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Howard Delman Takes Us Inside Atari

Last month, we took a look at the role that Atari alumnus Howard Delman played in the development of the vector graphics generator that was behind Atari's greatest X-Y arcade hits. This month, Howard talks about the development of some of the early video game projects at Atari, and gives us a look at what life was like at Nolan Bushnell's company during the heyday of the coin-op video game era.

Howard Delman grew up around electronics. His father was a TV repairman, and Howard was building radios and amplifiers before he was a teenager. He earned money in high school by repairing televisions and radios for his parents. However, his real love was science.

"I always said that I wanted to be a 'scientist,'" Delman said. "The chemistry lab that I assembled in my bedroom would probably qualify today as a toxic waste Superfund site. I attended Rensselaer Polytechnic Institute, in Troy NY, and received a BS degree in Chemistry. I continued on at the University of California at Santa Barbara, where I received a master's degree in Scientific Instrumentation. It was that program that gave me the foundation to enter the engineering field."

Atari was Howard Delman's first job, which he got just days after graduating from the University of California at Santa Barbara in June 1976. He was primarily hired as an electrical engineer (which led to his work on the vector generator, as described in last month's column). He also had a background in programming, and is credited with hardware and game design on several of Atari's early coin-op games, including *Super Bug*, *Canyon Bomber*, and *Fire Truck/Smokey Joe*.

"*Super Bug* was my first game, and I was both hardware designer and programmer,"

Delman recalled. "After a period of time learning from other engineers, studying existing designs, and assisting on a few other projects, I was given the description of a game called *City Driver*. The description suggested a top down view of city streets, similar to Atari's older driving games like *Trak 10*. My production release was quite similar to the original written description.

"Since it was my first game, a lot of time was spent just learning. My supervisor, Lyle Rains, was very good about leaving me alone to figure stuff out. Over time, I got my hardware debugged, my software came alive, and eventually, the game was playable.

"It is fascinating to look back at the size of the *Super Bug* development team. I did the hardware design, with inspiration and help from Lyle. I wrote all of the software, with guidance from a few other more experienced programmers. The sounds in the game were all discrete circuits that I created. Again, I was able to learn techniques from prior games, but no one was working on sounds specifically for *Super Bug* except me. I had the part-time services of a technician, Mary Pepper, to help me with board assembly, debugging, and modifications. Lyle contributed most of the screen artwork.

"When the player hits something in the game, there is a graphic that appears that says 'crash.' Here I need to give credit to my wife. She is a portrait artist, and she designed that graphic.

"So in essence, the 'team' consisted of me... with help from Lyle, Mary, my wife, and the technology of Atari's existing games. Compare that with development teams today, which number in the hundreds.

"*Canyon Bomber* was my second game, and it was championed by Nolan Bushnell. I don't recall if he conceived of it, but I do
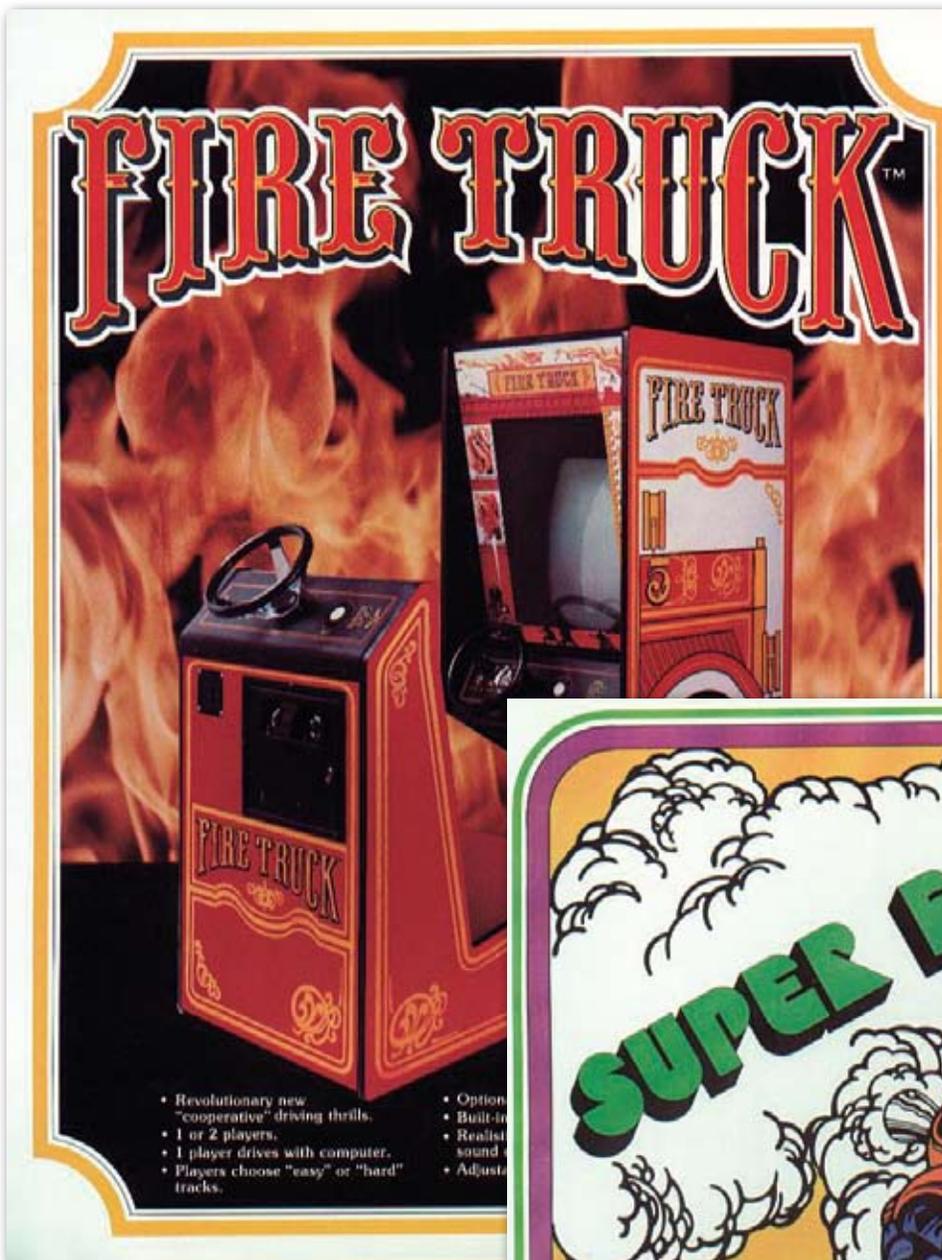
remember that he was very interested in seeing it created. As was often the case in those days, I did not need to create completely new hardware. The game *Sprint II* had been out for a year or so, and it had a hardware board that was very versatile. With a few minor modifications, I was able to use it for *Canyon Bomber*. Lyle again provided me with graphics, for the biplane and blimp. The sounds were discrete, and I implemented them with small digital and analog circuits.

"In those days, memory chips held 2K bytes of code, and compared to other electronic components, were considered 'expensive.' Thus, a program that was just one byte over 2K required a second pricey component. There certainly were games at the time that used more than 2K of ROM. *Super Bug* was 6K. But my supervisor, Steve Calfee, always liked to challenge people. So when my code came in at around 3K, he said, 'I bet you could get it down to 2K, and save the cost of the second memory chip.' Never one to back off from a challenge, I went back to work.

"With judicious scrutiny of every routine, I was able to finally shrink it to 2K. In fact, it was exactly 2K. There is not a single extra byte in the ROM.

"*Fire Truck* grew out of a discussion concerning the lack of two player cooperative games. I don't remember who came up with the idea, but someone suggested that a fire truck requires two cooperative drivers.

"Since I was the creator of *Super Bug*, and since I was looking for another project after *Canyon Bomber*, I was given the assignment of creating the first two player cooperative driving game. I knew I wouldn't have to start the development from scratch, since I could modify the *Super Bug* hardware and software. John Ray had recently joined Atari as a

FIRE TRUCK™

- Revolutionary new "cooperative" driving thrills.
- 1 or 2 players.
- 1 player drives with computer.
- Players choose "easy" or "hard" tracks.
- Option...
- Built-in...
- Realisti... sound...
- Adjusta...

SUPER BUG

- Fast, 1-player driving action
- Unpredictable track makes each game a new game
- Durable 4 speed shift
- Players can choose "novice" or "expert" track
- New French, German or Spanish video message options
- Built-in self-test program
- Optional extended play

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was ready for field-testing. The game earned very well, but as soon as distributors and operators saw it, they started complaining that it was too large for many locations.

"Thus was born *Smokey Joe*, a smaller cabinet with only one steering wheel, which required the player to chose which position he wanted to drive. The software changes from *Fire Truck* were minimal, and the game was made ready for production fairly quickly."

Howard was a part of Atari during its early years, when the company was on its way to becoming the fastest growing company in corporate history (at the time). Anyone who was around during the early days of video games has heard stories about Atari's corporate culture, which was unlike any other company at the time. Delman was there, and remembers those days fondly.

"It was incredible," he said. "Since Atari was my first job, I am sure that I didn't fully

hardware engineer, so I explained to him the electronic enhancements I needed. While he was working on them, and getting me a new hardware board, I went to work on enhancing the software.

As with many two-player games, there needed to be a one-player mode. This required that I add artificial intelligence into my motion algorithms. It was important that the computer driver not cause a crash, but it couldn't be so skilled that it prevented the lone player from crashing either. I seem to remember that the bulk of my development time was devoted to finding the right balance of skill and sloppiness for the computer driver. And since it seemed sensible to allow the single player to drive either the front or the back, I needed algorithms to allow the computer to drive either position as well.

"After a few months of work, *Fire Truck*

appreciate it. And I'm also sure that I was horribly spoiled by it.

"To begin with, you have to understand the philosophy of Atari's founder and CEO, Nolan Bushnell. To him, the most important thing in life was having fun in whatever you do. Sure, he expected Atari to make money, but he also expected all of his employees to enjoy the process of making it. We routinely had keg parties on Friday afternoons. If a difficult problem was finally solved, we'd all go out to a bar to celebrate. Our lunch area had a foosball table, pinball machines, and of course, video games. I went to Nolan's home in Woodside many times, and can clearly remember being in his swimming pool with a dozen of my fellow engineers.

"Keep in mind, too, that at that time, most of us in engineering were relatively young. During the 70's, it was the rare Atari engineer who was over 30. Most of us, at least initially, were single males only a few years out of college. So we all became friends, and stayed together even when work was over. To this day, I routinely socialize with some of the engineers that I worked with over 30 years ago.

"In 1976, when it was decided that Atari's engineering department needed its own building, Nolan decreed that it would have a cafeteria, an exercise room, and a hot tub. Although routine today, those were novel ideas back then.

"It was also important to Atari's executives that employees be motivated and rewarded. Perks included trips to trade shows, weekend brainstorming retreats to places like Monterrey and Sonoma, and parties at Nolan's house in Woodside."

Of course, those days didn't last forever. After selling Atari to Warner Communications in 1976, Nolan Bushnell stayed with the company for another three years. He left Atari in 1979. Bushnell's presence kept most of the corporate culture he had cultivated in place, but everything started to change after his departure. Along with many others, Delman left the company in the early 80s. And, as he explains, most of the departing employees left for the same reasons.

"The short answer is 'money and fame,'" he explained. "Atari had always been generous in sharing its success with its employees. We had a bonus plan in coin-op that paid me enough money for Asteroids that I could make a down payment on my first home. But of course, it wasn't hard for us engineers to figure out how much additional money Atari was making on our efforts.

"At the same time, the media was becoming aware of this new breed of 'whiz kids.'
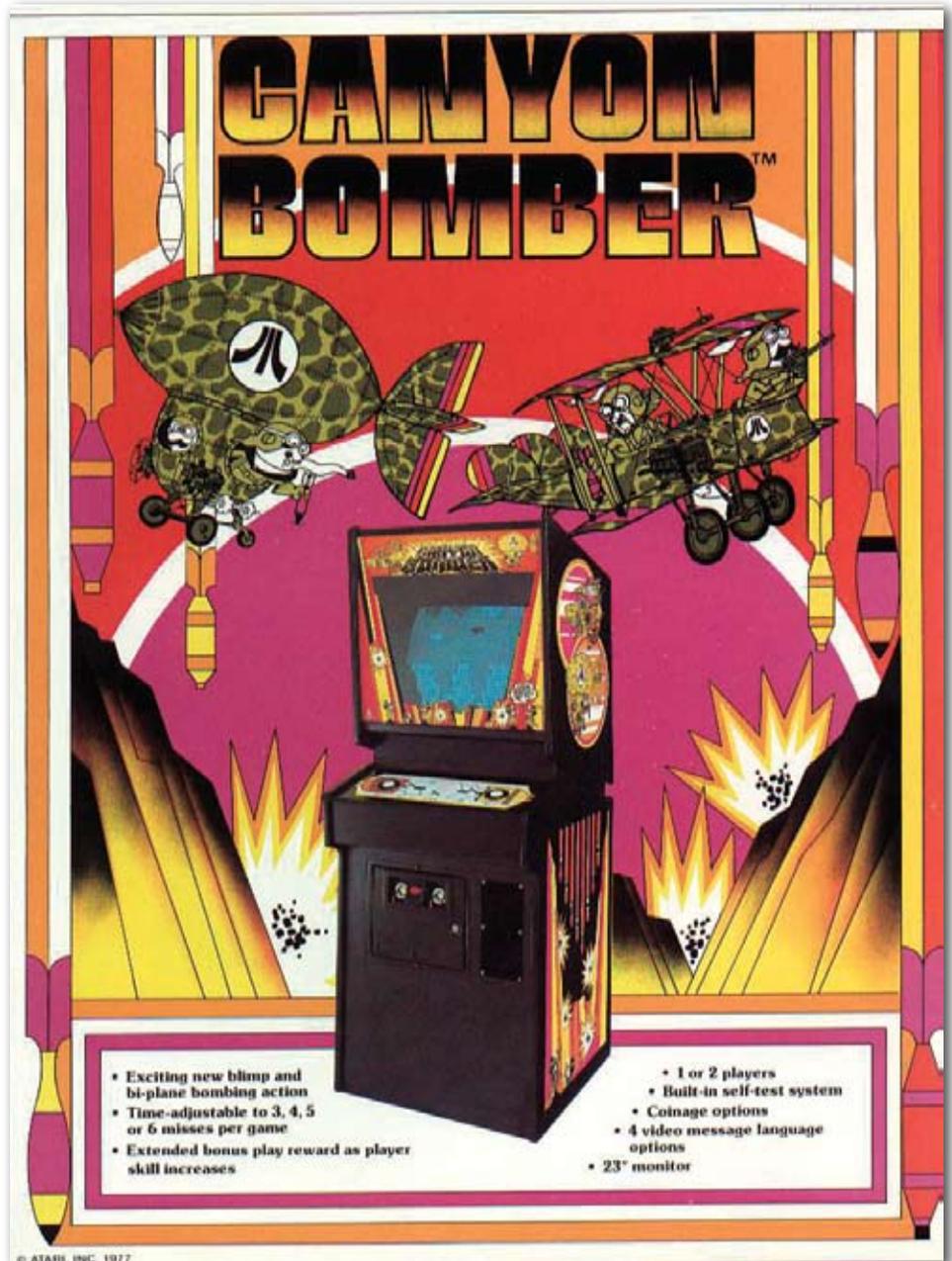
We were young, creative, quirky, and making a lot of money for ourselves and our companies. We became the newest celebrities.

"Magazines and newspapers were clamoring to interview us, but Atari didn't want its engineers getting publicity. For one thing, it didn't want other companies trying to steal us away. But I think there was also a fear that if we gained fame, we would want a lot more money. Indeed, a couple of people began promoting themselves to us as 'agents' who would negotiate better deals for us. So Atari forbade us from talking to the press.

"In the early 80's, programmers began leaving Atari's consumer division to form start-ups. The first was Activision, and it was quickly followed by Imagic. The motivations of the founders were two-fold. One was to make a lot more money. The other was to

become famous, and thereby increase their perceived value in the future.

"As I watched the exodus, as I considered my own sense of worth, as I contemplated my future, and as I saw the amount of money being generated by the game industry, it became clear that I needed to be independent of a corporate employer. In October of 1981, Ed Rotberg, Roger Hector, and I left Atari, and started a company that would eventually be named Videa." **GR**

Next month in the final installment of our interview, Howard Delman describes his post-Atari career, including his roles at Videa, Sente, and Axlon in the 1980s, and his consulting role in video games and other fields of electrical engineering in the post-classic coin-op era.