use repeatedly by tucking in new figures, getting prac-

tically instant answers. Still in MBASIC, with the ok prompt showing, type the following. (If you first type AUTO and a return, you won't have to remember to supply line numbers; the little devils will appear automatically. To cancel AUTO when you're done with it, hit ^C and a return when the next line shows—e.g., line 150 in the following:

```
Ok
AUTO
10 ' DAILY COMPOUND INTEREST
20 ' FILE NAME: DAILYINT.BAS
30 INPUT "INTEREST RATE AS A PERCENT=? (EXAMPLE: 8.75)"; INTPCT
40 INPUT "PRESENT VALUE=? (EXAMPLE: 1749.45) $"; PV
50 INPUT "YEARS=? (EXAMPLE: 27.5)"; YEARS
60 PRINT "INTEREST RATE=", INTPCT
70 PRINT "PRESENT VALUE=", PV
80 PRINT "YEARS=", YEARS
90 INPUT "ARE THE VALUES CORRECT? (Y/N)"; YESNO$
100 IF YESNO$ = "N" THEN GOTO 30 ELSE IF YESNO$ = "Y"
    GOTO 30
110 LET NPMNTS=360*YEARS
120 LET I=INTPCT/36000
130 LET FV=PV*((1+I)^NPMNTS)
140 PRINT USING "FUTURE VALUE=$###,###.##"; FV
150 [CTRL C] [RETURN]
RUN [RETURN]
```

Figure 1: Daily Compound Interest Program (some lines have been broken and indented for typesetting here).

After the return following the last line, type RUN and then another return. Answer the queries that appear, using the figures suggested earlier, and you should find your nest egg swollen to a nice \$19,389.40. (By the way, don't use commas when plugging in amounts. Commas have a special meaning in BASIC pertaining to print zones, and your computer will be confused.)

(Editor's note: The above example of daily compounding over 27.5 years requires raising the program's (1+I) factor to the 9900th power—using MBASIC's single precision (seven digits of precision). Multiplying a truncated fraction, even a six-digit one, times itself 9900 times does tend to accumulate error. Checking the \$19,389.40 result with a Hewlett Packard 12C financial calculator (ten digits of accuracy) gives the value \$19,399.81, a difference of \$10.41. MBASIC does, however, support "double precision" when you program for it, allowing 16 digits of precision.)

As hinted earlier, this program has another use—converting an interest figure into an annual yield. That's the second of the twin figures you see in bank ads touting certificates of deposit. To obtain this second result, run the program again, putting in the rate of interest for which you wish to find the yield, but entering 1 for the amount and 1 for the number of years.

If you're curious, you might try successive guesses to determine by trial and error the level at which yield becomes a whole percentage point higher than rate.

Minor Miracle

If you're a hardened math type and an even half-astute programmer you'll have found much of the accompanying article pretty elementary.

But here's something that may titillate even you. If you're one of the millions of people hoping to buy a new home soon or sometime, here is a kind of miracle to contemplate. It's a computer-assisted bit of self-hypnosis that could save you more than a hundred thousand dollars on a hundred-thousand-dollar home mortgage.

Begin with the program we've dubbed AMORTIZATION. (Not the LPRINT one that produces a table.) Alter it so it can process payments made other than monthly, by substituting the following for Lines 110 and 120 of Figure 2.

```
110 INPUT "NUMBER OF PAYMENTS PER YEAR=?"; NPMNTSYR
115 LET NPMNTS=YEARS*NPMNTSYR
120 LET I=INTPCT/(NPMNTSYR*100)
```

In preparation for using the program with your own existing or contemplated mortgage, give it a trial run. Assume a \$100,000 loan at 14 percent for 30 years, with monthly payments.

Then run it for a 19-year mortgage, with payments made every two weeks—26 payments a year.

Do you find it interesting that by making slightly less than half-size payments every two weeks instead of full-size ones monthly you can pay off the debt in 19 years instead of 30? And that the total paid over the lifetime of the mortgage is reduced by more than the whole amount of the mortgage?

Depending upon how you earn your income and how you handle it, you may find these every-other-week payments simpler to budget for than monthly ones. If your bank frowns on payments other than monthly, there's still a way to get this big saving. Make the payments into an interest-earning savings account and pay the mortgage holder from that. Make an additional payment on the principal whenever enough accumulates. Work out with the bank how this is to be done.

In setting up the loan, try to find a bank that will give you a reduced rate of interest because it's a 19-year loan not a 30-year one. (Some will, some won't.) Then you'll have an even earlier payoff and an even greater saving.

And think of the fun you can have in Paris or Tahiti during those eleven years or more of no mortgage payments. □

Saving your programs

At some stage of working with this or any other useful program you'll probably want to store it for future use. The command to save it as an MBASIC program takes this form: **SAVE "B:DAILYINT"**. Those quotation marks are essential.

Instead of storing programs in this fashion, you may prefer to tell MBASIC to save them in ASCII format, then use your familiar and versatile word processing program to edit them and to run them from. To do this, alter the command in the previous paragraph to **SAVE "B:DAILYINT",A**. With the program so stored—with WordStar, for example—you can run it from the opening menu by typing **R** and then MBASIC and the filename. And when you're finished with the program and type **SYSTEM** to get from MBASIC back to the good old A-prompt (A>), you'll be offered a shortcut route to the WordStar Opening Menu.

For these gains, and to be able to do your programming in your choice of BASIC or word processor without the nuisance of disk change, PIP MBASIC to your word processor disk.

Variations on the theme

Something for which you may well wish to use your daily-interest program is to compare alternative rates or periods when making a choice among investments or loans. For this purpose a hardcopy record is helpful. In order to make one, list the MBASIC program (that is, type **LIST** and a return) and then replace all lines containing **PRINT** with similar ones using **LPRINT**.

This procedure is especially simple when you're dealing with a file saved in ASCII. Edit it as you would any text file (though in WordStar, use **N=Non Document mode**) using conveniences such as **FIND** and **REPLACE**.

Now if you'll go back to the daily-interest program and examine it line by line, you'll see how each one does its work.

The first two lines have been used for remarks. Whenever a line starts with **REM** (or its quicker alternative allowed in MBASIC, a single quote) the program will retain that line and list it as a sort of memo, but won't execute it. Use such lines as reminders to you or another user of what the program is up to.

The next three lines ask you for the interest rate, the amount of money involved and the number of years. Your responses are then stowed away in places labeled **INTPCT**, **PV**, and **YEARS**, respectively.

The three lines thereafter print back your

responses, and lines 90 and 100 allow you to correct any mistakes (an "echo check").

Line 110 multiplies the number of years by 360 (some banks would use 365) to change to days, stowing this result in **NPMNTS**.

Line 120 divides the interest rate you put into **INTPCT** by 360 to change the rate from yearly to daily. At the same time it divides by 100 to change it from the percentage you entered to the decimal form called for by the formula.

Now all the data are in and converted to the form the standard compounding formula calls for. That formula, as you can see from Line 130, says that you start by adding 1 to the daily interest rate in decimal form (**I**). You then raise this to the power of the number of compounding periods—which for daily interest is the total number of days the money will be working (in amortization problems, this is the number of payments—hence the variable name **NPMNTS**). Next you multiply by the number of dollars you start with (the present value, labeled **PV** in the program). Line 140 instructs the computer to print the resulting future value (**FV**) as your new balance.

More?

Ready to go another step? Let's try remodeling that program into one even more worthwhile.

You can type what follows from scratch. Or, if you have saved the interest program in BASIC, you can list it and type in new lines. If you have it as an ASCII file, edit it with your favorite word processing program.

```
10 ' AMORTIZATION
20 ' FILE NAME: AMORTIZE.BAS
30 INPUT "INTEREST RATE AS A PERCENT=? (EXAMPLE: 8.75)"; INTPCT
40 INPUT "PRINCIPAL AMOUNT=? (EXAMPLE: 1749.45) $"; PRIN
50 INPUT "YEARS=? (EXAMPLE: 27.5)"; YEARS
110 LET NPMNTS=12*YEARS
120 LET I=INTPCT/1200
130 LET PMNTS=PRIN*I/(1-(1+I)^(-NPMNTS))
150 PRINT "PAYMENTS=$"; PMNTS
160 PRINT "TOTAL PAYOUT OVER LIFE OF LOAN=$"; PMNTS*NPMNTS
```

Figure 2: Amortization Program. Computes amount of periodic payments and total payout over the life of a given loan (some lines have been broken and indented for typesetting here).

As you can see, this useful schedule of time payments—for car, home mortgage, or whatever—asks you to fill in the same trio of variables as before. Since you're dealing with monthly payments, the formula then goes on (in Lines 110 and 120) to express the period of years and the rate of interest in monthly terms instead of converting them to daily. With these preliminaries out of the way, it applies

a standard formula, one that has served to generate whole books of bankers' tables. It will now serve you, requiring only the modest effort on your part of typing one slightly tricky line.

This formula—take a deep breath—calls for raising 1 plus the monthly interest rate, in decimal form, to the negative power of the agreed number of payments, subtracting this from 1, and then using the whole mishmash as a quantity by which to divide another quantity that you get by multiplying that same monthly interest rate by the amount of the loan.

Having wrapped the complex formula for time payments into an easily used program, what next? Well, how about writing a routine for printing out a whole table of payments?

Such a table should show payment amount, how much goes for interest, how much for principal, and balance still owing. Run down the lines in the following program to see how it does this.

```
10 LPRINT "AMORTIZATION TABLE"
12 ' FILE NAME: AMORTABL.BAS
15 LPRINT
20 INPUT "INTEREST PERCENT (EXAMPLE: 10.00; TYPE 0 TO QUIT)"; INTPCT
30 IF INTPCT=0 THEN STOP
40 INPUT "PRINCIPAL AMOUNT (EXAMPLE: 1000) $"; PRIN
50 INPUT "NUMBER OF YEARS (EXAMPLE: 1)"; YEARS
60 INPUT "NUMBER OF PAYMENTS PER YEAR (EXAMPLE: 12)"; NPMNTS
65 INPUT "AMOUNT PER PAYMENT (EXAMPLE: $ 87.92) $"; PMNTS
70 LPRINT INTPCT% " " "$"PRIN YEARS"YRS "NPMNTS"PER YR "
  "PAYMENTS $"PMNTS
80 PERIOD=0
85 LPRINT
90 LPRINT "PMT","INTEREST","APPL TO PRIN","BALANCE"
100 A1=INTPCT/100
105 A2=A1/NPMNTS:B1=PRIN*A2:B2=PMNTS-B1:PRIN=PRIN-B2
110 PERIOD=PERIOD+1
120 LPRINT PERIOD,B1,B2,PRIN
130 IF PRIN>.1 THEN 100
140 LPRINT
150 LPRINT
160 GOTO 20
170 END
```

Figure 3: Amortization Table. Lists payment number, amount paid to interest, to principle, and resulting balance—but makes you run the program of Figure 2 to compute the monthly payment (some lines have been broken and indented for typesetting here).

You'll probably find most of this program easy enough to follow. But you might wonder why Line 130 doesn't use **PRIN** as its cue to stop running. The reason is that if the payments—necessarily rounded to the nearest cent—wind up a penny or two short, the table will call for a tiny additional payment. This being ridiculous, it seems sensible to alter the command to say that when the balance drops to less than a dime, forget it.

Fine tuning

After saving this table-printing program and using it a few times, you may become critical of one aspect.

Is it a nuisance to have to dig out a separate program to calculate the payment amount first? Then why not combine the programs?

You could lift lines directly from the earlier program. But why not flex your muscles by introducing an additional element—the ability to handle payments made at other than monthly intervals? Then it will be able to produce information far beyond anything in those bankers' traditional fat monthly payment books. Because of certain possibilities inherent in today's new flexible mortgages, this power could prove remarkably useful. You can add this feature by replacing Line 65 with the six new lines that follow. Since one of them uses its line number, Line 65 is automatically canceled.

```
62 LET I=INTPCT/(100*NPMNTS)
64 LET PMNTS=PRIN*I/(1-(1+I)^(-NPMNTS*YEARS))
65 LPRINT "TOTAL PRINCIPAL AND INTEREST=$"; PMNTS*NPMNTS*YEARS
67 LPRINT
68 LPRINT "TOTAL INTEREST=$"; PMNTS*NPMNTS*YEARS-PRIN
69 LPRINT
```

Figure 4: Addition to Figure 3's Amortization Program. Makes that program compute the monthly payment for you (one line has been broken and indented for typesetting here).

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CALCULATOR

The additions from Figure 4 should make the program of Figure 3 produce output like that of Figure 5:

AMORTIZATION TABLE, AUTO-COMPUTED PAYMENTS

INTEREST PERCENT (EXAMPLE: 10.00; TYPE 0 TO QUIT)? 10
PRINCIPAL AMOUNT (EXAMPLE: \$1000) \$? 1000
NUMBER OF YEARS (EXAMPLE: 1)? 1
NUMBER OF PAYMENTS PER YEAR (EXAMPLE: 12)? 12
TOTAL PRINCIPAL AND INTEREST=\$ 1054.99

TOTAL INTEREST=\$ 54.9891

10 % \$ 1000 1 YRS 12 PER YR PAYMENTS \$ 87.9158

PMT	INTEREST	APPL TO PRIN	BALANCE
1	8.33333	79.5824	920.418
2	7.67015	80.2456	840.172
3	7.00143	80.9143	759.258
4	6.32715	81.5886	677.669
5	5.64724	82.2685	595.401
6	4.96167	82.9541	512.447
7	4.27039	83.6454	428.801
8	3.57334	84.3424	344.459
9	2.87049	85.0453	259.413
10	2.16178	85.754	173.66
11	1.44716	86.4686	87.1909
12	.726591	87.1892	1.72424E-03

INTEREST PERCENT (EXAMPLE: 10.00; TYPE 0 TO QUIT)? 0
Break in 30
Ok

Figure 5: Amortization Table. Output printed from programs listed in Figures 3 and 4 for \$1000 loan at 10 percent interest, compounded monthly for one year.

As you go on transforming your Kaypro into a high-powered pocket calculator, you'll discover something gratifying. Most math chores you meet in the course of such capers as handling money, running a business, navigating a ship, or designing and building a house can be performed by combining a standard formula with a short and simple program.

And very often what promises to be an elaborate program can be simplified by a few additional commands. These include GOTO (to jump the program directly to whatever line you specify) and GOSUB (to send the program through a set of commands ending with RETURN). FOR NEXT is a handy instruction you met early in this article. The command IF THEN, taking a form like IF A=1 THEN 90, jumps execution provisionally to a new line (Line 100 in both Figures 1 and 2). Such things as these are concealed in your user's guide to Microsoft BASIC, from which you should now feel competent to extract them.

Helpful tips

There are a couple of housekeeping commands you may find especially handy as you go on sharpening your calculating skills.

NEW clears memory and gets you off to a fresh start. Your clue that you should have used it will often be the appearance of an asterisk after a line
(continued on page 58)

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Adding Auto-Log to WordStar

A layman's guide for making WordStar automatically log on to drive B

by Joseph Katz

Tinkering is an American tradition. Tinkering to make WordStar friendlier, faster, and a better "fit" on a particular microcomputer has become almost as traditional. When one tinkers with a computer program, the work is called "patching." It involves substituting one set of codes for another within that program.

Of course, patching should be done only for good reason. The following patch makes WordStar automatically log on to Drive B on the Kaypro 4; tips for adding auto-log to other Kaypros appear in the accompanying article.

The reason for the patch is that it speeds operation of WordStar by doing away with the need for you to change the logged drive at the beginning of each writing session when you use WordStar in Drive A and have all your text and data files on Drive B. That also encourages good word processing practices because it preserves the integrity of the program disk while allowing you to use the maximum space on a data disk. It is worth doing.

The patching can be done with INSTALL.COM for WordStar Version 3.0, with WINSTALL.COM for Version 3.3, or with DDT.COM with either version. To keep things simple, only 3.3's WINSTALL approach will be covered here. (For 3.0 owners, we do offer the 3.0 patch points in the table below. For instructions on making those patches using 3.0's INSTALL.COM, please see our April 1985 issue's "Technical Forum."—Ed.) Follow my instructions carefully, to the letter, and you should have no trouble at all.

First, you should start with a copy of WordStar that has not yet been seriously altered (e.g., made larger by MathStar, or one of the other WordStar customizing programs. If you must patch such an altered version, you might have to use DDT.COM to make the patches.)

Make a backup of the WordStar disk using COPY.COM. Patching any program always should be done on a backup, *never* on a master or even a working disk, because a mistake can destroy the program or, possibly, the entire contents of the disk. Another reason for using a backup in this case is that you will have to erase a program from the WordStar disk. Obviously, you don't want to lose it forever. WINSTALL needs 18k of disk space for a backup copy of the WordStar command file, but the WordStar disk distributed with the Kaypro 4 is so packed that it only has 14k of space left. You create the additional 4k by erasing WORDFREQ.COM from the backup. After you have finished the patching and have tested the new WordStar to make sure it works perfectly, you can PIP a fresh copy of WORDFREQ.COM from the distribution disk to make your word processing disk complete again.

Once you have created the needed space, put the WordStar backup disk in Drive A and do a warm boot (press ^C). Then execute WINSTALL.COM (type WINSTALL<RETURN>). The program will display a copyright notice and warning, with an instruction to "Type any key to continue . . .": press RETURN. Next appears a note on what WINSTALL does: press RETURN again. Then comes a question about which MicroPro product you want to install: type WS <RETURN>. Some more notes about WINSTALL appear: press RETURN. You then are asked for the drive in which the WordStar files will be located during installation: type A:<RETURN> (don't forget the colon). That much is simple and straightforward.

Things become a little more complex and devious now. You will be asked which file you want installed, prefaced by an explanation that WSU.COM is the normal choice. Your temptation, therefore, will be to press RETURN and install WSU.COM. Don't suc-



cumb to that temptation. If you do, you will lose the features that customize WordStar for the Kaypro 4. Instead, tell WINSTALL to install WS.COM: type **WS<RETURN>**. Then you will be asked the name to use for the installed WordStar, prefaced by an explanation that "WS.COM" is the normal choice. That's just the choice you want, so press **RETURN**.

Don't be frightened by the warning that appears on the screen now. A mortal sin in patching is overwriting the original before the patched version has been tested, but because you are working on a backup disk (you are, aren't you?) you have both the distribution disk and the working disk for safety in case anything goes wrong. So press **RETURN** and take satisfaction that for once it was you who surprised a computer program instead of vice versa. WINSTALL will ask you to verify your odd choice: do it by pressing **RETURN**. You'll now have to wait while WINSTALL copies WS.COM.

When it has finished making the copy, WINSTALL displays its main Installation Menu. There are seven options, but we're at the tricky part of the operation, so you'll choose none of them—you'll choose an eighth option instead. How can you choose an option that doesn't exist? Trust me. It exists. MicroPro, manufacturer of WordStar, created it and then hid it so the end-user wouldn't be tempted to play in deep waters. Programmers, however, love to plunge in, so they know there has to be such an option. One set of programmers hides it; other programmers try to find it. Think of it as an electronic version of "Hide and Go Seek."

In any case, at the main Installation Menu type the plus sign (**+<RETURN>**). A banner headed "Custom Modification Routine" appears, which is just what you want to see. Press **RETURN**. The patching now begins in earnest.

To get WordStar to log on to Drive B automatically, you're going to have to add code to an area of WordStar called "MORPAT," which is reserved for just that purpose. Kaypro already has used part of that area, so we will use a little bit of another part. We also must tell WordStar where the new code is and when to use it. The "where" is starting at location 0300h; the "when" is just as soon as you execute WS.COM. (You don't need to know all this. I'm explaining it because I think people should know that we're dealing with a rational subject, not with magic. Skip the explanations and go on to the instructions, if you'd like.) First we start off with the where and when.

WINSTALL asks you to "Enter starting address." You type **101<RETURN>**. It then shows you a line of codes beginning **FCh 2Ch** and asks, "Is this the address you require (Y/N)?" It surely is. Type **Y** and

you'll be shown a screen full of instructions. Read them or not, as you please. The important things for now are on the last few lines of the screen—three columns headed "address," "current value," and "new value." The address is the location of the code, the current value is the code now at that location, and the new value is the code you want to substitute. You'll see "101h" as the address and "FCh" as the current value. You type **00<RETURN>** as the new value. The display now moves up a line to show you the current value at location 102h: "2Ch." Here you type **03<RETURN>**. Once again the display moves up a line to show you the next location. But you've finished with that part of the patching. You have just told WordStar where and when to find the code you will add. So now type a period and press **RETURN** (**.<RETURN>**) to get out of this section of WordStar's code.

You'll now be given the opportunity to exit the modification routine by typing an **X**. Don't do it. You now must add the code that you want WordStar to execute. If you don't add that code and you try to use the half-patched WS.COM you will drive the program nuts. You'll have told it to go execute nonexistent code. It won't like that—really. So don't stop at this point.

Press **RETURN**. The starting address you need to enter is 300 (type **300<RETURN>**). Once again WINSTALL shows a string of code, this time a line that begins "Oh Oh" and continues with nothing but "Oh." Type **Y<RETURN>**. A screen of instructions is displayed, but again only the last few lines are

SUMMARY OF PATCHES THAT MAKE WORDSTAR VERSIONS 3.0 AND 3.3 BEGIN WITH "B:" AS THE LOGGED DRIVE

WORDSTAR ADDRESS FOR EITHER 3.0 OR 3.3	CURRENT 3.0 VALUE	CURRENT 3.3 VALUE	NEW 3.0 VALUE	NEW 3.3 VALUE	DESCRIPTION
101h	08h	FCh	00h	00h	Your changes here cause a
102h	20h	2Ch	03h	03h	jump to address 0300h, the
					start of patch area below.
300h	00h	00h	0Eh	0Eh	Your changes in this origin-
301h	00h	00h	0Eh	0Eh	ally empty portion of the
302h	00h	00h	1Eh	1Eh	patch area, MORPAT, will set
303h	00h	00h	01h	01h	up a CP/M BDOS call which
304h	00h	00h	CDh	CDh	changes the logged drive from
305h	00h	00h	05h	05h	A: to B:.
306h	00h	00h	00h	00h	
307h	00h	00h	C3h	C3h	Your changes here cause a
308h	00h	00h	08h	FCh	jump back to where WordStar
309h	00h	00h	20h	2Ch	was about to jump before we
					interrupted; i.e., to 2D08
					for 3.0, and to 2CFC for 3.3.

Underlined entries in the above table highlight the minor differences between patches for WordStar versions 3.0 versus 3.3. If the current values of your WordStar addresses 300 through 309 are not all 00's, you need to snoop around for a clean slate; i.e., ten consecutive addresses of MORPAT that contain nothing but 00's (see sidebar).

important. You'll be changing the code at ten consecutive locations. For most of you, this will be addresses 300 through 309 in the following table. All ten should have current values of "Oh." (If they do not, see related article.)

Using WINSTALL the same way you did above, all you need do is to input the new values given for those addresses in the following summary table:

When you have finished making your changes with WINSTALL, the cursor will be at the "new value" for location 300. Type a period and press **RETURN** (type **.<RETURN>**). Now when you are given the opportunity to exit the modification routine, do it: type **X**.

You'll find yourself back at the Main Installation Menu. Here, because you are finished patching, type **X** to "Exit from INSTALL." A new menu appears, giving you three options. Choose option A by typing **A<RETURN>** ("Save the changes made during this install session"). You will be told "Your new installed WordStar file is A:WS.COM."

Now test your new WordStar. Put a blank, formatted disk in Drive B. Make sure it is blank and formatted. If you have made a mistake in the patching, it is possible—not likely, but possible—for WordStar

to run amok and zap both disks. Since you've done the patching on a backup, its loss will not be serious. But if you put your only copy of the great American novel in Drive B and lose it, you will feel at least mildly unhappy. So don't risk it. Put a blank, formatted disk in Drive B. Execute WordStar as you normally do, by typing **WS<RETURN>**. Sit and wait until you see "directory of Disk B:" appear at the bottom left-hand side of WordStar's Opening Menu.

Admit it: That is a lovely sight, isn't it? When you're through cheering, type an **X** to exit WordStar. Remember, this is only a test. You should find the **A0>** prompt on the screen. Check the directory of Drive A to make sure that everything is all right. If so, type **WS<RETURN>** again. You're logged on to Drive B again, right? Now create a file—any file. The "NEW FILE" message appears, right? Type a few lines and end the last one by pressing **RETURN**. Try out as many of WordStar's functions as you have patience for. Give the program a workout. If everything works as usual, save the file with **^KX**. You now should see the **B0>** prompt.

If everything worked okay, you should take pleasure in your ability as a WordStar patcher. (See related article on next page.) □

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Adding Auto-Log to Other Kaypros

You can add this auto-log feature to any other Kaypro, but it requires a bit more work. You'll have to find an area of MORPAT that has the ten free bytes needed for the auto-log code.

If you have WordStar 3.3, follow my instructions in the article up to where you first see the "Custom Modification Routine" banner.

When you are asked "Enter starting address:" type 2CB (the location at which MORPAT begins). When you are asked, "Is this the address you require (Y/N)?" type Y. You'll see the three columns—"address," "current value," and "new value"—but don't enter anything under new value. What you are looking for is a section of MORPAT that has ten consecutive current values of 00h. Press return and keep doing that until you find the first 00h. Write down the address at which it appears. Keep pressing return to make sure that it's followed by ten consecutive address, each with a current value of 00h.

Now, I've been giving addresses of only three digits. But addresses really have four digits, a pair of bytes: location 100 is really "0100." WINSTALL doesn't bother with leading zeroes, and you wouldn't have to either, except that you must interpret the address for WINSTALL when you make the first part of this patch. When I told you to replace "FC" with "00" and "2C" with "03," I was telling you to replace one address containing two bytes with another address containing two bytes. So think of addresses as having two bytes. Address "0100" has "01" as its first byte and "00" as its second.

This next thing is a little tougher. CP/M requires that you enter the "least significant byte" first when you put an address into WINSTALL as a "new value." The least significant byte means the right-most byte. So when WINSTALL showed you the current values of locations 101-102 (which really were "0101-0102") as "FC" and "2C," it was revealing an address that really was "2CFC."

Here's an example. Say you found that the starting location of the ten bytes containing 00h was at address 2CBh (the beginning of MORPAT) in WINSTALL. It really was address 02CB. Reverse the order so the least significant byte comes first: make it CB02. Put "CB" instead of "00" in location 101, and "02" instead of "03" in location 102. Then continue with the patching. But when WINSTALL asks for the starting address of the added code, give the address in the "real" order: 02CB. Then put in the code, starting at that address instead of the one in the article.

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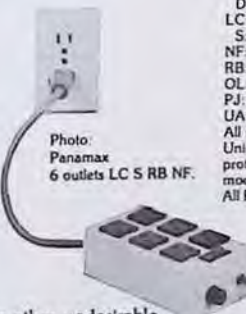


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Time-saving Kleertex templates are made from a durable, non-glare plastic, and can be put on and lifted off the keyboard instantly. The software commands on Kleertex templates are easy to read and are conveniently arranged in alphabetical order. With a Kleertex template on

SmartKey \$\$ Slashed

Now everyone can afford to supercharge their computing with **SmartKey II Plus**, the software program that Peter McWilliams and a cast of thousands rave about. **SmartKey II Plus** speeds up and improves accuracy in computing by letting you reduce multiple keystrokes to the touch of a single key. In a new national ad campaign Software Research Technologies, originators of SmartKey II, have slashed the retail price of this immensely popular program. In response, Central's new low, low price is:

SmartKey II Plus Super Combo Pak \$49

—includes SmartPrint II Plus and Screen Smarts

You can use this powerful program to assign thousands of keystrokes to one or more keys on your keyboard. Once you have redefined keys, you can put them to work or change them at will. All without interfering with the regular function of your typewriter-like keyboard. You can also store your "smartkey" definitions in a special file and use them later, or make numerous definition files to use with a variety of your favorite programs or projects. Imagine saving complex command codes, boilerplate paragraphs, inventory numbers, or whatever, and then injecting any of them into your work with the stroke of a single key. It's true, SmartKey makes computing exciting again.

Central's specially priced \$49 combo pak includes SmartPrint II, a program that greatly enhances the operation of dot matrix printers. In addition, Central's combo pak includes, as an exclusive bonus, a free copy of Paul Golding's \$15.95 book, *Screen Smarts, The Computer Tamer's Guide*. This book shows how Mr. Golding, a professional writer, uses SmartKey II to turn his humble computer into a supercharged dedicated word processor. Please don't delay, this offer may not be repeated. Order today to get this hard hitting \$115 combo pak for \$49.

Warning: SmartKey II has many imitators. Comes with a complete step-by-step manual. Easy-to-use.

Stop Tearing Up Your Disk Drives

If you're using your Kaypro as a printer buffer instead of a computer, you may be tearing up your disk drives. Disk drives are mechanical devices, they are often the first parts of a computer to go sour. No wonder. Everytime you feed your printer a file, the drives whirl madly until the printer has accepted the entire file. Sometimes this takes a long, long time.

If you're tired of hearing your disk drives grind down, you need a printer buffer. The best performance and price buffer on the market is the Consolink MicroSpooler. This computer-like tool absorbs files as fast as your computer can send them, and then patiently feeds or spools them to your printer a few bytes at a time.

The MicroSpooler is an intelligent, feature-packed buffer. It is easy to install and operate. Merely place it between your computer and printer, then connect it with two cables, and feed files as large as 64K within seconds to your letter quality or dot matrix printer. The instant the transfer is complete, you can operate your computer again. The MicroSpooler does the rest.

The MicroSpooler comes in a variety of configurations. You can link your Kaypro to any popular printer with two inexpensive cables. Please check our low MicroSpooler prices. You won't find a for 15 days. If you are not completely satisfied with your purchase, return it for an immediate full refund. Your Kaypro deserves this attractive and useful accessory. Order a compact and powerful MicroSpooler for your computer today. Works with all model computers.

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Box of 10 DS-DD Kaypro 4 diskettes: \$23.

Box of 10 DS-DD Kaypro 10 diskettes: \$23.

3M Head Cleaning Kits for Kaypros: \$21.95

3M DeskTop 24"x 26" Anti-Static Mats: \$44.

The Kaypro can dump a file faster than a printer can accept it. This device will catch the file, quiet the disk drives, and let you compute again.

CONSOLINK MICROSPOOLERS

Description	List	Price
64 K P-P	\$315.00	\$279.95
64 K P-S	\$343.00	\$299.95
64 K S-S	\$349.00	\$299.95
64 K S-P	\$339.00	\$294.95
Two Cables	\$56.00	\$29.00

64 K Stores and spools files as large as 64 K.
P-P Parallel Kaypro port to parallel printer port.
P-S Parallel Kaypro port to serial printer port.
S-S Serial Kaypro port to serial printer port.
S-P Serial Kaypro port to parallel printer port.
Cables Set includes one special male to female connector and one male-male connector.
*Please tell us model and type of printer you're connecting to your computer.

Photo: MicroSpooler 64 K P-P

Includes these unique features:

- Status digital readout
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- Comprehensive self test routine
- Slimline attractive casing
- Front panel reset
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Product Description List Central

Kaypro Software

ATI TRAINING SOFTWARE			
CP/M		\$39.95	\$33.00
MBasic	Interactive training	\$39.95	\$33.00
Microplan	teaches how to use	\$75.00	\$57.00
Multiplan	software. Fast results,	\$75.00	\$57.00
Wordstar		\$75.00	\$57.00

BORLAND INTERNATIONAL			
Turbo Pascal 2.0 *		\$49.95	\$45.00
Turbo Toolbox *		\$49.95	\$44.00
Turbo Gift Pak with * & Tutor		\$99.00	\$94.00

CDE SOFTWARE			
Checks & Balances		\$74.95	\$69.95

CHUCK ATKINSON PROGRAMS			
Quick Check Money Manager		\$99.00	\$74.00
Quick Check + AR		\$195.00	\$149.00
Retail Inventory + Q Register		\$395.00	\$289.00

COMPUTER EDITYPE SYSTEMS			
Magic Print *		\$195.00	\$155.00
Magic Bind *		\$250.00	\$199.00
Magic Index — includes *		\$295.00	\$245.00
All superior Wordstar enhancers			

COMPUTRONICS			
VersaBusiness Series			
VersaLedger II		\$149.95	\$115.00
Any other modules		\$99.95	\$79.50

CONSULTANT SYSTEMS			
The Real Estate Consultant		\$399.00	\$349.00
with The Creative Loan Consultant			
Don't buy or sell property without this			

CONTINENTAL SOFTWARE			
Home Accountant Plus		\$99.95	\$79.95

DATA DECISIONS, INC.			
KBAR, K-10 backup utility		\$89.95	\$69.00

DG/SYSTEMS			
Rembrandt Graphics Pak		\$79.95	\$59.00

DIGITAL MARKETING/PRO TEM			
Bibliography		\$99.00	\$84.00
Datebook II		\$150.00	\$115.00
Footnote and Pair *		\$99.00	\$79.00
Grammatik *		\$75.00	\$69.00
Hyper Typer, Typing Tutor		\$29.95	\$26.00
Index *		\$99.00	\$87.00
Milestone, Project Planner		\$250.00	\$199.00
Bibliography and Footnote		\$150.00	\$130.00
Notebook		\$150.00	\$119.00
Writer's Pak — includes		\$250.00	\$219.00
all * products are dBase II enhancers			

EAGLE ENTERPRISES			
Citation		\$185.00	\$155.00
General Ledger		\$185.00	\$145.00

FOX AND GELLER			
QuickCode *		\$295.00	\$235.00
QuickScreen *		\$149.00	\$129.00
QuickScreen MBasic		\$149.00	\$129.00
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FYI, INC.			
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SuperFile with Sort & Merge		\$195.00	\$149.00
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INFOCOM			
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Deadline		\$49.95	\$46.00
SeaStaker		\$39.95	\$37.00
PlanetFall		\$39.95	\$37.00
Inifidel		\$44.95	\$42.00
Witness		\$39.95	\$37.00
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LEXISOFT			
SpellBinder		\$495.00	\$359.00

MENDOCINO SOFTWARE			
Eureka, Disk Cataloger		\$50.00	\$48.00
helps you find the right file instantly			

MICROSOFT			
MBasic Compiler		\$395.00	\$299.00
MultiPlan		\$195.00	\$149.00

MICROSOLUTIONS			
Uniform Kaypro II		\$69.95	\$49.95
Reads 32+ machine formats			
Uniform Kaypro IV or 10		\$69.95	\$49.95
Reads 90+ machine formats			

continued on next page —

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Mile Plus Terminal Emulations		\$175.00	\$129.00

NORTHWESTERN ANALYTICAL			
StatPak		\$495.00	\$399.00

PEARLSOFT			
Personal Pearl		\$295.00	\$225.00

PLU PERFECT SYSTEMS			
Plu Perfect Writer CP/M 2.2E		\$39.95	\$31.00
Background		\$45.00	\$38.00
CP/M 2.2E only		\$32.00	\$27.00
Date Stamp		\$39.00	\$29.00

QUIC-N-EASY PROD.			
Q-Pro-4		\$595.00	\$395.00
with multikey file indexing			

ROBONICS			
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Graphic Express		\$125.00	\$99.00
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Fancy Font 2.0		\$180.00	\$149.00

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SOFTWARE TOOLWORKS			
Eliza		\$24.94	\$22.00
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Word Wiggle		\$29.95	\$27.00
C/80		\$49.95	\$45.00
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STAR SYSTEMS			
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Upgrade AP to SS1 Integrated		\$400.00	\$350.00

SUPERSOFT			
Disk Doctor		\$100.00	\$75.00

T/MAKER COMPANY			
T/Maker Integrated		\$495.00	\$379.00
with database manager & spelling checker			

WRITING CONSULTANTS			
Proportional Star		\$75.00	\$69.00

Hardware

DATASOLVERS			
Internal 300 Baud Modem		\$199.75	\$187.00
Internal 1200 Baud Modem		\$427.50	\$389.00
models for all Kaypros			

PANAMAX			
PowerMax —		\$559.00	\$399.95
250 Watt Battery Back-up			

SWP MICROCOMPUTER PROD			
128k Co-Power-88 MSDOS		\$400.00	\$375.00
256k Co-Power-88 MSDOS		\$500.00	\$435.00
256k Co-Power-88 Plus		\$600.00	\$535.00
plus board is expandable up 1 megabyte			

Supplies

Kaypro and Juki	print wheels	\$25.95	
Dysan SSDD Kaypro II disks	10/box	\$23.00	
Dysan DSDD IV & 10 disks	10/box	\$29.00	

Bookware

Complete Kaypro II, IV & 10		\$16.95	\$15.00
CP/M for the Kaypro		\$16.95	\$15.00
with an Intro to dBase II			
Kaypro WP Plain & Simple		\$13.95	\$12.50
Free Software Handbook		\$17.95	\$15.00
FS Handbook & 70 programs		\$57.95	\$44.00
Using CP/M on Kaypro 10		\$19.50	\$18.00
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Free yellow Hi-Liter pen sent with every book order. Prices, specifications, and offers subject to change without notice.

Do You Wish Writing Was Easier?

If you need to write, or want to write clearly, your Kaypro and the software program **Punctuation and Style** can help you get there faster. It improves, clarifies, and enriches your writing by identifying sentences with misused, redundant, faulty, cliched, or erroneous phrases, and shows you how to improve them. It helps you rewrite and check your work by quickly marking and annotating your files for easy correction. In addition to computer-fast identification of awkward, muddy, pompous, and wordy sentence structure, it also finds missing or improper punctuation, unbalanced quotes, wrong abbreviations, faulty capitalizations, and much more. **Punctuation and Style** actually improves your writing by mercilessly pointing out grammatical errors. After a few weeks with Oasis System's **Punctuation and Style** your writing is bound to become more dynamic, expressive, and honest. In time, you'll stop worrying about grammar and work on projecting ideas instead. After all, that's what writing is about.

Punctuation and Style makes writing and rewriting much easier. The list price of **Punctuation and Style** is \$125. Central's price is \$95. Experience the power of this valuable "Punctuation Checking and Writing Improvement Software" yourself. Order today to get this program fast.

Punctuation and Style works on files created with Wordstar or Perfect Writer. It comes with an easy to use, clearly written manual and is packaged in an attractive binder. Join thousands who now write with more confidence, faster, and better.

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number, indicating that the number is already in use.

To clean everything off a messy screen at any time, BASICs often are satisfied with something fairly obvious like CLR, but MBASIC will have nothing less than this oddball: CHR\$(26). That last trifle of information, by the way, was not to be found in any of the books in which I looked for it. I got it from a knowledgeable fellow at my Kaypro dealer.

Also missing from the indexes of any books I've looked into is the word *roots*. I guess we should all be flattered by the assumption that we remember, from an algebra class or somewhere, that to find the cube root of a number we need merely raise it to the 1/3 power. And so on.

Helpful in a variety of circumstances are other math functions built into BASIC, ready for use whenever you find them called for in a formula. Square root is wanted so often it rates its own command, as in SQR(99) for the square root of 99.

Used similarly, LOG finds natural logarithms, from which common logs can be obtained.

SIN, COS, TAN, and ATN (that's arc tangent) are built into MBASIC, in radians, for those who want to

know the angle at which to saw a rafter or to use trigonometry in any other way. The other trig functions can be derived from these.

Take it from there. □

Darrell Huff has been writing for a living since 1946—as an editor of Look Magazine, a regular columnist for Popular Science, and the author of numerous articles and books—the most famous of which is *How to Lie with Statistics*.



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Kaypro's 286i

Late breaking briefs on the industry's first IBM AT-compatible

Editor's note: Kaypro's 286i was released shortly before we went to press. Though we've scheduled a more extensive report on it in a later issue, we thought you'd enjoy the following preview.

In a move calculated to give Big Blue a run for its money, Kaypro Corporation has introduced the first IBM PC AT-compatible computer, the Kaypro 286i.



Touted as the "microcomputer with the power of a mini," the 286i has an 80286 microprocessor with a clock speed of 6.0 MHz, allowing for considerable versatility and speed. In fact, the 286i is reported to perform two to five times faster than the average microcomputer, virtually eliminating the lag time between command entry and execution.

The machine features a large internal memory—512k RAM is standard, expandable to 640k on the mainboard and 15MB with the installation of additional boards. This allows the machine to support multi-user/multi-tasking functions and to perform background tasks without decreasing its speed.

The unit also comes standard with two 1.2 MB floppy disk drives—allowing storage of nearly 600 pages of text.

The 286i with bundled software (see list) retails for \$4,550; the IBM AT, without software, sells for \$5,795.

Additional features include a real-time clock/calendar with lithium battery backup, three user-programmable timers, a sound system permitting user-programmable tones, color graphics, and slots for extra hardware—including a socket for an 80287 math co-processor. Of the eight I/O expansion slots, three are for system use, leaving five for user options such as a modem, extra memory, alternative input devices (e.g., a "mouse"), analog/digital converters and workstation growth.

The color graphics card with RGB output comes standard, allowing high resolution of 640 x 200 pixels on the optional external monitor. To accommodate peripherals, the machine has one serial and two parallel ports.

Kaypro 286i preliminary specifications—all standard

CPU: 80286 microprocessor, 6.0 MHz clock, socket for 80287 math co-processor.

ROM: 32k; automatic self-test on power-up.

RAM: 512k standard; expandable to 640k on the mainboard; expandable to 15 MB with extra boards.

Disk storage: Two double-sided, high-density floppy disk drives with 1.2 MB of storage each.

Board expansion: Eight expansion slots; three are used, leaving five open for options.

Keyboard: Detachable, 84 keys, IBM PC AT-compatible in layout and function keys; may be locked to prevent unauthorized use; bi-directional interface.

Color graphics: Standard; RGB output; IBM PC AT-compatible.

Time devices: Real-time clock/calendar with three user-programmable timers.

Sound system: Speaker included.

Input/output connections: Two parallel ports, one serial port; all IBM PC AT-compatible.

Case: Metal construction; desk-top configuration.

Dimensions (base unit): Length 21 1/4 inches; depth 17 inches; height 6 3/8 inches; weight 38 pounds.

Power: 110/240 volts, 60/50 cycles.

Software (all IBM PC AT-compatible): WordStar, MailMerge, InfoStar+, CalcStar, MicroPro's Tutors and Lessons, and Microsoft's GW-BASIC. □

tronic conferences and private databases. The AEC also helps aspiring cottagers find work at home or set up a computer-based business.

Like the other associations, the AEC is deeply concerned about protecting its membership's right to work at home. AEC members are mobilizing to protect their rights by opposing AFL-CIO efforts to ban telecommuting. The organization has authored "The Electronic Cottage Bill of Rights," whose first provision states, "Legislatures shall make no laws prohibiting freedom of opportunity to work in one's home with a computing and/or robotic device when that work does not interfere with neighbors' enjoyment of their own homes and communities." This message summarizes the sentiments of home worker groups in general.

How does this affect you?

"So how does all this affect me?" you ask. "I've never had any problem working at home on my computer." Many home-based computer business people either don't know, or don't really want to know, the specifics of their local zoning laws. "If they don't bother me, I

won't bother them," is an easy position to take.

But it's important to check your local regulations and to realize that many municipalities post a heavy per-day fine if you continue to work after receiving a cease-and-desist notice. Realize also that most zoning laws are written by inclusion, rather than exclusion, which means that unless a type of business is specifically mentioned in an ordinance, it is not legal. This is especially problematic for computer-based businesses, since many city zoning ordinances were written long before microcomputers became prevalent.

If you find that your zoning laws restrict computer use for business done at home, band together with other like-minded citizens in your area and approach your city council about having the ordinance changed to reflect current community needs.

As a home computer user, it is also wise to keep an eye on state and federal developments regarding computers. Better yet, you may want to join an organization of home business people to keep informed and to have a strong, clear voice speaking out on your behalf. □

XtraKey out "keys" the competition!

Thinking about buying a "key" program? (You know, the names all start with words like "smart", "magic", "pro", etc.) Looking for a faster, easier way to calc, or process words or databases? If so, then you owe it to yourself (and your Kaypro) to check out XtraKey. Quite frankly, we think it's the best of all the "key" programs. At any price! (And wait 'till you see our price.) Just like other "key" programs, XtraKey lets you redefine your regular keyboard keys to be anything you want. A word, a paragraph, a series of commands... whatever you hate to type over and over again! Close a letter in split-seconds. Log onto bulletin boards at the touch of a key.

Create instant "macros" for database programs. You can change, use or make up new definitions anytime. Even while running a favorite program like WordStar or dBASE III! Unlike other "key" programs, XtraKey can redefine your Kaypro's numeric keypad or cursor keys directly without complicated configurations. And there's no limit on definition lengths. Plus our advanced XShift feature lets individual keys have up to 16 meanings without losing their normal functions! Using XtraKey, you can even "talk" directly to your printer or video display. Change from regular to compressed type while working on a spreadsheet. Address an envelope while editing a document. Or call up your own custom help or menu screens (almost like having windows!)

There's more! Built-in print screen (screen dump) function... no need to install a special chip and void your Kaypro's warranty. Built-in batch processing. Automatic definition file loading. Backspace error correction. Input pause. All in one, neat little package that uses less memory AND disk space than other "key" programs. XtraKey is easy-to-use and includes a 70 page manual. No installation required. Now, for \$49.95, aren't you ready for real "key" power?

* To available CPM/TPA

New version 2.3! Even more features!

Print screen! File screen! XScreen!

An Xpert Software exclusive! Our new XScreen program makes instant copies of your Kaypro's current screen display* on your printer OR allows you to save screen copies in standard word processing text files! And it works any time, even while running your favorite program.

XScreen is a real plus for documentation writers or people who want the bottom line and want it NOW. Copy menus, sign-on messages, bulletin board conversations, spreadsheet totals, etc. Then use your word processor to insert screen copies directly into a document where they can be edited! WordStar users can even configure XScreen to eliminate the top rows and far right columns for instant letters and envelopes.

XScreen is easy-to-use and requires no installation. (No need to install a special chip and void your Kaypro's warranty.)

Now, for \$24.95, aren't you ready for real screen power?

* Printing characters only, no graphics

ORDERING INFORMATION

XtraKey and XScreen will run on all Kaypros except the K16. To order XtraKey, send check or money order for \$49.95 plus \$3.00 shipping (U.S. & Canada). To order XScreen, send \$24.95 plus \$2.00 shipping. California residents MUST add 6% sales tax. Inquire on foreign orders. Specify Kaypro 2 (SS/DD) or Kaypro 4 (DS/DD) disk format. VISA and MasterCard accepted (provide card number, bank number and expiration date). All orders please include telephone number.

Xpert Software

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PRINTER MODEM



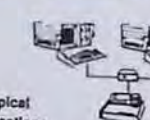
Typical Applications

PRINTER 1 PRINTER 2



Typical Applications

PRINTER



Typical Applications

If you use your minicomputer for word processing applications, a micro switch lets you select between two printers: a high-speed model for reports, and a slower, letter-quality model for correspondence.

MICRO SWITCH CAN MOUNT ANYWHERE



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You have worked hard to make your valuable products/services available to your customers. But they are probably going somewhere else and getting something they really don't want. Because when they need something, they remember someone else's advertising. Unfair? You bet!

Other businesses are paying a great deal of money to influence YOUR customers. It costs them a lot because their mailing lists are unorganized and out of date. You can surpass their efforts with your computer and E-Z Mail, the mailing list system that does everything for you.

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Ask for E-Z Mail at your local computer store. Suggested retail price is \$199.

To order direct: send \$199 plus \$5 for shipping. CA residents add 6% sales tax. Be sure to mention which computer you have. Phone orders (MC/Visa) accepted.



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CATALOG

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KayPro Disk K2
Utilities

Really coolies of spiffy little (and big) programs to help you get full use of your KayPro. ZESOURCE.COM: A true Zilog format disassembler for 8080 and Z80 object (.COM) files. Now you can turn .COM files into .MAC files. UNER.COM: Simply enter "UNER" followed by the name of the file you just erased and presto, the erased file is back! A lifesaver. FINDDISK.COM: Checks an entire disk, reports bad sectors, and then creates a special file containing those sectors. You save a bundle on disks. CAT2: This is a group of programs which create and maintain a single directory of all the programs you have on all your disks. Even keeps track of which programs are backed up and which aren't. UNSPOOL.COM: Use your KayPro II and print files at the same time. Doesn't slow down system response! DUMPK, DU-77, COMPARE, SUPERSUB, FORM-FEED, DIR-DUMP, ... and all have documentation on disk.

KayPro Disk K3
Games

KayPro Disk K4
Adventure

This disk contains one 191K game, Adventure ADV.COM. This is the latest, greatest, most cursed adventure ever devised by half-mortals. This is the 550-point version so the cave is greatly expanded and the creatures are much smarter.

KayPro Disk K5
MX-80 Graphics

KayPro Disk K6
Word Processing Utilities

KayPro Disk K7
Small C Version 2 Compiler

KayPro Disk K8
Small C Version 2 Source

KayPro Disk K9
ZCPR

KayPro Disk K10
Assemblers

KayPro Disk K11
Library & Checkbook Programs

CHECKS: This has been a very popular group of programs. Categorizes checks so you can keep track which are tax deductible and which get charged to which projects. Includes source and excellent example check files. Very powerful. LIBR: This is a complete set of library routines which let you group files into a single file called a library. Then CP/M sees them as a single program, but with the library routines, you can list them out separately, run them separately, or divide them up again. Almost like a unix environment. DISPLAY, VLIST, PGLST: Additional screen and print utilities.

KayPro Disk K12
FORTH

KayPro Disk K13
Source of fig-FORTH

KayPro Disk K14
Smartmodem Programs
KayPro Disk K15
Hard Disk Utilities
KayPro Disk K16
Pascal Compiler
KayPro Disk K17
Z80 Tools
KayPro Disk K18
System Diagnostics

Just as we finished editing the routines on this disk, we received a copy of KayPro's diagnostic disk. The memory test and drive exercise routines on this disk are more powerful than KayPro's versions. (Plus, it's only \$12!) Setup for KayPro II and 4.

KayPro Disk K19
ProWriter Graphics

KayPro Disk K20
Color Graphics Routines

KayPro Disk K21
SBASIC Routines & Screen Dump

SBASIC: Finally a disk of SBASIC software. There are some good examples of structured programming on this disk (including one program written both ways so you can see the difference).

SCREEN DUMP: This is a screen dump for all KayPro's new and old. You can buy a similar package elsewhere for \$60.



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EDITOR'S NOTES (continued from page 12)

using the computer, not learning the subject I was supposed to learn."

Comparing my experience with Wozniak's, I sense that my Kaypro 10 is more useful to me than Steve's Apple was to him. Surely we who cherish our micros and use them by the hour swear by the time they save us—in manipulating text, sorting, spelling, crunching numbers and more.

For certain tasks, micros do save us *much* time. However, I'm not convinced that they save *me* time—in the sense, for example, that I spend less time writing a piece on a micro than I would on a typewriter. In fact, the marvelous ease of making cumulative improvements—buffing my work to be better and better—is so powerfully addictive that it surely keeps me working longer on a piece than would the old technology. (As I recall, the drudgery of cutting and pasting and typing and retyping provided irresistible incentives to end many a project before I should have.)

In short, I don't think the excitement about microcomputing follows so much from saving us time, as it does from enriching our time—and boosting our enthusiasm about the final product.

It seems to me that it is this that lies at the heart of our addiction to micros—and this that can keep us happily swinging hammers and patting the ground. □

Technical Forum

by Tom Enright

Software compatibility—which programs run on what Kaypro models—is our main subject this month. A fair amount of mail has been coming in on this subject and much of it indicates some misconceptions about the differences among various Kaypro models.

Hardware types

With the introduction of the Kaypro 16 and other products you'll be hearing about, our "little gray boxes" fall into two basic categories: CP/M and MS-DOS. There is no compatibility between MS-DOS and CP/M programs (though ASCII files can be translated between the two, and higher-level language source code looks similar). That leaves us with the various CP/M machines to explain, and that is the source of the most confusion.

In the Kaypro CP/M area there are two further subdivisions—the '83 series and the '84 series of mainboards. But how do you tell which one you have? Simple—look at your drives and serial port(s). Check out the front of your Kaypro. If there is not a large space between the drives, you have the older '83 series mainboard. If there is enough space between the drives for another drive, you have an '84 series Kaypro. The difference is that '83 mainboards were teamed with full-height drives, and '84 mainboards used half-height drives, which left extra space between the two drives.

The Kaypro 10 has always been classed as an '84 series, whether you have the new 10 with the modem and real-time clock or the

older one without it.

Now look at the rear panel on your computer. If you have only one serial port it's an '83 series machine. Two serial ports means it's an '84 series.

Types of software

Now comes the question of which software runs on what machine? That depends on which of the two basic classes of software we're talking about: system software or application software. System software is machine- and model-specific, while application software is not—usually.

System software

System software includes things like COPY, CONFIG, the BAUD program, and your BIOS (Basic Input/Output System). These programs function properly only on the Kaypro model they came with. Along with your BIOS, system software also includes the system tracks on a bootable diskette.

The COPY program automatically writes the system tracks when it copies or formats a diskette. So does the SYSGEN program and, on the Kaypro 10, GENFLPY. This doesn't mean that you can't use the diskette on another machine, only that it won't boot on another model. You can always rewrite the system tracks if it has to boot on another model.

Some people run into problems trying to read Kaypro 2 diskettes on other machines. That's because Kaypro 2 diskettes are single-sided, while most other models use double-sided drives. The solution is to warm boot (AC) the Kaypro 4 or 10 with the single-

sided disk in the data drive (B drive for the Kaypro 4; C drive for the Kaypro 10). When you warm boot the computer, it goes out and looks at the disk. If the disk is single-sided, that drive goes into single-sided mode. Otherwise the computer assumes the disk is double-sided. So, if you're trying to read a disk from a Kaypro 2 on a Kaypro 4 or a 10, warm boot the computer after putting the diskette in the drive.

(With the advent of the universal ROM in Kaypro's latest machines, you can move disks from 2 to 10 to Robie and have the disk boot and run.)

Application software

Application software, such as word processors, spreadsheets, accounting programs, and languages, is adaptable to whatever machine or model you have. Most of these have an installation program included to define which computer or terminal characteristics to use.

The bundled software that came with your computer has already been installed for the model it came on. In most of it the terminal portions of the installation programs have been disabled. If it wasn't for that, you could reinstall any of the bundled software for any model and it would work.

Other application software usually comes with an installation program. The important part of the installation program is the terminal selection area. That is the section that lets you differentiate between the '83 and '84 series of Kaypros, or even an external terminal, if you wanted to use one.



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Technical Forum

No hard rules

Since each of the different installation programs uses different wording, there is no hard rule about which series Kaypro they're talking about. In most cases, you have one selection for Kaypro 2 and 4 and another one for Kaypro 10. Usually the Kaypro 2 and 4 selection is for the older '83 series, and the Kaypro 10 selection is for the '84 series terminal characteristics.

The difference in terminal characteristics between the '83 and '84 series is in the number of features provided. The '84 series Kaypro can do reverse and half-intensity video; the '83 series cannot. Another difference is in graphics: The '83 series has a Greek character set in the upper half of the ASCII range, above 128 decimal. On the '84 series this area has a graphics character set. In addition, the '84 series has a graphics mode for line drawing. The '83 series has no such counterpart. A good rule of thumb is that if it runs on an '83 series Kaypro, it will run unaltered on an '84 series machine—but not the other way around.

Very few applications programs take advantage of graphics. They have to be able to run on many other CP/M computers besides Kaypros. The other computers may or may not have any graphics capability. It doesn't make economic sense for software developers to have 15 different versions of a program just so it can use graphics.

So, the situation isn't as limited as some people believe. Most application software will run on any model Kaypro, as long as you install for the correct terminal characteristics. □

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Book Review

by William Murdick

In the first paragraph of his book, David Stone limits his audience to "WordStar users who are ready for advanced word processing techniques." The book, says Stone, "is meant... to explore the full capabilities of WordStar, with special emphasis on MailMerge."

Despite Stone's warning, you need only the slightest acquaintance with WordStar to follow along, partly because the author is a good stylist who can explain complicated processes clearly.

The emphasis is indeed on MailMerge, which is taught from scratch. Of the 16 chapters, 12 deal with MailMerge. The first three chapters discuss WordStar functions, while the last chapter describes and evaluates several spelling checkers and other popular ancillary programs related to word processing.

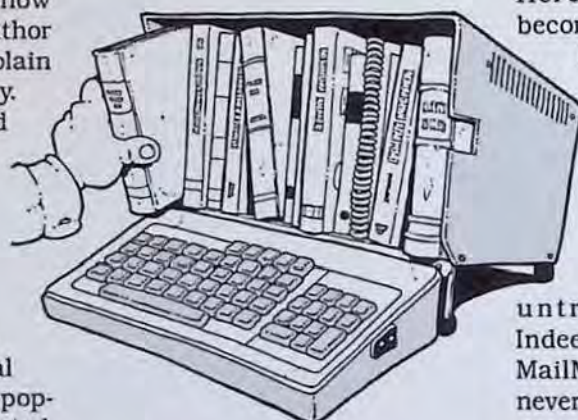
If you are interested only in WordStar, should you buy this book? That depends on how badly you want to learn the several things Stone has included on the subject in the first three chapters, and also on whether or not you are willing to learn a little about MailMerge, some of whose capabilities can be directly transferred over to the realm of ordinary word processing.

About WordStar

In a "Preliminaries" section, before Chapter 1, Stone tells you how to print multiple copies with your WordStar disk. In fairness to the author, I'm not going to give away the secrets that he is selling; if you don't know how to do these things and want to know,

then you buy the book. But I will say this much: the printing of multiple copies is one example of how MailMerge can be useful to a person who has no interest in

Getting the Most from WordStar and MailMerge: Things MicroPro Never Told You



mass mailings.

Chapter 1 tells you how to get proportional print, assuming you have a printer (usually a daisywheel) that supports proportional print. I followed Stone's simple directions—which amount to little more than typing in a few CTRL characters—and I produced beautiful printouts on a C. Itoh F10-40. Good proportional print really does improve the appearance of your text, putting it in a class somewhere between typewriter and typeset quality.

Stone has also worked out how to handle columns of words and other unusual formats that proportional printing can distort. The whole set of information here is excellent. Chapter 1 alone will justify, for some people, the price of the book.

In these early chapters Stone also describes the use of "snaking" to achieve two-column print with WordStar. When a printer snakes, it prints one column, then rolls back the paper and prints the second column. This isn't for everyone, since it won't work on all printers.

About MailMerge

Here is where Stone's book becomes of real value. No matter how clearly written official documentation may be, or how tastelessly enthusiastic its style, it always ends up devoid of any real character, as though the processes described were as yet untried by human hands. Indeed, the authors of the official MailMerge documentation may never have actually used the program to solve a personal or business problem. David Stone has.

Stone clearly knows MailMerge inside-out. He has tried everything, and he skillfully passes on the benefit of his experience as he teaches first the basics of MailMerge and then advanced procedures.

I knew nothing about MailMerge or any similar program when I bought Stone's book, so I used the text to actually learn the program. I found the beginner's chapters easy to follow, though somewhat slow going because of the wealth of detail. To give you a sense of the difference between Stone's book and the MicroPro manual, I randomly chose the File Insert dot command as an example and counted the number of words that the MicroPro manual devoted to the

subject—about 300—and then the number of words Stone expended on it—about 1,500.

There's more chit chat in a traffic sign than there is one of Stone's chapters, so those 1,500 words are not fluff: every sentence yields concise information, pithy advice, or concrete example.

Stone begins each chapter by listing the "Commands Introduced," the "Concepts Introduced," and the "Uses Introduced." This serves as a convenient index for later reference, should you wish to go back to re-examine a process. Typically, after defining new terminology or explaining new concepts, he begins the text by creating a real-life problem to be solved with MailMerge. Then he gives you a "list" of a MailMerge program—not essentially different from the listing of a computer program—that shows you how to solve the problem. Then he explains each element in the listing that is new or whose purpose is not obvious. He then repeats this process, with a new problem and solution, in order to show how slight variations in the original problem can be handled.

These listings become algorithms—model solutions—for everyday problems. In one typical sequence of three pages, for example, Stone shows you models for "Chaining Chapters of a Book" (meaning chain printing); "Chaining Chapters of a Book Using Different Disks" (handling the problem of not being able to fit your manuscript on one disk); "Automatic Entry of Date when Printing Multiple Letters"; "Automatic Entry of Date with Multiple Printing of Any Form Letter";

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Book Review

and "[Entering] Dates Automatically When Printing a Series of Different Letters."

You don't have to know anything about MailMerge to guess that all this represents a thicket of concrete, detailed information. The whole book has that encyclopedic density.

The chain printing is, of course, useful for ordinary word processing with WordStar. One of the things that gradually dawns on you as you read this book is that David Stone is correct in seeing MailMerge is an extension of WordStar, rather than as a separate program. The significance of that is that some MailMerge functions can be useful to the person who does a lot of word processing but has no interest in mass mailings.

The more complex the MailMerge function, the more useful Stone's text becomes, especially his suggested applications and sample MailMerge documents.

Conclusion

To sum up, *Getting the Most from WordStar and MailMerge*, is a well written instruction manual containing a small amount of valuable information about WordStar, per se, and a thorough treatment of MailMerge. For those who are doing, or will be doing, mass mailing, this book should be invaluable. □

Getting the Most from WordStar and MailMerge: Things MicroPro Never Told You

by M. David Stone
Prentice-Hall, Inc.
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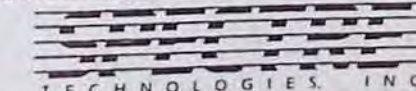
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MICRO FUTURES (continued from page 28)

going to see a blurring of organization. What we have in the U.S. economy today is a private sector broken up into corporations, partnerships, and proprietorships. There's also a huge but unnoticed non-profit sector. I think the lines between all of these are going to blur and new organizational forms are going to bubble up. These could be religious-economic or religious-political in nature. One can imagine all kinds of other groupings and grouplets forming and integrating into the work process in new ways.

Prospects for growth

GORDON: Your book *The Third Wave* came out in 1980, and with all the coverage it and the "Electronic Cottage" chapter got, we've seen a good deal of growth in telecommuting but still relatively low numbers of people working this way. Why do you think the growth has been slow to come?

TOFFLER: It's because of the need for social control and the fear of relaxing it, and the absence of the new institutions that are necessary to facilitate it. It isn't going to happen in the way that most people think about it, with big companies suddenly giving PCs to 10,000 employees and telling them to go home and work. It's going to happen when groups take the initiative to form themselves into new kinds of associations.

In that system, what you have is somebody between the big company and the individual telecommuter. That person takes the responsibility for supervision, so that the supervision isn't coming from some bureaucrat in a big company but from one of the participants elected by the others, or from an entrepreneur who has set up this little company. Once that

happens, the fear of lack of supervision will decline; it will make it possible for many companies to get many functions done a lot more cheaply.

One of the points I didn't make clearly enough in *The Third Wave* is that companies don't realize how expensive centralized production is. The cost of bringing several thousand workers to a central location include a great many hidden costs because the accounting system doesn't highlight them.

Also, companies that operate in a centralized fashion provide a whole hidden infrastructure of services that are necessary to support commuting. These include locker rooms, cafeterias, medical facilities, parking lots, security forces, extra insurance, expensive real estate, higher taxes, and on and on. If they began to tally up all these costs I think they'd begin to recognize that the decentralization of that work into the electronic cottage or into neighborhood work centers could make a radical difference for them.

In a country that has been whining and moaning about low productivity and searching for new ways to either squeeze the workers or to work smarter and introduce better machines to pick up another one or two percent of productivity, the single most anti-productive thing we do is to ship millions of workers back and forth across the landscape every morning and evening.

I think there's going to be an enormous economic advantage with telecommuting and this is going to grow. Of course, the drop in oil prices has probably slowed down telecommuting, but I think the long-term decline in telecommunications and computer costs will speed the pace of its growth. □

by Susan Hyman

The following new product listings are not reviews, and should not be considered as endorsements. We have looked at some of the products, but do not necessarily have hands-on experience with them.

To be considered for publication in *New Products*, please send press releases and product information to: *New Products* Editor, *PROFILES* Magazine, Kaypro Corporation, P.O. Box N, Del Mar, CA 92014. Releases must state specific Kaypro compatibility and the product's price. Send black and white photos if available.

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The book's introduction provides advice on selecting hardware and software, as well as using computers to their fullest potential. It also presents novel ideas on explaining the function of a computer to young people.

The "Hardware Products" section lists 767 microcomputers available in the U.S., with the product name, manufacturer and technical information. Some 2,550 peripheral hardware products, like printers and modems, are also listed and described here. The "Software Products" section contains over 5,000 packages arranged in 135 categories, such as word processing tutorials.

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TELECOMMUTING

(continued from page 34)

the bounds of location, it frees them from the artificial limits of the clock and calendar. In many kinds of remote work the person will be able to work whenever it's convenient and at his/her peak time; the torture of 8 a.m. starting times for the nightowls may be gone forever.

Think of how life revolves around the traditional work schedule of 8 to 5 Monday through Friday. Now, think of what it would mean (to you, your family, and a multitude of businesses) if you could:

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—go shopping when most others are working;

—change your weekend camping trip to the following Tuesday and Wednesday when you wake up to the sound of raindrops Saturday morning.

The luxury of a simple kind of time shift that many VCR owners rave about could be multiplied throughout the whole society—with significant adjustments needed in many cases.

Zoning. Last but not least, we have to deal with various regulations that were written when there was a clear separation between work and home life. (Other examples include income tax and labor law statutes.) In many communities today it's illegal to work at home, though this varies according to the kind of work.

The goal of preserving the character of the neighborhood is an admirable one, but it has no bearing on the telecommuter working unobtrusively at home. There's no reason why a programmer or market research analyst should be as restricted as a person with a homebased retail or does affect the neighborhood, yet

many zoning ordinances today don't make that distinction. Zoning boards, like many other groups, need to be educated about the realities of today's and tomorrow's prospects for remote work.

Where do we go from here?

Will you work at home if you work in an office today? You might, if your employer chooses to get involved with telecommuting and if you're the type who can handle it. All the PCs and modems in the world won't save you if you can't stay away from the refrigerator or need the routine of the commute to gear up for a day's work.

It's likely that we'll see a steady growth in telecommuting, but as Alvin Toffler says, it won't necessarily be thousands and thousands of people banging away at keyboards on their dining room tables. As employers become more aware of the benefits—and realize that 100 percent of the workforce doesn't have to be in the same place at the same time—we can look forward to more experimentation and use of telecommuting as an alternative to a pattern of working that's more than 100 years old. □

Gil Gordon is president of Gil Gordon Associates, a consulting firm in Monmouth Junction, New Jersey, specializing in the implementation of telecommuting and other remote work programs. He is editor of the monthly newsletter "Telecommuting Review" and lead author of a book on telecommuting due out in late 1985 from Prentice-Hall.

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Upcoming Issues

June

Next month, *PROFILES*' theme will be "International Kaypro Applications." Learn how Kaypros are being used to: help a Caribbean island recover some of its culture and history; trace what happened to "the disappeared ones" in Argentina; adapt screenplays on location—in Afghanistan.

The new Perfect Writer (version 2.0) will be extensively reviewed, comparing the old with the new and even touching on how it stacks up against WordStar. Of course, *PROFILES* will continue to offer its readers the practical information they need to exploit the full potential of their Kaypro computers.

July/August

"Tools for Writers" is the theme of our combined issue. Writers make up a healthy percentage of Kaypro owners and there's a mountain of software to help ease the task. We'll look at electronic style checkers, thesauruses, off-beat word processors, and more.

In addition, we'll be bringing you columns devoted to public domain software and bulletin board systems, regular book reviews, and other information that you need to keep pace in the world of microcomputing. □



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