

ATARI VCS

by DAN GUTMAN

It used to be that computer owners could dismiss the Atari 2600 VCS (Video Computer System) as a mere plaything that temporarily infatuated millions of Americans. Video game systems were just toys compared to the more powerful and versatile "real" computers.

But now, the four best-selling video game systems (Atari VCS, Atari 5200, ColecoVision and Intellivision II) all have plug-in expansion modules to add a keyboard and more memory to the basic game system. Just as personal computers began playing games a few years ago, this year the game systems have become computers. No longer are there video game systems *and* computers. The differences have diminished to the point that they are now one product.

Because of this, the Atari Video game systems will receive coverage in these pages. And what could be better to start with than one that's in ten million homes, the Atari VCS?

A LITTLE HISTORY

Credit for the VCS usually goes to Nolan Bushnell, who started Atari with \$500 and gave us *Pong* in 1972. Actually, it was principally invented by Atari's Steven T. Mayer, who had also helped design the ATARI 400 and 800 computers. The VCS came out in 1977, but didn't catch on for quite a while. It wasn't until Bushnell left Atari in January of 1979 that *Space Invaders* arrived and the VCS took off. Now, despite the fact that Intellivision, ColecoVision and the Atari 5200 easily outstrip it in computing power, more than half of the video game systems in American homes are the Atari VCS. Originally sold for \$180, it was last sighted at \$95 and dropping.

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LET'S GET PHYSICAL

The VCS is a good-looking little machine made of black and brown simulated-wood plastic. The cartridge slot is right in the middle, flanked by four switches: Power, Game Reset, Game Select and Color/B&W. Game Select is for games like *Space Invaders*, that has 112 different variations. Recently, the Color/B&W switch has been used for other purposes. In Spectravision's *Nexar*, for instance, that switch will freeze the action indefinitely so you can answer the phone (or even go on vacation) and resume the game when you return. In the back of the VCS is a switch that manipulates the difficulty level of the game.

Packed with the VCS are two joysticks, two paddle controllers (for horizontal-movement games like *Breakout*), a TV/game switch box and a *Combat* cartridge.

Inside, the VCS sports a 6507 microprocessor. The 5200 game machine and the 400/800 computer carry the 6502, which can address more memory. This affects the number

continued on next page

of independently positioned objects the screen can handle on one line. The VCS allows a programmer to manipulate five independently moving objects while the 6502 grants him eight. However, the VCS has something the computers don't — repeat register. This feature gives a designer the freedom to copy objects on the screen and repeat them without using more memory. In effect, it gives the illusion of a more complex game.

HUNDREDS OF GAMES

At last count, there were over 200 game cartridges for the VCS, triple the number for any other system. With so many VCS's out there, software companies have stuck to designing VCS games instead of switching to flashier games for the ColecoVision, etc. Activision, formed by four ex-Atarians, was the first company other than Atari to manufacture games for the VCS. Soon after, in 1981, other companies joined the fray almost every week — Imagic, Parker Brothers, U.S. Games, Spectravision, Telesys, CBS, Sega, CommaVid, Twentieth Century Fox, Tigervision, Coleco and even arch-rival Mattel.

Atari now has nearly 20 such competitors, which certainly contributed to the Warner Communication “bombshell” that Atari games were not selling as well as previously. But this has been a blessing to the consumer, who has the choice of virtually any game imaginable if he or she owns the VCS.

Originally, the VCS was designed to do two things — play *Pong*-type games and play tank-battle games. In fact, in the beginning nobody at Atari dreamed the 4K program capacity of the machine would ever be fully utilized. But video game designers, in their zest to program more colorful and complex games, have pushed the old warhorse to its limits and beyond. Some of the games approach the quality of computer games that have twice the memory.

First there are the classics — *Space Invaders*, *Asteroids*, and *Missile Command*. These games brought the middle class into the arcades, and also brought them back home. The Atari VCS versions are not identical to the coin-ops (neither are the 400/800 versions), but they capture the feel and personality of the games. Although *Pac-Man* was a huge disappointment for the millions who ran out to buy it, Atari has consistently provided good games for the VCS. *Defender*, *Centipede*, *Berzerk*, *Ms. Pac-Man*, *Galaxian* and *Vanguard* are examples. Turkeys included *E. T.*, *Raiders of the Lost Ark*, and most of the sports games. The VCS is great for fast-moving action games, but it takes to sports like an elephant to a birdbath.

Other excellent VCS games are: *Kaboom* and *Pitfall* (Activision), *Demon Attack* (Imagic), *The Empire Strikes Back* (Parker), *Star Gunner* (Telesys), and *Nexar* (Spectravision). Needless to say, there are a good many duds also. VCS games sell for \$20 to \$30.

Great effort has been taken to squeeze every last ounce of graphic capability from the VCS. Early on, Atari dis-

covered that they could turn 4K games into 8K games by a method called “bank switching.” Two 4K chips are packed into the cartridge and they alternately turn on and off, tricking the system into playing an 8K game. Recently, CBS Video Games introduced two games, *Wings* and *Tunnel Runner*, that use a “RAM+PLUS” chip that *triples* the capacity of the VCS. The limits of the cartridge possibly may be extended even further.

ADD-ONS

Not simply content to settle for cartridges, two companies have come out with devices that plug into the VCS and expand its memory even further. The Starpath (Arcadia) Supercharger, designed by Bob Brown, formerly Director of Research at Atari, expands the Random Access Memory of the VCS from 128 bytes to 6,272 bytes. A 50-fold increase in memory gives designers a lot of room to play with, though Starpath has yet to release a monster game.

The Supercharger is the size of two cartridges on top of one another, but it still plugs into the cartridge slot on the VCS. A short cable goes from the Supercharger to any standard cassette recorder. In this way, the Starpath games, which sell for just \$15 on tape, get loaded from the tape recorder into the Supercharger. The Supercharger sells for \$44.95 (including one game) and Starpath has seven games for it. At this point, no other companies have released games that take advantage of the Supercharger's capability. Amiga will unveil a device similar to the Supercharger in June.

Another improvement in the VCS concerns its controllers, which have a tendency to break after six months of heavy play. No less than 15 companies are selling replacement joysticks and trackballs for every conceivable taste and grip preference. They run from cheap, plastic replacements to huge arcade bat handles for \$70 (nearly the price of the VCS). Wico's Three-Way Deluxe Joystick and Suncom's StarFighter are considered the best. Any controller that plugs into the VCS will also plug into the 5200 or the ATARI 400/800/1200.

DEATH OF THE VCS?

She's a tough old bird. A lot of people like to poke fun at the VCS, saying it's weak and obsolete. But the video-game designers have seen it as opportunity — coming up with ever more powerful chips, improving the joysticks, plugging who-knows-what into it, cramming in some more memory — even using deception to make games *seem* more complicated. Now, with four companies (Atari, Entex, Unitronics and Spectravision) making computer add-ons for it, the rumored death of the VCS has been slightly exaggerated. Unless those ten million VCS owners find a better video game system, with a library as extensive as the Atari 2600 VCS, it may be around in the year 2600.



VCS GRAPHICS

*One picture is
worth a thousand bytes*

by DAN GUTMAN

Of all the popular video game systems — Atari VCS, Intellivision, ColecoVision, Atari 5200 — the Atari VCS is graphically the worst. It puts the fewest number of dots on the screen, fewest number of colors on the screen, and the fewest number of independently-positioned, movable objects on a line. However, thanks to heavy hitters like Space Invaders, Asteroids, Missile Command and Pac-Man in its library, the VCS has invaded millions of our homes. That staggering number has provided the incentive to turn the VCS into a machine that is now showing graphics that rival, and sometimes surpass, those of computers with three times as much memory.

Here are some of the graphics stars in my VCS collection.

- **Ms. Pac-Man** (Atari) — Although she is not nearly as spectacular as the arcade game, this cartridge puts Atari's VCS Pac-Man to shame. The field is a brilliant blue and you get a new maze every third wave. Ghosts, fruit, pretzels and Ms. Pac-Man are colorful, clear and realistic.

- **Demon Attack** (Imagic) — Not only are your flying enemies incredibly detailed in the first wave, but they continually change throughout the game, all the way up to wave 85.

- **Strawberry Shortcake Musical Match-Ups** (Parker Brothers) — This game is aimed at little girls, and it is enjoyable just to *look* at the game's graphics. There are six Strawberry Land characters, each with a different three-piece outfit. A smiling sun sails across the sky to indicate the time remaining.

- **Pitfall, Keystone Kapers, and Plaque Attack** (Activision) — Activision is known for its superior graphics. These recent releases display such objects as shopping carts, escalators, snakes and packs of french fries — as tiny as two inches tall, but sharp and recognizable.

HOW DO THEY DO IT?

But if the ATARI 400 computer, for the sake of argument, has three times the memory capability of the VCS, shouldn't the graphics on games for the 400 be three times as good as games for the VCS? All other things being equal — yes. But other things are *not* equal. Although the 400 has the capability to display eight independently-positioned, movable objects on the screen (compared with five on the VCS), the VCS

has something the 400 doesn't, called "repeat register." Repeat register allows an object on the screen to be duplicated indefinitely, with no extra drain on available memory.

For example, in **Frogger**, where you have an endless series of logs floating from one side of the screen to the other, the VCS designer (Ed English, for Parker Brothers) only had to code one log and put it in repeat register. The 400 designer, without the benefit of repeat register, had to use up a lot of memory to code each log. Virtually every VCS game has repeating objects, and this gives the illusion of a game that is more graphically complex.

Also, VCS designers have used their ingenuity to create games that match the graphic quality of computer games. One "trick" that is often used is a technique called "bank switching." The 6507 microprocessor chip in the VCS can only address a 4K ROM game. But if you put *two* 4K chips in the cartridge and instruct the VCS to look at one, then to rapidly switch to the other and back again, the system will, in effect, be playing an 8K game.

Games like **Missile Command** would look miserable if not for bank switching. Bank switching has not been used much with the 400 or 800 computer, only because each has enough memory so that it is not necessary to fool the system. Techniques like repeat register, bank switching, and simply "bludgeoning" a program to get every available byte out of it, have helped reduce the "graphics gap" between the VCS and the home computer.

LOOKING GOOD AND PLAYING BAD

There is no doubt that good graphics can improve a game. However, it must be remembered that great graphics are not synonymous with "great game." The 4K that is available to the game designer must fit all his or her graphics, sound and play action. If a lot of that space is used for the graphics, it will be necessary to sacrifice some sound and playability.

Last year, Atari released **Earthworld**, the first game in its "Swordquest" series. When you turned the game on, it displayed an incredibly detailed, multicolored sword that led you to expect a graphically superior game. However, the graphics

continued on page 67

VCS GRAPHICS *continued from page 64*

on the rest of the game were rather ordinary, and, according to a reliable source, the sword itself took up 2K of the game's memory — one quarter of the total memory available just for the attract mode! You have to wonder what was sacrificed in play action in order to get that sword.

Video games are intended for interaction, not just observation. If the graphics are terrific and the game is lousy, the designer might as well take up painting. It is a very rare game that can display incredible graphics and, at the same time, give us exciting, action-packed play. Pitfall is one such game. The designer, David Crane, could have put less emphasis into the graphics of the game to make Pitfall Harry climb trees or shoot a gun. Instead, he chose to go with the good play action he had and make the graphics superior. These are decisions and tradeoffs that determine the quality of a game. Graphics and game play are a delicate balance.

Graphics are a large part of a game, but *only* a part. Two of the best video games ever, *Space Invaders* and *Asteroids*, were simple, straightforward, and black and white. But just as TV, movies, and photography were pushed inexorably towards better and finer color and resolution, so, we expect, will the market demand the same from computer graphics. In that line of development, the VCS is close to its limit now.



ATari COMPiler

ATACOMP makes it possible to write and debug your games in BASIC; then compile and execute them with machine language speed. It will compile the BASIC commands: GOTO, GOSUB, A = , IF . . . THEN, PEEK, POKE, END. Originally written in BASIC using these commands, ATACOMP actually compiled itself! Game capabilities include sound, color, P/M graphics, timers, random; joysticks, scrolling, display lists, character sets — anything accessible with PEEK and POKE. Takes less than 30 seconds to compile 10K. Includes manual and full length arcade game.

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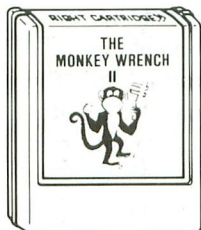
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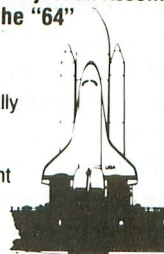
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