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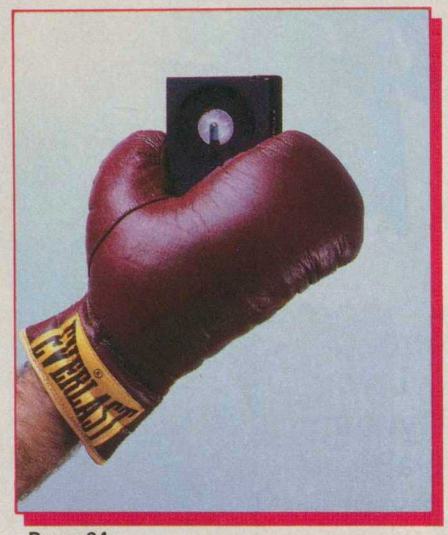

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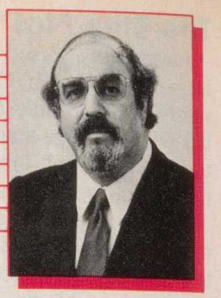
Computer Ease



The Human Interface

by Ivan Berger

Why a Computer Column, Anyway?

Why, indeed? Because video and computers are on intersecting paths. Except for pocket computers, virtually every computer either has a video screen or requires one; home computers that require them use home TV sets and monitors.

Computers that don't use video technology are beginning to appear: Pocket computers use flat liquid-crystal displays (LCDs) which can show a line or two of programs and instructions. And portable and desktop computers have appeared with larger LCD panels which display a few short lines. But it's only a matter of time until flat-panel display technology and video converge, too. The flat-tube Sony Watchman and forthcoming Sinclair pocket TV, as well as the LCD and other flat-panel TV sets shown in prototype by other companies, are cases in point.

The computer/video connection is not just one of shared technology. The home-entertainment center used to mean a radio/phonograph; then it came to include TV. Now, it's begun to include computers along with video recorders, disc players, and games. Don't expect to find that idea only in specialty magazines like this one—you'll find it in more general magazines as well, those covering lifestyles or home decorating, for example.

From the user's standpoint, there are two major differences between video and computers: first, while you can approach video as a purely passive viewer, computers require active participation if you're to do anything worthwhile (or fun) with them. Second, choosing and using computer equipment and software (programs) requires you to know a good deal more than you need know to use video, even if you use video quite actively. This column's purpose is to help you learn at least the broad outlines of what you need to know about computers—to give you the guided tour that orients you to a new place, but not the knowledge you'd gain from living there awhile.

Computers themselves know nothing. No matter how much knowledge a computer may store and manipulate, it has no mind and no awareness of that knowledge. Images of alien invaders, your last month's check reconciliation, operating codes for a machine tool—they're all just abstract symbols as far as the computer is concerned. All a computer does is manipulate symbols according to a preset program of instructions.

That would seem to limit the computer's uses; actually, it's what makes computers powerful. Reduce anything to symbols and the machine can handle it—your taxes, this article, games, fluctuating temperatures, sound waves; you name it. And name it you must—the computer could not care less about what's symbolized. Whatever it is, those symbols get manipulated in the same limited range of standard ways. What makes one program of computer instructions different from another is the precise order and combination of manipulations it applies.

For instance, a program can move those symbols around, add and subtract them, compare one to another, and take different actions based on the results. Individually, such tiny program steps cannot accomplish much. But you can build powerful programs from such little steps if you use enough of them. The task might seem like building a house from toothpicks—but at computer speeds of several thousand steps per second, it works.

The "processor"—the part that does all this computing—is in most personal computers just one chip among dozens or hundreds of electronic and mechanical parts. The others are equally important.

In addition to the processor, a computer must include "input" (through which information can reach the processor), "memory" (in which information can be stored till needed), and "output" (through which the processor can communicate with you or control outside devices). To be practical, though, a general-purpose computer should also have "mass storage"—a way of recording and reading back information not currently being used.

When you look at a home computer, the first things you'll usually see will be its input keyboard and output screen. You may also see cassette recorders or "floppy-disk drives" for mass storage of information. (If they're not built in, they're not considered part of the computer—they're "peripherals.") The rest—the processor and memory, plus circuits for connection with peripherals—is all inside.

The more peripherals available for a computer, the more it can be made to do. My system, for example, has a printer for permanent output on paper, an audio-type cassette recorder, an extra floppy-disk drive, and a "modem" for communicating by phone with other compu-

ter systems. I could also get: joysticks for maneuvering in games and graphics, devices to run lights and appliances in other rooms, to answer me by voice or respond to my voice, to draw detailed pictures on external TV screens, to read magnetic-striped identification cards—and quite a few other things.

Since I write articles on my computer, the printer is by far the most important to me. Without it, the only way I'd be able to submit my articles to my editors would be to bring the computer down to VIDEO's offices and have the editors take notes off its screen. [*Harrumph!—Ed.*] As an editor myself, I know just how pleased they'd be about that! For most applications, the printer is tied with mass storage for the title of Most Valuable Peripheral, though some people get more use from modems or other gadgets.

Printers and modems are available for virtually all computers, though, so you needn't give much thought to that if you're shopping for a home computer. (How to shop for the peripherals themselves will be covered in a later column.) There are some basics you should think about, however, when looking for the computer itself:

□ **Memory.** The more, the merrier. It's usually measured in kilobytes (abbreviated "K"), with typical computers ranging anywhere from 1K to 64K; some 128K and 256K machines are starting to appear. For serious applications, 16K is the minimum.

□ **Screen.** The more characters a screen displays at once, the more information you can get from it at one glance. Many computers can display 24 lines of 80 characters apiece—that's about twice as much as a computer like mine, which displays 16 lines of 64 characters, and 4 times as much as a computer with a 24-by-40 screen. On the other hand, a screen that shows fewer characters can show them larger. For games, graphics, and other purposes, a color computer is a lot more useful (and fun) than a black-and-white one. You can also rate display systems by "graphic resolution": the number of independently controllable "pixels" (image spots) that can be shown on-screen.

□ **Keyboard.** Computer users spend a lot of time at the keyboard entering data, writing programs, or simply responding to questions and prompting from the computer. The better the keyboard, the more you'll enjoy working with it.

At the bottom of the keyboard scale are those whose "keys" are printed on flat membranes, such as the Atari 400 and the Timex/Sinclair ZX81. Membrane keyboards are dust- and water-resistant, but they provide no "feel" to tell your fingers what keys they're pressing (which will trouble touch typists more than those who hunt and peck) and which have been successfully pressed (which some computers solve by beeping on key actuation).

Next up are those with calculator-like keys. The Radio Shack Color Computer is one such example, with keys that feel like flat-topped square Chiclets. Even for a fast typist like me, that's okay. At the top of the line are true typewriter keyboards, with sculptured tops and the same inter-key spacing that most typewriters have.

Even among these, there are substantial differences: My Radio Shack Model 1, for instance, had keys set in an angled plane, like a row of steps, with a slightly spongy feel and a tendency to "bounce" (repeat characters when pressed once). My Model III, on the other hand, has keys set on a slight curve, more closely approximating normal finger movements, and its feel is quite precise with no keybounce at all.

Computer keyboards usually have special keys not found on typewriters, such as Break, Control, and cursor-control arrow keys. They may also have special-function keys, either to do predetermined tasks (e.g. Erase Line) or whatever task for which the user programs the computer. The more of these the merrier, too, since they make certain programs much easier to use.

There's more than that to selecting a computer and quite a bit of ground to cover on how to use it once you have one. We'll save all that for future columns.

Ivan Berger is technical editor of Audio Magazine.

Arcade Alley

A Critical Look at Video Games

by Bill Kunkel & Arnie Katz

The Fourth Annual Arcade Awards

As long-time readers of "Arcade Alley" may recall, this is the month in which we traditionally cover the annual Arcade Awards competition. For the fourth year, the best designs in all segments of electronic gaming—video-game cartridges, computer programs, stand-alone devices, and coin-op video games—vied for honors.

The scope of the awards has expanded greatly in tune with the booming state of electronic gaming. There were more prizes given to publishers of deserving games at this year's Arcade Awards presentation than in any previous year—but there were also more worthy titles competing for the statuettes. As a result, this edition of "Arcade Alley" will cover only the video-game cartridges that copped Arkies this year. Next time, we'll look at computer software that earned similar distinction.

☐ Video Game of the Year: **Demon Attack** (Imagic/Atari VCS). This multi-screen invasion game turned out to be the yardstick against which gamers measured the quality of each new cartridge during 1982. Superior graphic and sound treatment made "Demon Attack" as much a delight to the eye and ear as it was a challenge to the mental and physical capabilities of home arcaders. Certificates of Merit: **Star Master** (Activision/Atari VCS), **Atlantis** (Imagic/Atari VCS).

☐ Best Science Fiction/Fantasy Video Game: **Defender** (Atari/Atari VCS). This home version of Stern's popular coin-op game provides non-stop action and a severe test of any arcader's abilities. It's a scrolling shootout in which the goal is to save survivors of a nuclear attack while zapping enemy ships lingering in the area for a final kill. If the rules governing the Arkies didn't forbid any game from winning more than 1 honor, "Defender" would have been a strong candidate for at least a couple of additional statuettes and probably a Certificate of Merit award as well. Certificates of Merit: **Space Jockey** (US Games/Atari VCS), **Encounter at L-5** (Data Age/Atari VCS), **Threshold** (Tigervision/Atari VCS).

☐ Most Innovative Video Game: **The Great Wall Street Fortune Hunt** (Odyssey/Odyssey²). The third game in Odyssey's Master Strategy Series continues the high standard of quality set by its 2 predecessors, "Quest for the Rings" and "Conquest of the World." This stock-market trading game features on-screen stock and news tickers to keep the wheeling and dealing going for one or more participants. Certificates of Merit: **Nexar** (Spectravision/Atari VCS), **Word Zapper** (US Games/Atari VCS).

☐ Best Solitaire Video Game: **Donkey Kong** (Coleco/ColecoVision). Three different playfields highlight the home-screen edition of the world's most popular electronic climbing game. Can you guide Mario to the top of the half-completed skyscraper and rescue the kidnapped girl from the giant gorilla? It won't be easy, especially while dodging the barrels Donkey Kong rolls in Mario's direction. Certificates of Merit: **Berzerk** (Atari/Atari VCS), **Infiltrate** (Apollo/Atari VCS), **Gorf** (CBS/Atari VCS).

☐ Best Multi-Player Video Game: **The Incredible Wizard** (Astrocade/Astrocade). This home version of Midway's "Wizard of Wor" is the finest cartridge ever produced for this system. One or two gamers can work together or square off head to head in this maze-shoot. Arcaders must overcome a range of challenges, including invisible attackers, multiple playfields, and the powerful Wizard himself. Certificate of Merit: **Conquest of the World** (Odyssey/Odyssey²), **Bowling** (Mattel/Intellivision).

☐ Best Video Game Audiovisual Effects: **Smurf** (Coleco/ColecoVision). Once

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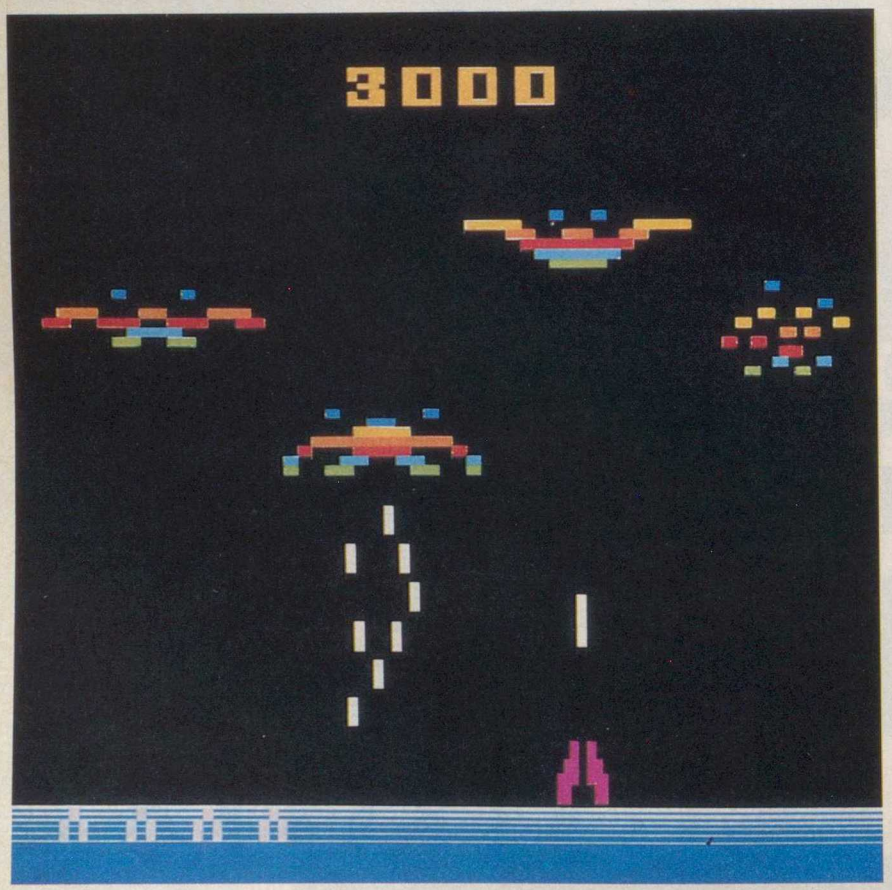

This was the game to beat in '82: Imagic's 'Demon Attack.' No one managed.

player on which we did the original test to see whether our original measurements were a true indication of that machine's performance, or whether the disc originally used had lowered the measurements of the system. (We kept the original player at VIDEO in the meanwhile and no adjustments of any kind have been made to it.) The results of the test confirmed our suspicion: The original player performed within 0.4dB of the measurements made on the new one. The results were S/N left channel 71.3dB and right channel 70.3dB. The original player does meet its manufacturer's specification of better than 70dB audio S/N, with CX on.

Conclusion. The LD-1100 is unquestionably the best source of audio accompanying video material. It's one of the few pieces of equipment up to the quality of the best component systems.

Test Report: Pioneer LD-1100, Audio Performance Update

DATA

Date of retest: November 1982

RESULTS & RATINGS

Audio S/N: originally reported 62dB, CX on; retest result 70.3dB, CX on

Audio performance: excellent as originally reported

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Arcade Alley

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you've pointed out that playing "Smurf" is like walking through a Saturday morning cartoon show, what else needs to be said? Certificate of Merit: **Phasar Patrol** (Starpath/Atari VCS), **Triple Action** (Mattel/Intellivision).

☐ Best Arcade-to-Home Video Game Translation: **Frogger** (Parker Brothers/Atari VCS). Even in a year in which first-rate home editions of top coin-ops abound, "Frogger" is something special. As players hop across the crowded highway and then across the swift-flowing river, they experience all the thrills of Sega's play-for-pay original. Certificates of Merit: **Galactic Invasion** (Astrocade/Astrocade), **Venture** (Coleco/ColecoVision).

☐ Best Action Video Game: **Chopper Command** (Activision/Atari VCS). Players need a strong trigger finger for this scrolling shootout, in which you must command an armed helicopter that is the only force standing between a variety of attackers and a truck convoy on the ground. Certificates of Merit: **Space Cavern** (Apollo/Atari VCS).

☐ Best Adventure Video Game: **Pitfall** (Activision/Atari VCS). Swing through the trees with that great white hunter, Pitfall Harry, on his gold-finding expedition. The sheer number and variety of possible situations is almost unbelievable in a VCS-compatible cartridge. Certificates of Merit: **Earthworld** (Atari/Atari VCS), **Riddle of the Sphinx** (Imagic/Atari VCS).

☐ Best Sports Video Game: **Hockey** (Activision/Atari VCS). Though other cartridges may simulate the rink sports more faithfully, none packs as much rock-'em-sock-'em excitement as this version. Each coach controls a two-man team in this contest of skating, passing, and shooting. Certificates of Merit: **Super-Challenge Baseball** (Mattel/Atari VCS), **Super Challenge Football** (Mattel/Atari VCS).

☐ Most Humorous Home Arcade Game: **Megamania** (Activision/Atari VCS). The concept behind this multi-scenario invasion game is that a pilot has fallen asleep after a big snack and is dreaming about being attacked by a variety of foods and household items. Can you repel the dreaded hot dogs or stop the assault of the radial tires? It's sure fun to try! Certificates of Merit: **Fast Food** (Telsys/Atari VCS), **Sneakers** (Sirius Software/Apple II).

And there you have 'em: the best video game cartridges of 1982. Meet us here on "Arcade Alley" next month for a rundown on Arcade Award-winning computer games.