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Behind the Scenes at Coleco and Atari

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ALL KEYED UP
The Computerization of Video Games—
A 16 PAGE REPORT

On the Trail of Q*bert's Quest

A Programmer's Guide to the VIC-20

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ASTROCADE

One More Time

The year is 1976 and Atari is busily developing what will soon be known as the Video Computer System. It is designed to accept cartridges which push into the top of the unit and allow individuals to play games on a regular television set. With about 600 bytes of storage capacity, the unit will be enormously successful.

Meanwhile, across the country, Jeff Fredrickson, of Dave Nutting & Associates, the design wing of Bally/Midway, is busily developing its own home game system that will be known as the Bally Professional Arcade. It will be designed to accept cartridges that load similarly to a cassette tape (and even look like them), while allowing owners to play games on a regular television set. It has at least six times as much game storage capacity as the Atari VCS, but won't be the success it should have been.

By now, everyone knows something about the VCS. With estimates of about 12 million units out there, and seemingly non-stop television commercials for compatible cartridges, it has touched every game player's life. The Bally unit, on the other hand, has sold, perhaps, 120,000 units, has had limited television advertising (a short campaign last year under its new name and ownership, Astrocade), until recently no third-party software developers, and remains one of the better-kept secrets in the history of home video game systems.

Bally's plan was to introduce a BASIC programming cartridge which would allow the user to write his own programs, games and learning activities, as well as some limited home management monitoring. The cartridge was introduced about a year after the release of the master unit when a cassette interface, permitting the recording of programs and playback through the computer, was also introduced.

Bally's planned third step would have satisfied those users frustrated with the limited capacity of the original unit and BASIC programming cartridge. A keyboard computer, dubbed "Z-grass" (for the graphics oriented, user-friendly operating system) was announced with the introduction, in 1977, of the Bally Professional Arcade.

This computer was scheduled to have 64K RAM, 32K internal ROM, a full-sized keyboard, broadcast quality

video, dual audio cassette jacks with motor control, RS-232 Input/Output interface and CPM compatibility. The Z-Grass 100 (a later *iteration* of the original design) was designed to be a full, state-of-the-art computer. So what happened?

Well, to fully understand the answer, it's important to trace the history of the arcade system. Although initial orders were taken in September 1977, Bally wasn't ready to fulfill its orders for a few months. Those units were, on the whole, defective, with heat-sink problems being the major difficulty. A user would buy the unit, take it home, turn it on, and it would overheat, frying some of the sensitive components. The system would then have to be returned to the dealer and many of those first sales ended up being non-sales, with the defective units returned for refund, rather than being replaced by working units. It took some owners six or seven "trade-ins" before getting one that was reliable. This was enough to discourage most potential purchasers, and marked the system from the beginning.

With overall corporate attention focused on other growth areas and business activities, Nutting's design group was involved in perfecting the design of the Z-grass computer add-under. According to Nutting, this went through "at least 12" revisions, and when he was finally satisfied that an acceptable unit had been developed, Bally management decided to abandon the endeavor, principally because of quality problems, and the resulting slow sales.

Astrovision (which changed its name to Astrocade) entered the picture, purchasing the license to manufacture, market, and develop new hardware and software for the Bally Professional Arcade. Astrovision also apparently purchased all units and components still at Bally. The Nutting design group and Action Graphics, which was then a wing of Nutting, would provide software and engineering support to Astrocade but, in the words of Nutting, "no money."

Until Astrocade finally began releasing new software in late 1981, there had been no cartridges available for approximately two years. Lack of product would have doomed most systems (as it had Fairchild's Channel F), but not the Professional Arcade. And, in 1977, the unit was touted as an expandable home computer. Promoting it this way succeeded in attracting buyers who, for the most part, desired to get into computer programming (the VCS buyers were mostly interested in playing games), thus keeping the system alive.

Robert Fabris, publisher/editor of *The Arcadian,* a newsletter which publishes programs and information about the system, began his publication in 1978. He has been one of the major forces keeping it going since that time. His publication, meanwhile, has served as a link between the owners of the unit, and has also been a major provider of information by both Bally and Astrocade. It was through this publication that many of the third-party programmers have sold their cassette-tape loaded programs for the system. However, Astrocade never reached its anticipated goals, releasing only a few cartridges, abandoning plans for a keyboard, and finally declaring bankruptcy last year.

The first computer add-on was introduced in June 1980. Called the Blue-RAM ($180 assembled, $140 kit) it was designed by John Perkins, of Perkins Engineering. The unit provided 4096 bytes of memory, which could be designated either RAM or ROM by moving a switch, 128 bytes non-protectable ROM, and allowed games to be transferred to Blue-RAM and recorded onto tape. Also available was an 8K extended BASIC cartridge ($49.95), for more complicated programming, and simplified graphic design and game development. Perkins Engineering also offered a 62-key keyboard ($89.95) which simplified the entry of programs into the system, a specially designed modem/printer interface ($99.95), a Blue-RAM operating system ($9.95, which allowed development of longer programs), and a BSR controller ($19.95), providing the Professional Arcade with the capability to control up to 16 lights or appliances in the home.

Perkins Engineering now also offers a 16K system ($275 including 8K Extended BASIC), a kit for converting the 4K Blue-RAM to 16K, and a 32K Blue-RAM ($395 including extended BASIC). Both units take about three weeks to prepare before shipping.

In April 1981, Alternative Engineering introduced its Viper (Video Image Processing Equipment Research) System 1, a 16K memory expansion for the Bally Professional Arcade. The $275 unit included an 8K extended BASIC language tape, with special graphics routines and other features which facilitated programming. Available at extra cost was a keyboard ($175), and a 16K RAM card ($150). Expansion cables, multibus adapters, an EPROM programmer card, and an RS-232 interface card were also announced. In addition to these two manufacturers, other users developed light pens (to allow drawing on your TV screen, printers, other keyboard/memory expansions, and machine-language programming utilities (to program faster video games).

While the Blue-RAM and extended memory Blue-RAMS are still available, Alternative Engineering may stop production of the VIPER, for a very good reason—they have licensed the Z-grass operating system for use in an add-on keyboard computer. Sources at Alternative Engineering indicate that a unit has been designed to the basic specifications of the unreleased Z-Grass 100: 64K RAM, 32K ROM, and a 4K screen interface. The unit will have a full-sized keyboard, two cassette recorder interfaces with motor control, RS-232 ports, CP-M compatibility, and voice. The name for the device hasn't yet been decided and a cabinet design hasn't been finalized.

Marketing of the unit will be through Esoterica Limited, an Ohio-based producer of arcade software, with an already well-established distribution network. The company, which began by providing cassette tape-loading programs, has recently made available the first independently-produced game *cartridge* for the Professional Arcade. Future plans call for the computer to be released throughout the distribution network, with units hopefully on the store shelves when you read this.

—Mark Brownstein