Volume 1, Number 1

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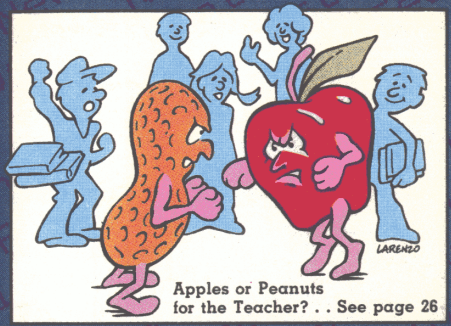
HOME COMPUTER™ DIGEST

News and Happenings in the Home Computer World

- Window Wars Rage On
- Home Computer Market Shake Out
- Las Vegas Show Stars
- TI PLATO: To Be or Not To Be
- Industry Standards Made in Japan?



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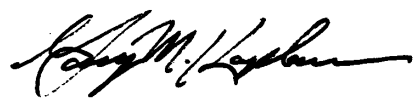
We are pleased to introduce the first issue of *Home Computer Digest*. This journal from Emerald Valley Publishing Co. is a companion to *Home Computer Magazine*, our long-standing resource for home users of the leading microcomputers. *Home Computer Digest* is designed to complement the practical, user-oriented nature of our larger magazine by offering readers a broader view of the ever-changing home computer industry.

Within these compact pages, we will cover all phases of the computer world. The *Digest's* regular columns—*New Tech News, Industry Watch, Software Trends, Novel Applications, Gameware Updates,* and *Computers in Education*—will compile essential industry developments in a concise, easy-to-read format. Each month, comprehensive feature articles will focus on important dimensions of the new technology to help you develop an in-depth understanding of current directions in the computer field.

Like *Home Computer Magazine*, this publication is written especially for you, the *home* computer user, and we welcome your input. We will consider carefully any questions or suggestions we receive from our readers, and we encourage those of you with inside sources or keen ears to send in relevant news for publication. Let us know how *Home Computer Digest* can help keep you well-informed in this dynamic, exciting Information Age.



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Any Questions?

The present global ignorance of computing may come, in part, from our natural aversion to asking simple questions—for fear of revealing only a shallow knowledge of vital topics.

Why not let someone else ask the questions while we sit back and benefit from the reply? That's the purpose of this column.

Q. Why do I need a data storage device? What kinds are there?

A. Unless you use your computer strictly as an entertainment machine, you will need to store your programs or data either on tape or on a disk system. The cheapest option is an ordinary cassette tape player. It is easily plugged into your computer and is fairly convenient for storing data; but sometimes it won't pick up the data unless the volume and tone are adjusted to a precise setting. In addition, taped information transfers slowly compared to other media. At this point, the most popular storage method is a disk system using floppy diskettes. These thin little wheels of mylar encased in plasticized envelopes were once a luxury for the few. Disk drives are now available for about $250, and $150 drives are in the works.

Q. I bought a "64K" computer, thinking I had a machine powerful enough for word processing and for running a small business out of my home. When I plugged it in, it turned out I had only 38K of memory available. What happened? Is this false advertising?

A. The claims of some computer manufacturers may be misleading, but they are not false. Your machine is endowed with 64K, but nearly half of that capacity is being used to carry out non-storage functions such as interpreting BASIC statements and running the hardware. Fortunately, some micros let you add on the memory you need; for $100 or so you can get extra memory in the form of a "card" that plugs into your computer console. Some users may be annoyed at having to make this extra purchase, but it may still be a cheaper option than the models that boast a large usable memory—and a big price to go with it.

Q. Sometimes I leave my computer monitor on for hours at a time. Can this practice harm the machine?

A. The back of your television screen or monitor is coated with phosphors which glow when bombarded with a stream of electrons. This electronic bombardment can be controlled to create precise images on your screen, but if an image is kept on for a long period, the phosphors of that pattern will burn out, leaving a permanent "ghost" on your screen. Some computers have an automatic switch-off device to prevent this problem—the machine goes blank if a key is not pressed within a certain period.

Q. What exactly happens when I transfer data from the diskette or tape to the computer? Can data be lost during transfer?

A. One of the sublime beauties of computing is that your disk drive or cassette player will keep your data safe, no matter how much you mess up the program loaded into the computer. Many people are unaware that loading a program from tape or disk into the computer merely copies the material on the disk into the computer's memory. This is analogous to playing a record on your stereo which

doesn't affect music stored on the record. Programs are destroyed only if you forget to record them, or if you take deliberate steps to erase them from the storage medium.

Q. We are concerned about getting a computer for our child as soon as possible. We know that he will need one in order to keep up with other children his age. The problem is money. How much will it cost to buy a computer for a five-year-old?

A. For many months now, massive ad campaigns have been urging parents to buy computers for their children so that they can "compete with the others." But it isn't clear what all these millions of youngsters are expected to *do* with their machines. It seems unlikely that many will become professional programmers. As for using a computer at work, it is not likely that great skill or long training will be necessary for most jobs—especially in years to come when computers will be extremely accessible. Computers can, however, be powerful educational tools. The LOGO language has proven very beneficial in helping kids learn math and logic. And a computer is great for helping children learn to read and spell. Fortunately, many such activities can be carried out on a simple computer system. An under-$100 machine attached to the family TV set and used with a cassette player is a perfectly good means of introducing your child to computing.

Q. I need a printer. What kind should I get?

A. It all depends on your needs. Basically, there are two kinds of printers: fast ones and slow ones. People who choose fast ones get a print-out with a "computerized" look. The letters are made up of dots printed out by a matrix of tiny pins striking the printer's ribbon. These dot-matrix printers for home systems can crank out copy at 50 to 200 characters per second. If you want typewriter-quality characters, you will have to sacrifice speed. A page printed on a daisy-wheel printer is indistinguishable from hand-typed copy, but such machines write at 12 to 55 characters per second. The dot-matrix printer is normally used for utilitarian data display such as program listings or department store sales slips. Letter-quality printers are generally used for business letters, press releases, and manuscripts.

Q. I ordered a printer through a mail-order house, and now that it's here I can't get it to work because my computer doesn't have what they call an RS232. What gives?

A. One of the curiosities and curses of buying computer products is that many items come strictly a la carte. The RS232 "card" is simply another collection of integrated circuits that conveys data from a computer's memory to a printer. This accessory can cost anywhere from $50-$200. In addition, you will have to spend $20-$50 for a cable to connect your printer to the RS232 card.

Window Wars

When Apple introduced the Lisa a year ago, it was met with less than the rousing reception Apple had hoped for, primarily because of its sky-high price tag. But Lisa's use of the screen as an "electronic desktop" caught the imagination of software developers and computer users alike. Extending the desktop idea to other computers is now becoming a major focus of the big software houses.

VisiCorp has been the pioneer in developing what is called an *integrated operating environment*. Designed to free the user from shuffling back and forth among programs and files for spreadsheet, graphics and word processor, *Visi On* opens up *windows* to several programs simultaneously. The user gains access to the system by moving a "mouse" (a sort of desktop joystick) across the desk. Using *Visi On*, the user can select a spreadsheet program and enter data, then move the mouse to select a graphics program to draw a graph based on the data just entered on the spreadsheet. Then, via the mouse again, the user can select the word processor and transfer the results to a report. This program interaction is all accomplished from the same screen, with no long delays between programs! The package was developed with the first-time user in mind, so there are no special languages or codes to learn.

What Price Windows?

One major stumbling block in this scheme of easy program and file interaction is the amount of memory required. VisiCorp hoped its *Visi On* would provide a window environment requiring only 128K of RAM and two floppy-disk drives. But the product as it is now being shipped requires a hard disk, a floppy-disk drive, a minimum of 384K of RAM (with 512K recommended), and the mouse device. The package lists for $495 without the mouse; the mouse adds $250 to that price. *Visi On* is available for several IBM PC-compatible machines and the DEC Rainbow, among others (as long as they have plenty of memory).

Microsoft's answer to *Visi On* — *MS-WINDOWS* (slated for release

in the second quarter of 1984) — will require only 192K of RAM and two floppy-disk drives. Because it is an extension of MS-DOS (so Microsoft claims), it will be compatible with nearly all existing application software that runs from MS-DOS. This is one-up on *Visi On* which supports only applications that are designed exclusively for use with the *Visi On* system. Microsoft expects the retail price on their package to range from $50 to $150, depending on the hardware supported, and maintains that *MS-WINDOWS* should work on any computer running MS-DOS. However, *Visi On*'s late appearance on the market and larger-than-anticipated memory and data storage requirements might cause an impartial observer to take a somewhat skeptical view of Microsoft's ambitious promises. We'll have to wait and see if *MS-WINDOWS* is the look of the future or just a promising silhouette on a shade that hasn't yet gone up.

The rest of the software world is not just standing by to see which of these two giants will emerge from all this window innuendo. The DesQ system from Quarterdeck (planned release was in December) already integrates existing programs in a window-like environment, but Microsoft's software may prove to be more flexible. Meanwhile, Digital Research (CP/M's developer) has developed an approach quite similar to the window concept with its Concurrent CP/M operating system.

Windows for the Home

So when can the home computer user expect to be looking at his programs through these marvelous windows? The Apple Macintosh, which was introduced January 24, has a mouse and windowing built in. At $2,495, it will compete directly with the IBM PC. Apple also recently announced an *AppleMouse II* package ($150 retail) to bring mouse software to the Apple IIe in March. In addition, a program called *Appleworks,* which integrates word processing, database management, and financial modeling, will be available in March ($250 retail). While this package does not incorporate windows as such, it does boast that "users can easily move information... from any file to a word processing file, using the program's 'cut and paste' functions." With Apple marketing these programs, can windows be far off?

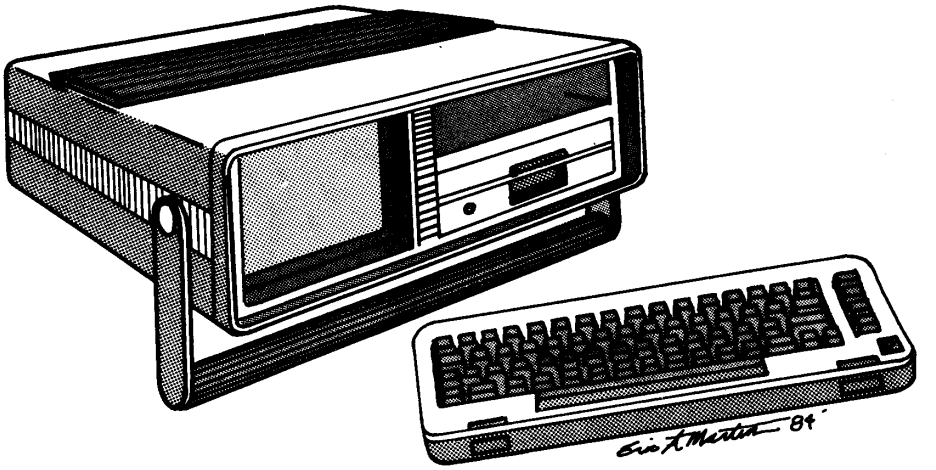
Commodore is also getting into the integrated software market. Their *3-PLUS-1* software package (a built-in option on their new home computer, the Commodore 264) boasts a windowing capability that allows simultaneous viewing of word processor and spreadsheet screens. Available as a ROM cartridge for the C-64 (and as an expansion for the 264), it will not require the large RAM of *Visi On* or *MS-WINDOWS*, but it will probably not be as flexible as these other software packages.

Software development is not restricted to large, established corporations. For example, a new company, Arktronics (established August, 1983, by two Michigan college students and the owner of the Golden Nugget casinos in Las Vegas and Atlantic City), is releasing an integrated package (February 1984) called *Jane* that runs on Apple II series and Commodore 64 computers. *Jane*'s developers claim that it could be modified to run on any computer with 64K of memory, and they hope to market versions for the IBM PC and PCjr in February 1984. *Jane* comes complete with mouse and runs with just one disk drive (Apple version) or cassette storage (C-64). This package includes word processing, spreadsheet, and file/list management, with more to come. *Jane*'s $295 price tag gives one pause, and we can hardly wait to see *Jane* RUN.

—Roger Wood

Sleeper of the Year:

The Commodore Executive



While everyone was buzzing with speculation about the Peanut, the Adam, and other "startling" announcements from the home computer front, Commodore came out with a breakthrough that has been kept surprisingly quiet, considering its importance. The Commodore 64 system has been bundled into a 5" × 14½" × 14½" brown box that includes every essential but a printer. The Executive features a detachable keyboard, 5-inch color monitor, disk drive, and 64K RAM. Now the big surprise: a price tag of $995. That's little more than half the cost of the typical portable system.

When the first Executive 64 press releases came out last fall, some of the machine's specifications put me on my guard. Would a 5-inch screen even be readable? And how substantial was that detachable keyboard? Wasn't 27.6 pounds a bit heavy for a new-model portable?

When I finally got close to the machine, I was suprised by the clarity of the monitor display. It was small, yes, but the resolution was better than I had expected. The screen's readability, however, depends on your eyesight. The tiny screen is simply the portable option—this machine can easily be plugged into a standard television or monitor.

The keyboard is a joy to type on. It seems even smoother and more responsive than the standard Commodore model. The Executive is the first low-end system that is both powerful and portable. It can be used as a writing machine or business tool at the office, then brought home at night and plugged into the family entertainment center.

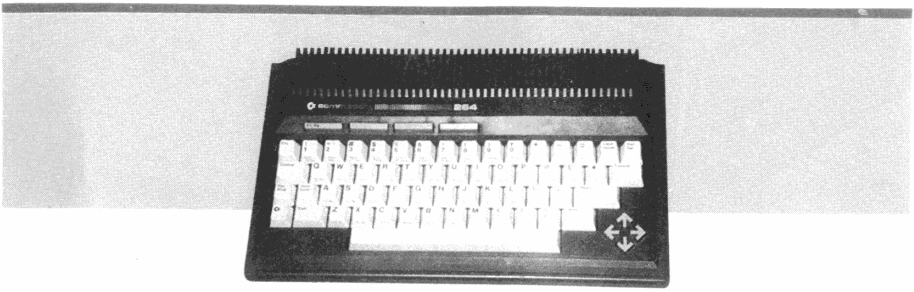
This model takes advantage of the huge library of software written for the original Commodore 64, and even has a slot for cartridges. It is compatible with all Commodore and VIC-20 peripherals, including modems.

Despite the extremely sparse press coverage given to this new computer, the demand for it has been overwhelming. No one should be surprised. The public has long been waiting for a reasonably-priced, powerful, portable computer.

—Greg Roberts

CES SHOW STOPPERS

Short on Hardware—Long on Software



Even though many of last year's exhibitors didn't appear at this winter's Consumer Electronics Show—or showed up as registrants but didn't exhibit—there were some who came to Las Vegas with promising new products to unveil. The big story was Commodore's introduction of its new "dedicated" computers.

According to sources inside Commodore, enthusiasm for the long-awaited 128K, 16-bit Zilog 8000 has waned. Their excitement is now centered around the new series of 64K "Specialty Computers." Commodore Market Development reps say these computers—the 264 series—will carry a price tag in the neighborhood of $500, well below prices for the Adam and PCjr home computers.

These application-oriented "cousins" of the Commodore 64 with their built-in software were the talk of CES. Reportedly, users need only turn on a particular model and its specialty program will RUN automatically. Word processing and an integrated, consumer-level LOTUS-style package called 3-PLUS-1 were on view at the show. Commodore's 3-PLUS-1 will be a cartridge option for the C-64 and will be offered as a built-in or cartridge option for the 264. The functions of the package are simplified word processing, electronic spreadsheet, and data-base management; the "PLUS 1" is a business graphics program.

There was a lot of pre-CES talk about a 364 model with built-in speech synthesis and a numeric key-pad, but the machine was a no-show at the booth.

Even though these new-breed 64's look different from the original Commodore 64—sporting a stylish low profile with a streamlined tilted keyboard—they are compatible with most of the Commodore peripherals. Their software, however, will not be C-64 compatible because the new series uses a custom chip—the 7501 microprocessor—that is a combination of the 6502 and the 6510.

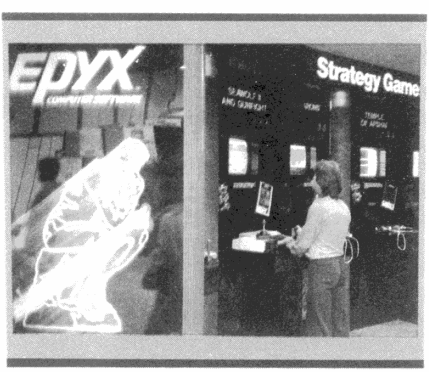
Commodore fans can also look forward to a built-in machine language monitor with 12 commands as well as more available memory. The new machines have a total of 64K of RAM with 60K RAM accessible through BASIC. This arrangement has more RAM available than the C-64 for users to PEEK and POKE about in to their heart's content! Other outstanding features include four separate function keys, an ESCape key, over 75 built-in com-

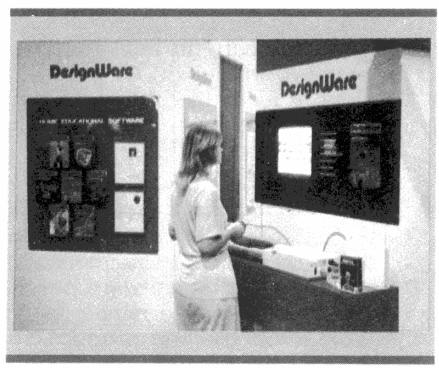
mands, including RENumber and DELete, and graphics plotting using a special graphics mode. This mode uses all Super Expander Commands to give users a full 16 colors plus 8 luminance levels for a total of 128 working colors (just like Atari). The pixel resolution is the same as on the 64, but sprites are not available.

Apart from Commodore's new releases, this was a small producers' show. Timex introduced a 300-baud modem that may make a lasting industry impression with its automatic dial and answer features. A major attraction with this modem is free membership in the Source Telecomputing Network (a hundred-dollar value)! Another scene-stealer was the home version of Video Technology's Laser 3000. Yet another low-priced ($700) Apple-compatible computer, this one boasts four-channel sound, eight function keys, and built-in Microsoft BASIC. Although representatives claim that the Laser 3000 will run most existing Apple software, the user-jury is still out on whether this machine will take any sizeable bites out of big Apple's profits.

Software trendsetters on the scene at CES were showing titles that reflected a new focus. As industry analysts had predicted, arcade classic titles were outnumbered by games that required some strategy and even considerable thought.

Leading the way in this transition is Epyx, of *Jumpman* fame. Following a re-organization of their popular software line into four different categories—"action," "action-strategy," "pure strategy" and "learning fun"—Epyx representatives report that most of the company's new titles will be action-strategy games like *Pit-stop*. Not just another fastest-take-all race around a speedway, this game requires players to decide when to take a pitstop, what to do when they get there, and how much time to take. Each of these variables actually does affect the outcome of the game so that play will be different every time. This kind of software could provide users with a longer lasting challenge for their money.





While arcade-oriented publishers are putting more cognition than ammunition into their software, educational software producers are adding more action to their learning activities. CBS Software's "edutainment" line of learning games stresses "multiple-player, multiple cooperation" for users from preschoolers to adults, according to Ed Auer, CBS Software President. Look for *Strategy World*, *Design World*, and *Knowledge World* to debut soon. DesignWare is looking at the number two spot on the list of top ten producers of educational software with 24 action-learning titles.

Spinnaker, long-time leader in the educational marketplace, introduced *Trains*, an economics simulation package available on Apple, Atari,

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Software Trends

CROSS FERTILIZATION

Simon & Schuster has joined the pell-mell rush of book publishers to jump into the computer age with the announcement of their Electronic Publishing Division to produce home computer disks. As could be expected, Simon & Schuster will concentrate on programming for education. The S&S book publishing operation has been up-dated with a new Computer Book Division. Barnes & Noble, whose main New York bookstore is the world's largest, will bow to the publishing trend with a separate store next door for computer books and software. B&N's Computer Book Shop and Software Center is a physical acknowledgement of the fast-increasing dominance of computer books in the publishing industry. Outstripping even the fiction market, computer book sales are taking over. *Publishers Weekly* has run features on computer book and software retailing weekly, and recently devoted a special issue to this hottest of all publishing topics. Software companies themselves are getting into the act. Microsoft Corporation, the big-time hardware and software company in Bellevue, Washington, will begin to publish books, many of which will be guides to Microsoft hardware and software products. It looks like it will be some time before computers kill off the age of Gutenberg, so widely predicted a few years ago. They may even have resuscitated it.

ALL THE TIME AND EVERYWHERE

ROMOX thinks the new reprogrammable cartridges they've just begun to market in convenience stores in California will become the most popular kind of software purchase. Retailers will lease ROMOX's reprogramming terminals for $160 per month, and customers will be able to choose and produce new software via electronic downloading on site at stores 'round the clock and—if ROMOX's ambitions pan out—'round the world. ROMOX plans to contract with one software distributor per country: with Japan's Aster Co. first, to be followed by distributors in Canada, England, France, Denmark, Sweden, Norway, and Finland. Domestically, ROMOX would like to persuade major companies such as Microsoft to distribute their software electronically through ROMOX's machines. Right now, ROMOX handles programs for the TI, Commodore, and Atari machines and has licensing agreements to electronically distribute programs from Creative Software, Epyx, Fox Video, Funware, HES, Mattel, Navarone, Sierra On-Line, Telsys, UMI, and Vidtec. Microsoft will be producing software for the IBM PCjr, and ROMOX would like to distribute those programs.

VENTURE-CAPITAL MUSCLE TO SQUEEZE THE LITTLE GUY?

If we're to believe Steve Axelrod, a "software agent" interviewed by Mary Alice Kellog for *ADWEEK*, the days of the kitchen table software outfit are coming to a close. According to Axelrod, marketing know-how accompanies the big-time venture capital that's now going into software companies. Axelrod foresees bigger and fewer software companies who produce sophisticated, highly competitive programs for several machines at once and who market their products with a skill and aggressiveness formerly reserved for hardware selling. As if to substantiate Axelrod's identification of a trend, TA Associates of Boston has just put $2 million venture capital into Alpha

Software of Burlington, MA. This is the first time outside capital has gone into Alpha, and they've since come out with full-page glossy magazine ads.

STAR-STUDDED AFFILIATIONS

Rapidly expanding First Star Software has sold a non-controlling interest to Warner Software (a division of Warner Publishing, itself a division of beleaguered Warner Communications). First Star, whose best-selling *Astro Chase* for Atari game systems was authored by award-winner Fernando Herrera, has announced *Bristles*(tm), a new game by Herrera for the Atari and the C-64. Herrera, now Head of Design and Engineering for First Star, is notable as the first software author to conduct an autograph signing. The Toronto Film Festival sponsored an evening commemorating Herrera's work, and UCLA's Video Game Conference will honor Herrera this spring. First Star will pursue its interest in tie-ins with other media via independent film producers Richard Spitalny and Bill Blake, and in a joint venture with MARVEL COMICS Group to design and market software featuring Marvel Comics characters. Warner Software/Warner Books in the meantime will affiliate with LIST Magazine to produce a line of integrated computer book and software packages, its first for IBM PC business applications. Meanwhile, the parent company, Warner Communications, will try to fend off a takeover attempt by Rupert Murdoch, the controversial Australian newspaper baron who now controls major newspapers in England and the U.S.

MILTON BRADLEY-TI AGREEMENT

Milton Bradley and Texas Instruments agreed last year that MB would market their MBX Expansion System with three of the ten games coproduced by the two companies, and that TI would sell the other 7 games. This agreement was to have gone into effect during the first quarter of 1984. When TI left the home computer market, Milton Bradley and TI came to an amicable agreement rather easily: Manufacture of the MBX Expansion System has been terminated to the mutual satisfaction of both parties, and neither company has further obligations to that project. Milton Bradley, who had produced the MBX for only two weeks prior to the TI pull-out announcement, will not market the device, but has distributed the surplus through internal employee sales at both companies. Production of the software for the MBX had begun and will be completed. The three games that require use of the MBX unit (*Terry Turtle's Adventure*, *I'm Hiding*, and *Championship Baseball*) will be sold to company employees with the MBX units. The seven titles TI was to have marketed (*Honey Hunt*, *Sound Track Trolley*, *Space Bandit*, *Sewermania*, *Big Foot*, *Meteor Belt*, and *Super Fly*) have been shipped and will be sold internally as well as through TI's regular retail channels. The suggested retail price of the software has been cut from $49.95 to $29.95. When the current software inventory is gone, MB and TI will discuss future licensing arrangements.

TI Pullout The Aftermath

A lead player walked off the set, a tardy prima donna pirouetted to center stage, and the rest of the troupe waited in the wings for their roles to be re-cast. Before the curtain had fallen on this end-of-the-year drama in the home computer world, industry analysts had filed their reviews and were braced for the big showdown. But the last act is still being written by consumers, who are clearly ad-libbing in this "who'll-buy-it" mystery.

Instability is nothing new in the high-tech market. But the concurrent demise of Texas Instruments' 99/4A and the unveiling of IBM's PCjr gave rise to predictions of an inversion of established buying patterns. Sales of low-end computers were expected to suffer from consumers' fears of being "orphaned" by the price wars that knocked out TI, whereas manufacturers of higher-priced models anticipated a boost from the reflected glory of IBM's impeccable reputation. Market analysts predicted an overall "wait and see" attitude, with consumers holding out for stabilization in the low end and postponing expensive purchases until the long-delayed arrival of the Peanut.

TI Loyalists and Converts

Instead, a wave of buying mania swept the country and left dealers struggling to keep up with the demand for lower-priced models. Heavy holiday sales depleted retailers' stocks as drastic price cuts stimulated new consumer interest in joining the ranks of home computer owners. "Fire sale" prices made TI wares irresistible to Christmas shoppers, who queued up at discount chains to purchase the remaining $149 consoles for a mere $49.

The estimated 2 million + TI user base is both a temptation and a frustration to third-party hardware and software suppliers. A number of manufacturers have expressed interest in supporting the 99/4A group, but these suppliers must seek alternate methods of distribution, as most retailers will not continue to carry TI compatibles. Only those companies that can convert to mail-order and access communication channels with TI users (e.g., mailing lists, users groups, and targeted publications) are expected to succeed.

Rumors of 99/4A look-alikes have surfaced, and many concerns are expected to cash in on the machine's popularity. But Texas Instruments

may not be through with the home computer world for good. Some analysts believe that the corporation's cautious exit from the scene indicates a desire to slip back into the running at a future time. TI has been very protective of its distribution network, and even continued to support sales of the discontinued 99/4A through the Christmas season with at least half of the company's prepurchased TV ad time. Sales of other Texas Instruments products (hand calculators, educational aids, and the CC-40 portable computer) have been strong.

The Upshot Still Not Clear

IBM may have kept the public waiting too long. When the release of the PCjr was delayed beyond December's peak market, frustrated consumers who felt they had to have a micro under the tree turned elsewhere. Advance publicity for the Peanut may have over-inflated consumers' expectations; then a wave of cynical reviews hit, suggesting that the Peanut's capabilities might not justify its cost. Many sources began stressing the lack of compatible software for home applications. Executives with an IBM PC at the office might work at home in the evening on a junior, but garden variety home computer users will have to wait for IBM to woo them with software, or stick with micros that put more emphasis on the "home" in home computers.

Although IBM can be accused of neglecting the home market, its appeal to business and educational institutions has been strong. Virginia Polytechnic Institution and State University will require all entering engineering students to purchase a PCjr, PC, or XT. The College of Engineering at VPI contracted with IBM for 1,600 PCjrs sight unseen, and is willing to increase the order to 4,000 if the actual goods prove satisfactory.

Other high-end producers may profit from these year-end dynamics. Apple executives have stood firm against the tide of price slashing, discount distribution channels, and home entertainment marketing. Apple's sales approach still emphasizes user guidance and support, with sales through authorized dealers only. The delayed release of the Peanut may have created a windfall for Apple.

Flash-in-the-pan profits generated by the TI pull-out were apparent in the low-end market. Discount chains across the country reported record holiday sales of lower-priced models. Christmas shoppers stood a better chance of finding a Commodore 64 or VIC-20 on the depleted shelves, and both models moved quickly. Commodore's new line of 64K "Specialty Computers" and the Commodore Executive may be the reason Commodore did not raise prices, as did Coleco and Atari, who moved into the gap left by the TI's departure.

The sudden pull-out may have been too much for manufacturers at the extreme low end of the price scale, however. Doubts have surfaced about the longevity of manufacturers like Timex/Sinclair who fought vigorously against TI in the price slashing competition, but may not have enough of a computer to withstand market pressures. The clearance prices on the TI-99/4A have also infringed on sales of Radio Shack's TRS-80 color computers.

Advances in technology and high-powered advertising strategies will continue to sway a fickle public. But independent-minded consumers may still have a few surprises in store for industry experts who attempt to make predictions in this quickly changing market.

—Joan Killough-Miller

Novel Applications

NO SOONER SAID THAN DONE

New hardware developments will mean greater independence for handicapped users who may have difficulty with the standard computer keyboard. Voice recognition modules such as Voice Driver, designed by Voice Recognition Systems of San Francisco for use with the Apple II and IIe, allow system operation via speech commands without any special programming. The user's voice is imprinted by voice utility software, which can input a vocabulary of up to 80 words. The module can screen out ambient noise and performs with a recognition accuracy of 98%.

THE NEXT BEST THING TO BEING THERE

Rand McNally & Co. has gone beyond the boundaries of the conventional atlas with a line of educational games designed to teach geography, U.S. history, meteorology, and the time and seasons. The new skill-building software for the Apple II and Atari 800 computers is aimed at fourth to sixth graders. *Unlocking the Map Code* includes a "simulated flight plan" in which students pilot their way between world capitals managing risky terrain, limited fuel, and other flight obstacles.

WHAT NEXT?

Just in time for 1984 comes the Expando-Vision interfacing box by Stimutech, Inc. Commodore and Atari users can hook it up to their television sets and undergo self-improvement programs with subliminal messages flashed on the screen every 2½ minutes. The messages, which appear too quickly to be consciously noticed, are said to be "imprinted" on the subconscious to help the viewer reduce stress, lose weight, or stop smoking, for example. So now you can watch *Love Boat* and *The Dukes of Hazzard* and know that you will be a better human being for the experience.

BETTER HOMES AND CONSOLES

Look for new hardware and software systems that can manage home operations and act as central timers. Products are being developed to control house lights, give you a wake-up call, detect smoke, activate sprinklers, and even heat up your hot tub. Our editors have even seen a TI console turned into a burgler alarm. Now if they could only come up with something to get the kids off to school. . .

THE FAMILY THAT COMPUTES TOGETHER...

The Enchanted Village(tm) is a new concept in retailing that offers computer-related merchandise, in-store seminars, a library, and live performances—all dedicated to the concept of "Edutainment"(tm), a marriage of education and entertainment. Here customers can shop and learn in a family environment that even includes a supervised playroom. The first two outlets opened this fall in Pittsburgh, PA, and Fairfax County, VA, with a national chain slated for the future.

NO FLAB FLOPPIES

Good news, micro buffs. You don't have to leave your console to keep the old body in shape. Spinnaker has introduced *Aerobics*, the company's first venture into the adult software market. Led by a computer-generated figure called "Jane" (who else), this at-home fitness program offers a customized work out with challenging exercises and coordinated music. The program is available on diskette for the Apple, Atari and Commodore 64 computers.

SEND IN YOUR ANECDOTES AND JOKES

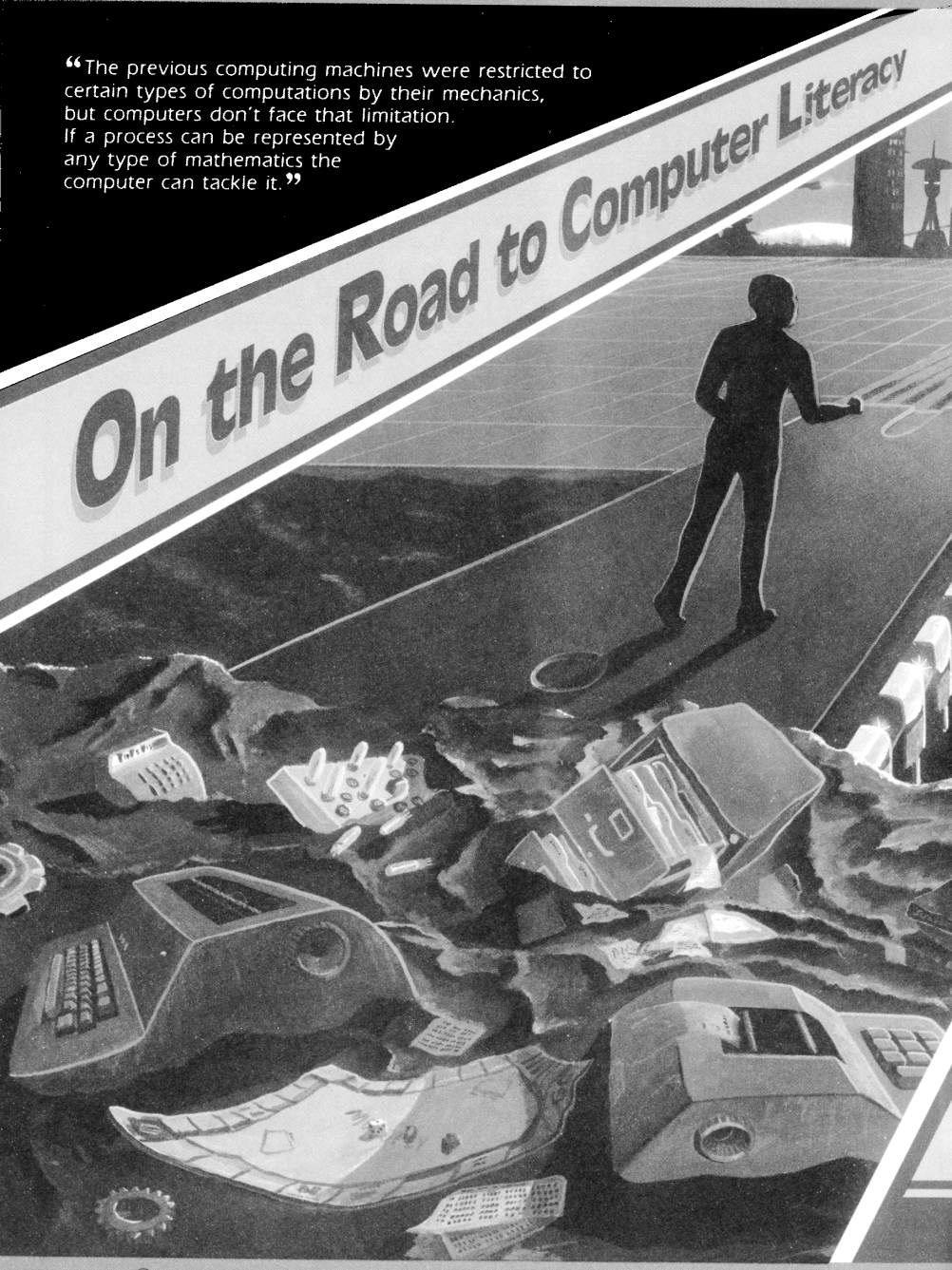
Do you have a good anecdote or joke to share? Don't limit it to the breakfast table or the office—Home Computer Digest will not only listen, but will send a $25 check to the authors of the ones we print. We are always looking for cartoons, bizarre news items, jokes and short anecdotes having to do with home computers, robotics, or any other aspect of the computer industry. Short items need not be typewritten. Be sure to put your name, age, address, and telephone number on each item you submit. Due to the large number of contributions received, none can be returned. Materials chosen will be subject to conditions set forth on the Masthead page of *Home Computer Digest*. Mail all submissions to:

Features Editor
Home Computer Digest
44 Club Road,Suite 210
Eugene, Oregon 97401

CES Show... cont. from pg. 9

and Commodore at a modest $39.95. With each player taking on the role of railroad supervisor, mental and physical action go hand-in-hand. Spinnaker leads the pack when it comes to putting *real* physical action into home computer software. Showgoers gave *Aerobics* a real work-out (or was it the other way around!). In fact, health and self-improvement packages abounded at WCES. With products like this one and Synapse's *Relax* (for the IBM PC, soon to be available on the Commodore and Apple computers), the phrase "Let's get physical" may take on new meaning for software developers in 1984.

—Sharyn Lyon



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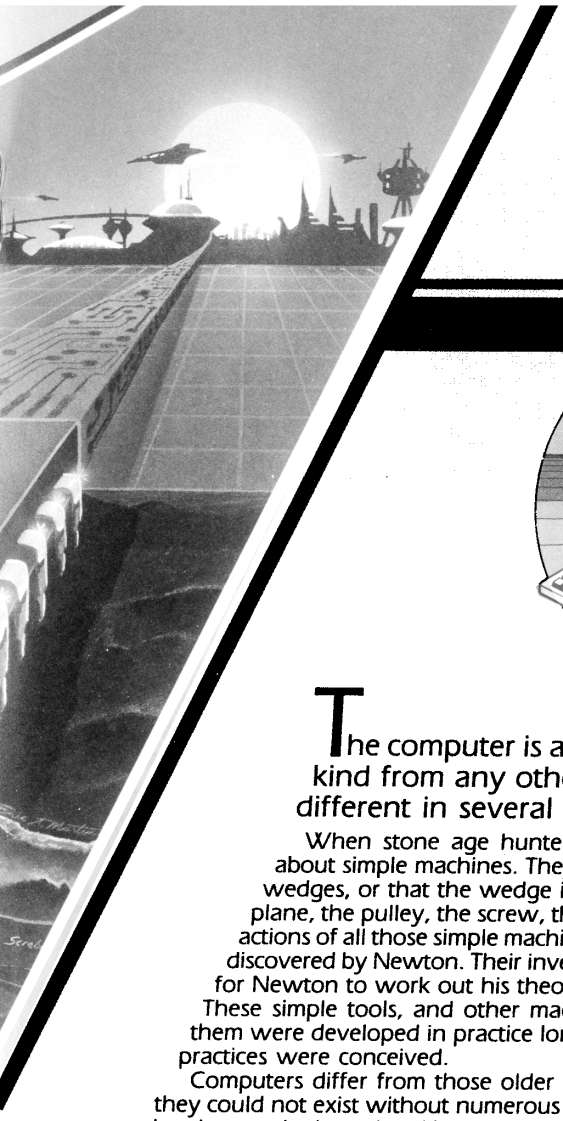
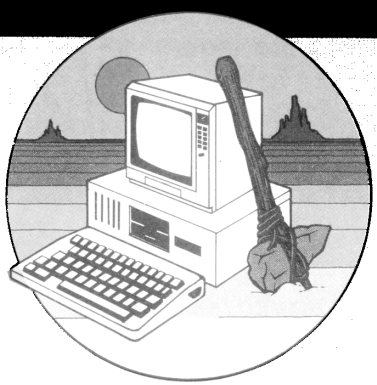


COMPUTERS: *THE NEW TOOLS*

ANALOG VS. DIGITAL

Part 1



The computer is a machine. But it's a different kind from any other we have known so far—different in several important ways.

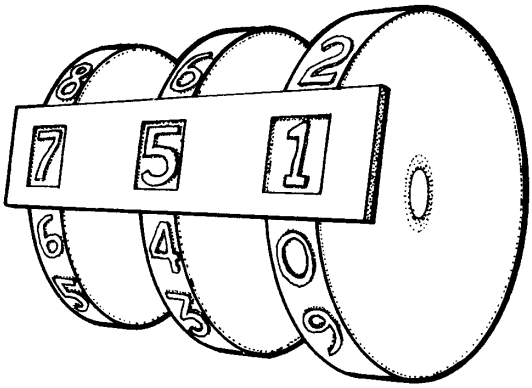
When stone age hunters made axes, they knew nothing about simple machines. They didn't realize that their axes were wedges, or that the wedge is a simple machine like the inclined plane, the pulley, the screw, the lever, or the wheel and axle. The actions of all those simple machines fall under the laws of mechanics discovered by Newton. Their inventors, however, didn't have to wait for Newton to work out his theories before they devised their tools. These simple tools, and other machines made from combinations of them were developed in practice long before the theories behind those practices were conceived.

Computers differ from those older tools in two important ways: First, they could not exist without numerous innovations in the fields of physics, chemistry and other related branches of science. But beyond that, computers deal with a new realm: the abstract rather than the concrete. A stone axe did physical work: It split open a billet of wood or an opponent's skull. The computer processes information: It splits numbers.

The manipulation of numbers is a relatively recent development in human history. We have tools from every period of history as far back as we have human remains. But the manipulation of numbers—mathematics—probably began only about the time recorded history began. And we can, in fact, date precisely a number of discoveries which had to precede the appearance of the computer.

Counting the Hours

There are older computing devices which also dealt in abstractions and also depended on a variety of these discoveries. Sundials, for instance, measured the progress of the day, and divided it up into hours. Hours, of course, are abstractions, arbitrary divisions of the day devised by humans. Once the division of the day into the periods we call hours had occurred, other methods for keeping track of these periods, methods entirely independent of the sun's movement, came into being: water clocks, hourglasses, mechanical clocks. . .



The number lying under a given mark indicates the digit that gear represents. The relative position of the gears gives each gear its respective value.* Movement *of the gears changes the values displayed.

These mechanisms are all ***analog*** *devices. Analog devices use the position or movement of some physical object to produce their information. Sundials depended on the movement of the sun; water clocks and hourglasses on the movement of water and sand, respectively; mechanical clocks on the movement of springs, gears and pointers. The motion of the substance was, in effect, the computation; the physical location of the substance was the result—that is, the information.*

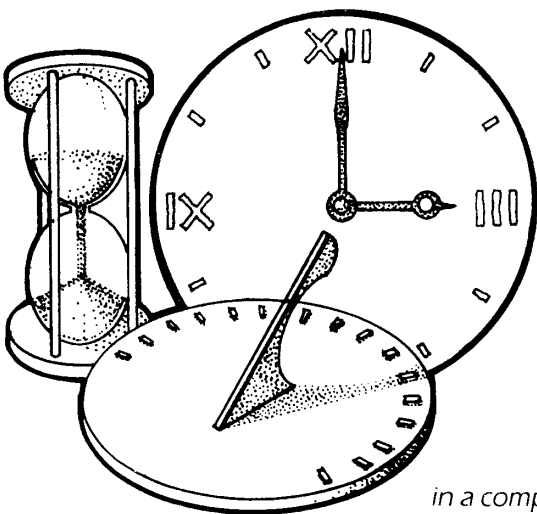
In the case of an hourglass, for instance, the movement of sand corresponds to the passage of hours in a

day. And we read the results from analog devices by measuring a quantity of the substance—to read an hourglass, we have to be able to figure out what portion of the total sand in the glass has moved from one compartment of the glass to another. On some glasses, this is easier than on others because a scale is etched on the glass. Nonetheless, we have to look at the ***quantities*** *of sand.*

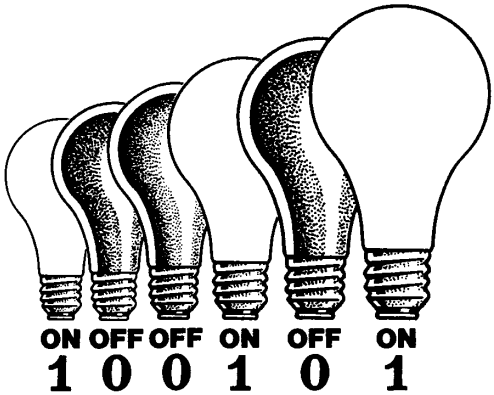
The States of Computing

Later computing machines, like Babbage's computing engines from the mid-1800's or the more recent mechanical adding machines, were also analog devices. In addition to the movements of physical objects, however, they relied on ***positional notation,*** *which is the basis for our everyday numbering system. Every number we see has a value which depends on the position and value of the individual digits in the number. When we see 751, we know that it represents seven hundreds, five tens and one one.*

The shadow of the sundial's pointer marks the hour of the day. Hourglasses and mechanical clocks use the movement of sand and gears to compute hours. They measure only the passage of hours; when synchronized with the sun's movement, they denote a particular hour.



Most computers, by contrast, are not analog devices, but ***digital*** *devices. Rather than having moving parts, they use electronic components and changes in these components to represent their calculations and results. (There is, of course, movement in a computer, but not any kind we normally understand as movement. It takes place in the realm of subatomic particles.) These components have a special characteristic: They take on* ***states*** *—i.e., they can take on only one of two states. In essence, either they are charged or they are not. Computers use this system because there is a form of mathematics that exactly corresponds to this dual-state concept.*



This mathematics, although developed over the years by a number of people, is most often associated with the work done by an English mathematician, George Boole. His system, called Boolean algebra, reduces mathematics to its very basics. Boole said that there are two basic elements and three basic operations that can define all mathematics. Usually, the basic elements are represented as 0 and 1. We can think of the operations as addition, multiplication and negation. With combinations of these elements and operations, we can represent all of mathematics.

⟹

DEVELOPING

The task will be to write a program instructing an all-purpose robot to change a lightbulb. First, spell out a step-by-step procedure for replacing a burnt-out lightbulb in order to see how to develop an algorithm, in English, for this seemingly simple task. The robot must have a complete and unambiguous set of instructions to follow.

At the very top level, the name of the program might be "Change the lightbulb in the kitchen ceiling." Rewrite this top level description of the algorithm to read: CHANGE LIGHTBULB(KITCHEN)

Then divide the problem, or task, into its main subtasks. There is no single correct way to divide up a task, although some ways will be better than others. Try:

1. GO TO THE (KITCHEN)
2. REMOVE OLD LIGHTBULB
3. NOTE WATTAGE OF OLD BULB AND DISCARD
4. GET NEW BULB WITH SAME WATTAGE
5. INSTALL NEW BULB

⟹

Many electronic components are like light bulbs: They can only be on or off. They also can be interpreted as the digits of a number in their respective positions, but they can represent only two digits: 1 or 0, on or off. This numbering system is known as **binary** *(from the Latin for two).*

The same operations used in Boolean algebra to combine elements have exact counterparts in the computer world. These counterparts manipulate the states of a computer's electronic components. With this binary-state manipulation at the component level, we can also represent all of mathematics—electronically.

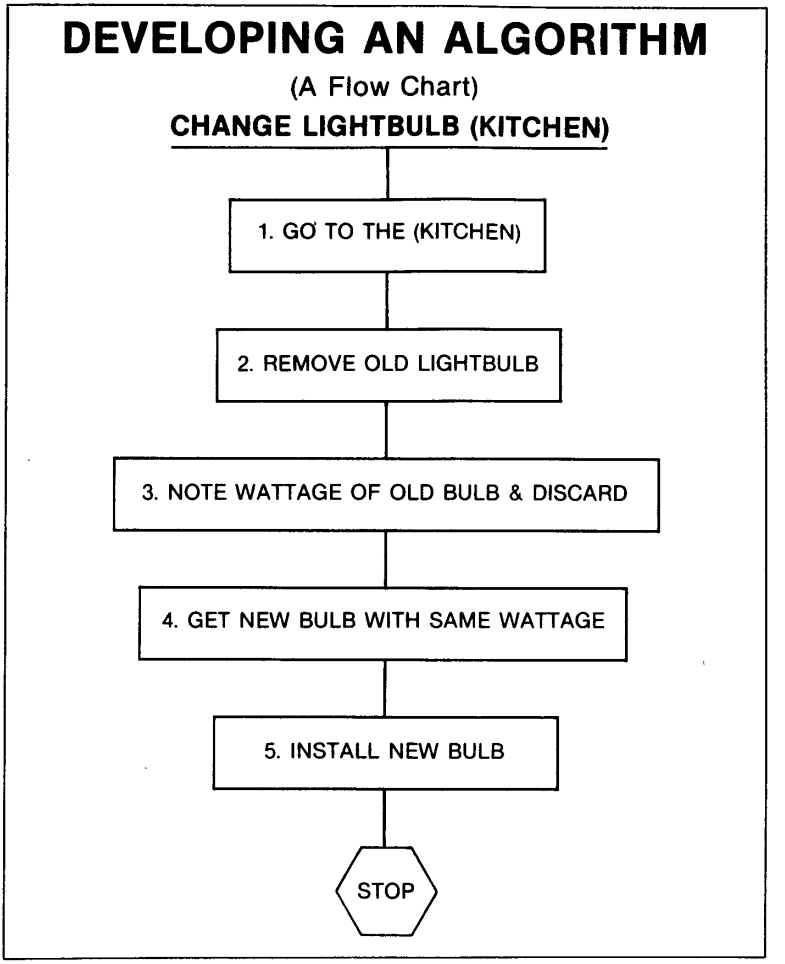
This opens a vast range of potential for the computer. The previous computing machines were restricted to certain types of computations by their mechanics; computers don't face that limitation. If a process can be represented by any type of mathematics, the computer can tackle it.

That immediately presents us with two difficulties central to our use of the computer: (1) finding an appropriate mathematical representation for the problem we're working on, and (2) finding a method for translating that representation into terms compatible with our particular computer.

ALGORITHMS

Notice that these subtasks are arranged in a natural *sequence* that cannot be changed. For example, it is simply impossible to remove the old bulb before going to the room where it is to be found. Also, there are not yet sub-tasks for handling problems—e.g., if at Subtask 4 there are no fresh bulbs with the correct wattage. Though at this level they can be ignored, such details must eventually be taken into account.

The procedure is similar to the grammar school exercise of outlining a report. Each step is broken down into sub-steps until they can be translated into instructions the robot can understand. Development of all algorithms follows this procedure of refining the subtasks into progressively smaller steps until each step is simple and unambiguous enough for the robot to execute. The flow chart on the next page is one way to represent an algorithm.

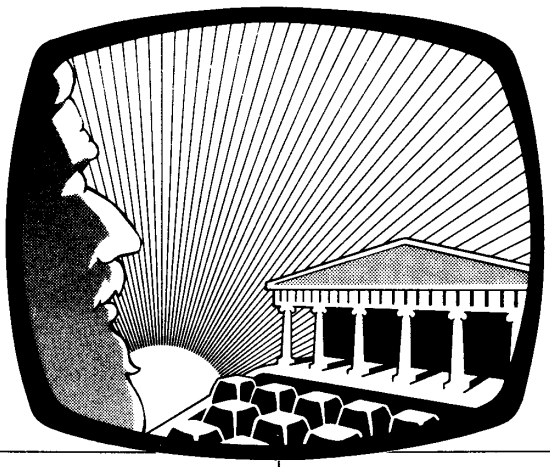


Clear Steps

Once we have defined the problem in mathematical terms, we next have to present it to the computer in clear steps. We have to devise a procedure with a definite beginning, definite steps, and a definite end. Such a procedure is called an ***algorithm****. We use algorithms in various guises in everyday life. Recipes are the most common examples: They tell how much of each ingredient to use and how to prepare them for a given dish. We don't have to use a computer language to define steps clearly, though. Clear plain English sometimes is sufficient; other cases call for mathematical notation. In most cases, however, a combination of both is required.*

Once we have an algorithm which defines all the steps necessary to solve a problem, and indicates all the data (elements and transformations) necessary for that solution, we can translate that algorithm into forms computers can use: Boolean elements and Boolean operators. HCD

PLATO Lives



Even though they've moved out of the home computer market, Texas Instruments has no plans to abandon their PLATO project. In response to the anxious inquiries coming into our offices, we sought out both Dale Osborne, head of TI's Educational Products Division, and Ken Modesitt, Manager of TI's Computer Based Learning Consumer Group. Both gentlemen assured us that TI remains committed to and will bring to market all 108 PLATO program packages as originally scheduled.

The ambitious educational software library for the TI computers grew out of a long collaboration between the University of Illinois and Control Data Corporation. TI bought the field-tested but text-heavy and expensive-to-run Illinois-Control Data educational packages (known as CENTRAL PLATO) in order to format them to run on an inexpensive computer. Although early TI PLATO releases relied heavily on text, their computer format opened up the PLATO library to a host of users who could now bypass the high telephone communication costs that had confined CENTRAL PLATO sales to a well-endowed institutional market. More recent TI PLATO releases redress the text imbalance of the earlier educational packages and capitalize on the full capabilities (including graphics and sound) of the TI-99/4A computer.

School districts and individuals can rest assured that in addition to the *Basic Skills* and *High School Skills* packages already available for the 99/4A, there will soon be a full 108 TI PLATO packages reaching from the third grade through the university level. Of special note in the upcoming TI PLATO packages is an in-depth science series (the Chemistry package alone consists of 7 double-sided floppy disks). At the high school level, packages in social studies are promised. *Basic Reading, Basic Math, Basic Skills Grammar, High School Writing*, poetry, and drama packages are among those scheduled for an early first-quarter release.

TI plans to prepare a not-too-modest 500 sets of each of the first 80 PLATO packages and will make more available when those are sold.

—Erin O'Connor

Les Izmore and DeBug
BY LAREDO & ROBERTS
©1983 EMERALD VALLEY PUBLISHING Co.
LES AND DeBUG STILL HAVEN'T FOUND THE MARKETING SCAM THAT WILL MAKE CHAMELEON COMPUTER & PETFOOD Co. #1.
WHAT'S THAT IN MY BREAKFAST?
FROOT FLIES
SOME COMPANIES WILL IMPLEMENT ANYTHING!
BUT EVERY MARKETING PRO WE'VE HIRED HAS BEEN A DUD!
SOME CONSULTANTS WERE STILL PUSHING A GAMES EMPHASIS WHEN THAT MARKET HAD ALREADY LEVELED OFF!
AWESOME!
WE SPENT A FORTUNE GETTING IMPORTANT PEOPLE TO ENDORSE OUR PRODUCTS, BUT FEW CONSUMERS WERE IMPRESSED
WHOOZAT?
WE TRIED TAKING OUR PRODUCT TO FAIRS, BUT NOBODY WANTED TO TALK DATA. THEY ALL JUST WANTED TO RIDE THE OCTOPUS.
PROBLEM IS, LES, NOBODY KNOWS WHO THE AVERAGE CONSUMER IS. LOOK AT ALL THOSE FOLKS OUT THERE. COULD YOU SAY ANY OF THEM ARE AVERAGE?
I HAVE IT! DELETE ALL OLD DATA! FORGET CONSULTANTS AND MARKETEERS. WE'RE GOING TO TRY SOMETHING RADICAL — CUSTOM BUILT MACHINES — ORIGINALS TAILORED TO THE INDIVIDUAL!
WILL THEY SELL?
THEY'VE GOT TO! IT'S OUR LAST HOPE!
LES AND DeBUG SCRAPE TOGETHER EVERY PENNY THEY CAN FOR A MASSIVE ADVERTISING CAMPAIGN!
... AND THEN WAIT...
THEN COMES THAT FATEFUL KNOCK AT THE DOOR!
MY NAME IS HOAGY QUIHOADY. I NEED A COMPUTER!
WHAT'D YOU HAVE IN MIND?
I'M SICK OF SMALL! I'M SICK OF PLASTIC! I'M SICK OF HIGH-TECH. I'M SICK OF INTEGRATED CIRCUITS YOU CAN'T EVEN SEE. I WANT SOMETHING BIG, LUXURIOUS, FLAMBOUYANT WITH CLASS AND EVEN TRADITION! WAIT! WHAT'S THAT MODEL ON THE WALL?
BUT THAT'S ENIAC!!
1949
BUILD IT!
BUT THAT WOULD COST MILLIONS!
I DON'T CARE SCALEFACE! I'M AN ECCENTRIC BILLIONAIRE!
LATER, THINGS ARE REALLY HUMMING!
THE GLASSBLOWERS ARE HERE WITH THE VACUUM TUBES!
A WILD AND COURAGEOUS MARKETING PLOY HAS PAID OFF!

Computers in Education

SCHOOL MARKET WIDE OPEN (BRIEFLY)

Schools used to conservatively buy Apples or frugally go with the TRS-80. Nowadays, when it comes time to buy micros for computer literacy instruction, popular choices include Atari, Commodore, and Franklin home computers. And the entry of the IBM PCjr may further change the face of the market. Despite the drawbacks of the PCjr's infrared keyboard (inappropriate for school settings where the presence of other computers will interfere with its operation), it seems likely that schools will pay the extra $20 for a keyboard cable in a tradeoff for the "serious computing" and "reliable" reputation of IBM. Companies such as The Learning Company (TLC) are going all out to alleviate the lack of PCjr-compatible educational software by September. The cost of the PCjr may be an inhibiting factor, though. School budgets have shrunk in recent years, and schools are under even more pressure than ever to seek out heavy discounting for their large volume purchases.

A COMPUTER IN EVERY CLASSROOM

In a recent message to educators, President Reagan gave hardware manufacturers more incentive to go after the education market. The proverbial promise of a chicken in every pot will be replaced with the equivalent of a computer in every classroom, in keeping with the Chief Executive's recommendation that every student take a half year of computer science.

BIG CATCH IN EDUCATION MARKET

Apple and IBM may be butting heads in a competition to get the most hardware into the schools. While Apple has stopped "giving away" its machines, we expect to see this company cast out some new bait to lure this profitable fish away from Big Blue. Meanwhile, IBM sits smugly on piles of orders for their new PCjr (sight unseen!) from educational institutions. Neither company is talking strategy yet, but buzzings have been heard that one or both may offer sizeable scholarships and grants to schools stocked with their machines. We look forward to counting the orders again in September when the real angler comes forward to claim the prize.

SOUNDS OF MUSIC AT CES

The show was alive with the sounds of music coming from Syntauri Corporation's portion of the Apple Computer Exhibit. From the joystick-controlled *Musicland*, to *Simply Music* (a total keyboard learning and performance system) crowds at the Winter Consumer Electronics Show gathered to watch as Apples were transformed into interactive instruments. Professional-sounding results came from the tuned-in and the tone-deaf alike, and everyone seemed to learn something from these newly-announced packages.

New Tech News

RELIABLE STORAGE FOR THE ADAM

Although Coleco claims that "Adam includes all the hardware and software necessary for immediate use in the home," reports of data losses from their digital tape drive cartridges indicate that long-term reliable data storage remains something of a problem. It seems that inadequate shielding around the tape cartridge and a "residual electromagnetic charge" that occurs when the tape drive is turned on can make the tapes temporarily or permanently unusable. This, coupled with the difficulty of producing prerecorded tapes in volume, spells trouble. Coleco's introduction of an optional 5¼" floppy disk drive at January's CES could signal that the end is near for the digital tape drive. The new disk drive—scheduled for release in second quarter, 1984—will be available for "under $400." Let's hope that this is all the hardware Adam users will need.

AN A.T.&T. PC?

Though it's keeping developments under wraps, A.T.&T. is rumored to be close to releasing their own home computer. Would you believe a 64K unit complete with 1 disk drive and monitor for less than $400? Ma Bell isn't making any public statements, but news of the product is leaking out slowly but surely.

KOALA WIDENS FOCUS

Koala technologies, fresh from their great Koala Pad success, will soon market a device known as the Gibson Light Pen. Designed for use with the Apple II series, IBM PC, IBM PCjr, and Commodore computers, it is expected to retail for under $300. The pen, the interface card, and software allowing the user to create and store high-resolution shapes and designs are included in the package. Properly interfaced, the pen can also be used as a pointing device in lieu of a desk-top mouse. The pen should allow the user to choose and manipulate programs as well as data displayed on the screen in a window environment.

THE KODAK DISK—BUT NOT A CAMERA

Yes, Kodak has gone into the disk drive business, and oh, what a disk drive. The 3.3 Flexible 5¼" Disk Drive—named for its 3.3 MByte capacity (2.62 MByte formated)—boasts a transfer rate of 500 Kbits/sec. (twice the IBM PC's rate) and a track-to-track access time of 3 msec. (half the IBM PC's time).

Kodak also claims the drive is downward-compatible to read conventional 5¼" diskettes because its microprocessor logic detects a conventional disk inserted in the drive and automatically adjusts motor speed to the conventional rate. At CES they had the drive interfaced to a PC via a modified 8" controller using a third-party operating system called DOS-2.08. Tne drive, produced by Kodak, will be marketed by Data Technology Corporation at a retail price of $495. Release is planned for third quarter, 1984.

Remembering Kodak's marketing ploy—selling cameras to sell their film—it should come as no surprise that Spin Physics of San Diego, is making special pre-formated diskettes for Kodak to market at an anticipated price of $12-$15 each. Also not surprising is that Kodak is the parent company of Spin Physics.

Industry Watch

COMPAQ TRIO LICENSED—OTHERS IN TRIPLE TROUBLE?

Now that they've gone out of the home computer business, Texas Instruments is catching up with encroachments on its always closely-held technology. The three former Texas Instruments employees who founded Compaq some two years ago recently agreed to purchase licenses from TI for personal computer technology used in Compaq's portable microcomputer. Encouraged by this settlement, TI is pushing company patent attorneys to get other personal computer manufacturers to honor three of TI's patents for widely used computer technology—2 bit-pusher patents and a patent to protect TI's combining of manual input device, single-chip personal computer, and screen display. Analysts inside TI insist that many computer manufacturers violate these patents and will be affected by TI's decision to "collect" on their earlier contributions to microprocessor circuitry.

COMPANIES STAY AWAY, OR GO BUT DON'T SHOW

It used to be that a company's appearance at COMDEX or CES signalled the industry that the company was doing all right. Failure to appear was sure to provoke rumors that the company was in trouble. But lately, with the proliferation of computer expositions threatening a schedule of one every six weeks, some companies, (confident that their absence won't be misinterpreted) are being selective about the shows their money and energy go into. Sirius, Sierra On-Line, and Broderbund, for instance, decided this year to relinquish the pleasures of their regular January CES floor exhibit space in Las Vegas in anticipation of a more productive sales effort at CES in June. Others came only to see and be seen.

TI USERS, TAKE HEART

TI will continue to support its huge Home Computer user base. March Direct Marketing (MDM) has been contracted by TI to keep users apprised of third-party hardware and software, via a quarterly catalog. TI will fully honor its warranties and maintain out-of-warranty service in addition to its helpline,800-TI-CARES. GROM licenses for TI's auto-incrementing memory feature are in the works, as are agreements for selling GROMs to interested third-party software manufacturers. TI is also negotiating with third parties interested in manufacturing 99/4A software formerly produced by TI. So far, both Sierra On-Line and Imagic have agreed to "take back" and distribute the TI software. Sierra On-Line will also manufacture and market 5 educational programs developed by Walt Disney Studios for TI, and Imagic will manufacture and market 5 of its programs for which TI had previously purchased rights.

Magazine scanned 2022 by Stephen Shaw

Toward an Industry Standard

While American computer devotees curse software incompatibilities, the Japanese are doing something about the situation. No fewer than a dozen Japanese firms (including Matsushita, Mitsubishi, Toshiba, Sanyo, and Yamaha) are releasing new MSX-standard personal computers. These machines are hardware compatible, using a Z-80A microprocessor, a TI video chip (the same one as in the 99/4A), and identical sound generators. They are software compatible too, and the MSX standard designation comes from their uniform ability to run Microsoft Super Extended BASIC.

The only American companies to jump on the MSX bandwagon thus far are Spectravideo and ROMOX. Spectravideo will release an MSX-compatible model, the SVI-728, sometime in the first quarter of 1984. Although they have not settled on a price yet, reports place it within the under $500 range. The computer will feature a keyboard with 87 keys (including a numeric key-pad and 10 user-programmable function keys), 32K of ROM (which contains MSX-BASIC), and 80K of RAM. It will have CP/M capability and be expandable to 96K of ROM and 144K of RAM. This should be strong competition in the low-end home computer market.

ROMOX feels so far that the MSX is most appropriate for the Japanese market, but hopes to produce software for the MSX system. ROMOX already has arrangements with Aster Co. in Japan for its electronic software distribution system, so this would seem like a natural.

Why such a lack of American interest in the MSX? It's too late: The U.S. home computer market is already bursting with competition. The 8088 microprocessor is used in so many machines now that a Z-80A-based machine might be an out-of-date "standard" in the American market. Right now the PC-compatible computer is the de facto American "standard," although discussions of a U.S. standard these days must include the possibility of an A.T.&T. Unix-based home computer. Mysterious TV commercials featuring the undisclosed contents of a home-computer-sized box identified as "the future" add fuel to expectations that A.T.&T. will exercise its considerable clout to establish a Unix-compatible standard in our American marketplace.

But we Americans don't have the added push for standardization that accompanies language considerations in Japan. High level computer languages (like BASIC) are written in English, so for the Japanese to work in their own language, an extra translation step is necessary. Dealing with a single BASIC (like MSX) instead of several incompatible BASICs greatly reduces these translation difficulties.

— Roger Wood

Gameware Updates

WELCOME ABOARD, PAC-MAN?

The reason your flight is off-course may not be hijackers. Recently, intermittent radio interference from a passenger's Pac-Man game shut down an engine on an Eastern Airlines plane. The Radio Technical Commission for Aeronautics (RTCA) will investigate the problem of portable computers interfering with aircraft navigational systems.

EN GARDE!

Atari and Coleco are battling it out with Wico, Discwasher, and Zircon International for the best joystick at the lowest price. Although the Atari 2600 joystick is a traditional best-seller at $9-$11, short supplies have led many gamesters to make other selections from the myriad available in the $10-$50 range. Beefed-up ad campaigns, like Wico's pre-Christmas debut on national television, are expected as the contenders take jabs at Atari's 4-1 sales lead.

TRIAL OFFER

A new marketing approach by Epyx offers a "Preview Disk" that allows consumers to sample excerpts from five games (*Gateway to Apshai, Jumpman Junior, Pitstop, Seawolf,* and *Gunfight*). Epyx has mailed out a quarter-million flyers advertising the sample disks to users who can order one for $2.50, which is refundable with proof of purchase from any of the games.

SEND IN THE CLOWNS

Although games might amount to only half of a software publisher's sales, many feel that popular game titles are important in establishing brand recognition. Advertising for entertainment-oriented software can help lure consumers towards more serious applications packages such as education and home management. The games themselves can be constructed as tutorials that introduce gamesters to other areas of computer use. Watch for a glut of new game titles during the first half of 1984, and new lines of "hybrid" software that mix business with pleasure.

FROM SILVER SCREEN TO MONITOR

The trend in gameware for '84 is movie titles. Box office hits *Krull* and *Star Trek* are slated for release in adventure game versions, and a new game features Kung Fu fighter Bruce Lee. Even Buck Rogers will enter the 21st century immortalized in a video game.

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