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GATEWAYS TO LOGIC
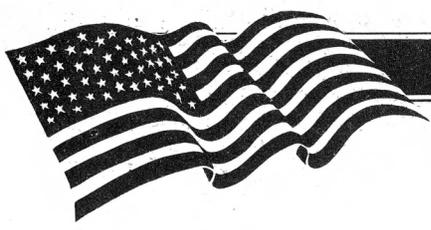
Tom Williams, Editor-in-Chief of California's Info World, helps PCW circumvent the Apple III information embargo by jetting over this up-to-the-minute report.

Myopia may not be an in-curable condition, but it sometimes seems to require radical therapy. I give you the example of microcomputer manufacturers who are con-vinced that they have achieved the world's greatest hardware design. The fact that this design is different than anything else in existence is claimed to be one of the product's greatest assets, and well it may be from the standpoint of pure technological excellence. But when it comes to selling computers and providing the user community with products that are both useful and versatile, there are other considerations, considerations that require a little 'letting go' on the part of manu-facturers.

It is a truism that the S100 bus is not the most refined design for micros. It's also true that, since S100 is not the proprietary design of any one company, there is more hardware and software available for it than for any other micro bus. This is not meant as a promotion for S100, but as an example of a phenomenon that was going on before everyone's eyes, and was misperceived by many to their detriment.

The example is that a major product which has been the result of much in-vestment and design work can positively *benefit* from the existence of cottage industries. That seems so obvious that it's hardly worth saying. When Heathkit first announced the H-8 computer, they felt that a new cottage industry would spring up around their new Benton Harbor bus the way it had around the S100, simply because their new bus really was a design improvement over S100. That didn't happen, partly because there was not enough volume of Heath computers in the beginning also because the memory arrangements of the H-8 presented additional problems to software designers.

As a counter example, Radio Shack was able to make a success of the TRS-80 because they had a large volume of the machines available at startup, and because the TRS-80 was complete in that it required no expansion or configur-ation decisions on the part of the buyer before it could be used. Radio Shack has apparently resented the existence of independent manufacturers of peripherals for the TRS-80 and is rumoured to be designing

custom-made chips into its new TRS-80/Color (or TRS-90) which will prevent the easy interfacing of non Radio-Shack devices to the machine. If that rumour is true, it's probably the biggest mistake Tandy could make.

Still more foolish are those companies who base the main software support for their machines on ROM cartridges. At first, this seemed like a novel approach. The first consumer computer to offer such a thing was the Video Brain by Umtech. You haven't heard much about the Video Brain of late, and there's a reason . . . it's no longer made.

It's one thing to provide the main system software in ROM - Exidy was the first to offer cartridges, but only for the language like Basic or assembler — but it's quite something else to expect that all the applications programs will be provided in ROM packages as well. Not even the largest manu-facturer can afford the human resources necessary to create the volume and variety of useful software demanded by users. And if there has been any lesson learned these past three years it is that *software* is what makes a computer valuable. Thus the only alternative is to make it easy for independent authors to write programs for the machine.

This cannot be done for ROM-based applications, because each author would need a development system for the computer in question, and that costs around $25,000. Texas Instruments and Atari have hedged a bit on this because they originally planned to have most applications programs on ROM. They've since come out with tape and diskette systems, but not the ROM. They seem unsure of their identity and have not attracted independent software vendors, and may be in trouble. The Texas Instruments machine is definitely in trouble and TI engineers who worked on the 99/4 project are said to be circulating their resumes because, currently, TI doesn't have anything in the works in the way of a personal computer.

There is evidence that the smarter companies are coming around to the realization that it's not only in their interest to allow ancillary entrepreneurs to produce both hardware and software products for their machines, it's also in their

interest to *aid* them in doing so. When unveiling its new Apple III system, Apple said that it would be holding *seminars* for qualified independent hardware and software producers who wished to market products for the Apple III. Given this attitude and the very positive features of the Apple III, I predict Apple will have much success with this product.

Speaking of the Apple III, although as of the time of writing it had yet to be officially unveiled (its only airing prior to your reading this having been at the National Computer Con-ference in Anaheim). I recently got an advance peek at the machine and was quite impressed.

The Apple III has a CPU that's built around the 6502A with several other chips such that it executes a superset of the 6502 instructions. It also features relocatable base page register, relocatable stack, an and 128 kbyte address space. The basic machine comes with 96k of RAM and is expandable to 128k.

The Apple III is supplied with a built in 5¼-inch disk drive, and 12-inch black -and-white monitor. Apple will be offering it as a complete 'problem solving' system. The first two such config-urations to be offered will be a word processor and an 'information analyst'. The word processor will come with a second disk drive, a printer (there are several options), and word pro-cessing software. The information analyst will come with the single drive and Visi-calc III, as well as a mail list manager and Apple business Basic.

The most impressive thing about the Apple III is the software orientation of its design. The display, which is now 80 characters by 24 rows, can be selected for any of 16 combinations of foreground and background colours. The character generator is in RAM, and is loaded when the operating system boots. This means that the entire set of 128 characters and symbols can be configured in software. A lookup table defines which letter, number, or symbol will be specified as each keyboard code comes in. Thus, any character set-Arabic, Greek, Japanese, Cyrillic, etc. — can be defined in software.

The software definable character set is also very useful in word processing operations. I saw some of the WP software under develop-

ment and various type fonts were being displayed on the screen . . . medium, italic, boldface, etc. These, along with proportional spacing, corresponded exactly to what would appear on the printed page.

I/O is likewise very software oriented. Apple has written a large number of device drivers for most popular peripherals. When the system is configured, the user simply assigns a peripheral to a certain slot and assigns the proper device driver to it. Thus, whenever that device is called, the operating system takes care of slot and driver; the user simply says what peripheral to use.

Apple is also building in a battery-powered clock/calendar that it says will run continuously for three years. It's said to be accurate to one millisecond, and will keep track of year, day, month and time of day.

One other nemesis of Apple users has been cured: the reset button has been placed on the rear edge of the keyboard, and the control key must be pressed simult-aneously to reset the machine. In addition, Apple has pro-vided an Apple II emulation software package, which, when loaded into the Apple III makes it look exactly like an Apple II in terms of soft-ware and I/O. Thus, all the existing Apple II software can now be run on the Apple III.

Delivery of Apple III systems is scheduled to begin in late July or early August with the Information Analyst priced at about $4,400. The next will be the word pro-cessor around September, which will be priced at $5,400 to $7,800 depending on the type of printer chosen.

Technical specifications

CPU	2 MHz 6502-based with extended ad-dressing
Memory	96-128 kbytes dynamic RAM, 4k ROM
Disks	1-4 minis, 143 kbytes/disk
Screen	Text: 40x24 b&w, 80x24 b&w, 40x24 in 16 colours, user definable characters; Graphics: 280x192 in six colours, 140x 192 in 16 colours, 560 x 192 b&w
Video	NTSC b&w or colour, RGB
Audio	Integral 2 inch speaker, six-bit DAC, one-bit square wave, 'beep'
I/O	RS232, two joy-sticks, printer output