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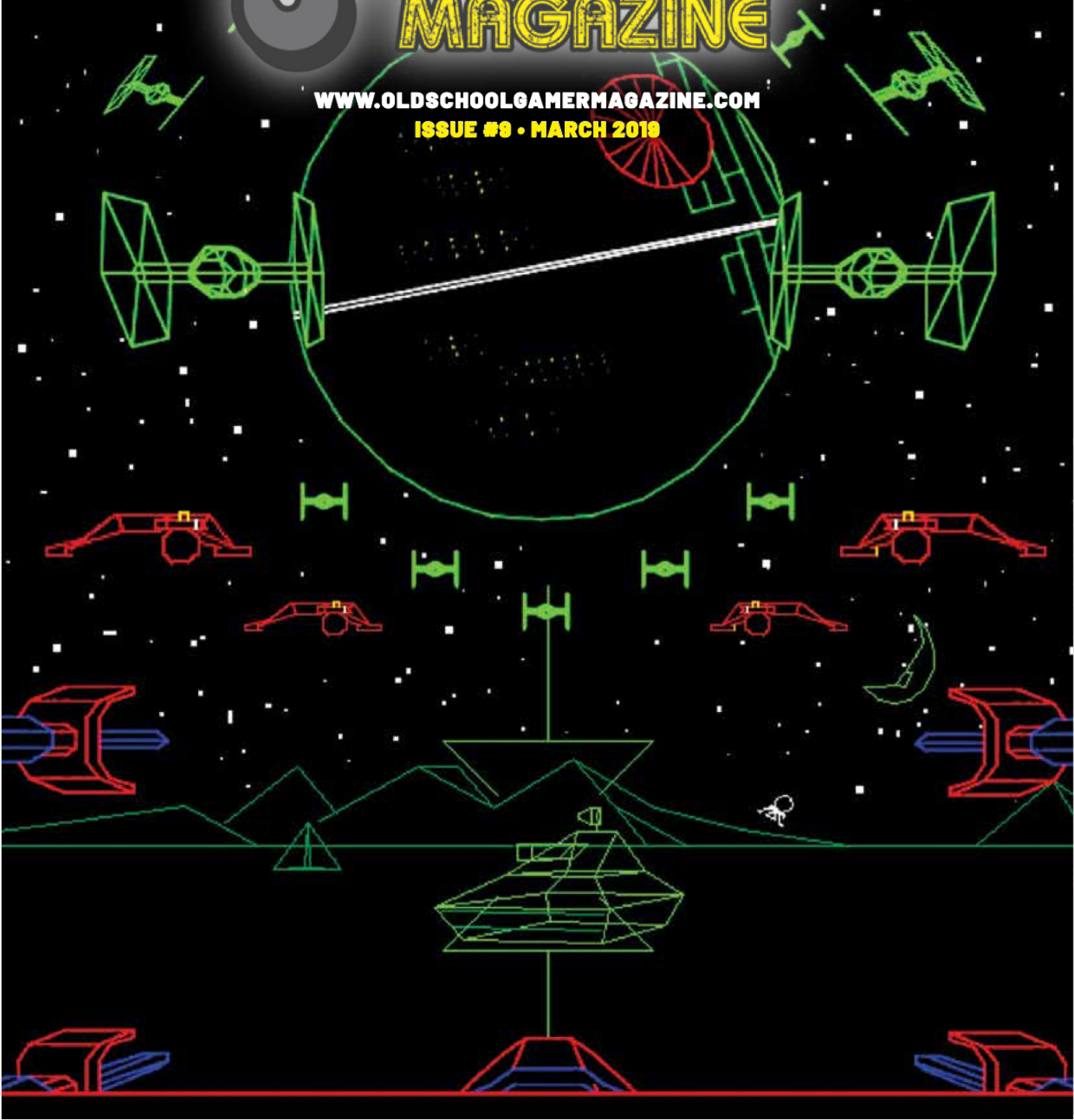


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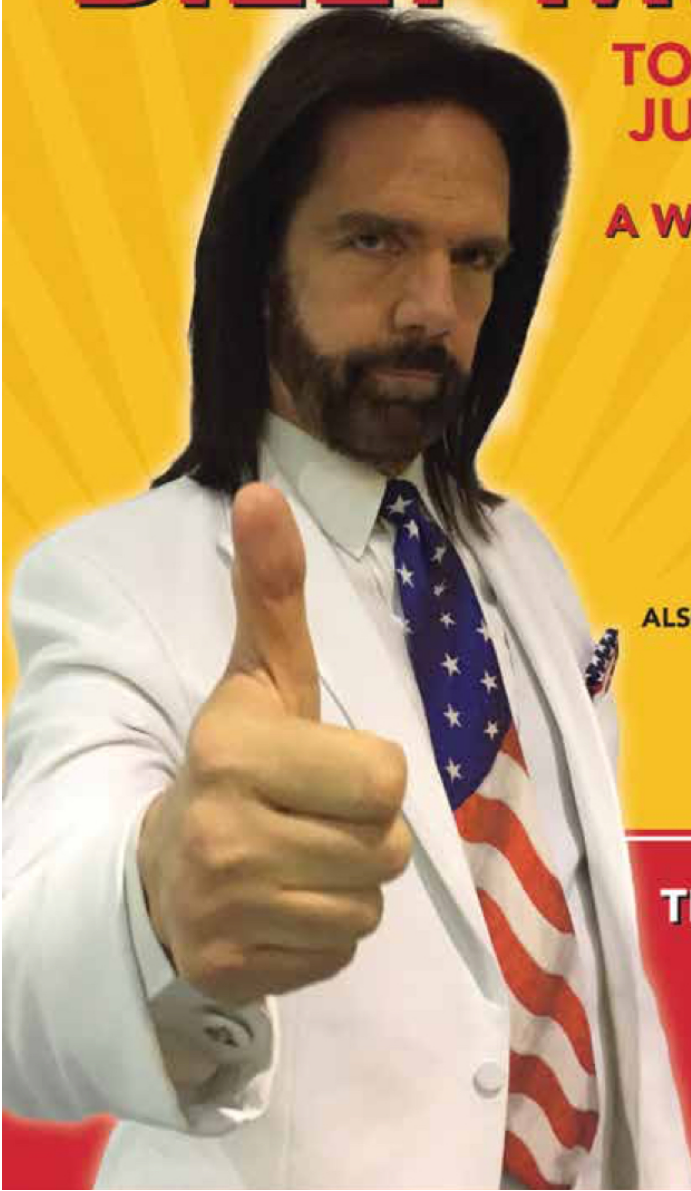
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# The Sims

By Todd Friedman



**Y**ou can't talk about the history of simulation games without mentioning The Sims. The name itself is short for simulation. The Sims series is widely considered on the top of the list of franchise games. The Sims series has sold over 200 million copies worldwide and fans of The Sims franchise are online like never before. Hundreds of millions of player-created content have been shared and downloaded by one of the most active player communities in the world and the viral appeal of The Sims is further evidenced by its 30 million fans across global social networks. There are other amazing statistics about the franchise - as of September 2018, The Sims app has been downloaded 41 million times, sold over 25 million dollars to date with mobile gaming alone. That puts the total number of players that have played the game at approximately 80 million. The Sims franchise has generated more than 3 billion dollars in revenue, putting them in the same class as the blockbuster films Titanic and Avatar.

The Sims was designed and created by William Wright. Years before The Sims game was a reality, William designed the ever-popular game Sim City. This game would let you be your own architect by creating buildings, roads, parks, schools and fire stations, to name a few. The idea would be to build your own unique city or town while also pleasing the people living there. The first release of this game was in 1989 and was primarily for the Commodore 64. Numerous sequels followed in the following years as the popularity grew to historic numbers. The one variable you could not control was the people. They would be computer generated and their actions depended on the design of your world. William thought of the idea to create a new simulation game that would allow you to control all aspects of the individual inside the virtual playground. This

game would be called "The Sims". According to an interview he did with "Gamasutra", Wright explains that he did not have enough money or sponsorship to originally produce the game. "They never gave me any money for it, either, so I never got the advances. I wasn't in any real financial obligation. So, it just sat on the shelf for several years. The Commodore version was all done; it was just never published".

Finally, The Sims was published in early 2000 on the Microsoft Windows platform by Electronic Arts. The title was published by William Wright's company Maxis. Taking on one family at a time, you try to guide your characters to success in life, love, and the workplace. Along the way, you develop friendships, work your way up the career ladder, and try to keep your Sims fed and happy. You control their every move. Decisions they make is up to you, the gamer. Without successful decisions, you can see the characters diminish and notice they will have no future. There are so many decisions it can keep the average gamer hooked for hours on end. As the game goes on, there is personal interaction between the characters. Some decisions result in negative actions from the character, such as pushing away someone who wants to give a back rub, pulling someone out of the bathroom so they can pee, or becoming disappointed due to being shot down romantically. You see a variety of emotions on the characters as well, such as kindness, sadness, and even anger, which can turn into a fist fight. Each Sim has eight needs that constantly need to be met, and at most you can satisfy 2 or 3 needs at a time.

**Y**ou control the whole neighborhood; however, you start one house at a time. If there is not an action in the house, nothing will happen. Most

of the time you can come back to the game and start where you left off, however, there are exceptions such as love. If your character is romantic when you leave the game, there is a chance they will either be serious or separated, depending on the nature of the situation. Energy is a big factor in playing a successful Sims game. There are two ways to increase Energy - sleep and coffee. Sleep is the better solution, and the better the bed (or couch in the case of naps, the more energy you receive in less time. If you fail to get to sleep or drink some coffee before your Sims' Energy bar hits Pure Red, then he will collapse on the floor and sleep there. Your Sim will wake up with no Comfort, and far less Energy than if he had slept in a bed. So, before the energy gets too low, send the Sim to bed.

Sims 2 takes place in Strangetown - a location featured on all versions of the game and share common characters between them. With great new environments, expanded character customization, and new ways to cook and prepare food are just some of the new abilities in The Sims 2. The Sims 2 provided many more challenges for ardent fans of this simulated life genre. Your Sims now come with dreams and goals that you must try to fulfill. The game also has a genetic component that lets Sims pass their own traits down to their kids. Children and teenagers now have homework and their grades rise or fall depending on whether they finish it or not. Teenagers can hold jobs as well as go to school, but if their grades drop too low, they can lose their job. Like





in the first Sims game, a mother Sim and a father Sim can have a child. Also, children can be made at the start of the game or received from an adoption service. You can even create custom Sims that look like you. Other improvements include “wants” and “fears”. These change when a want or fear is completed or when the Sim wakes up from sleep. One of the biggest changes in Sims 2 is that a Sim can go to a community lot (a place in town like a store or a park). They can go there by using the phone to call a taxi. There would not be a video game these days without some kind of controversy. The Sims 2 delivered some to the public and there was a lengthy debate. When your character uses the washroom, there is a moment where the part of the naked body is blurred out. After a lengthy court battle, Electronic Arts removed the pixelated scenes from the game. Little did the world know what kind of adult content would be coming to the world after 2005.

On June 2nd, 2009, Sims 3 made its way to the shelves. The Sims 3 was a commercial success, selling 1.4 million copies in its first week. The Sims 3 introduced many more character customization options than The Sims 2. There are over 20 different hair styles to choose from on launch day. There were expansion packs created later that increase this number along with other perks. Sims 3 also has sliders that lets you choose customized gradients for skin color (to better represent different ethnicities). In this version of the game, it introduces “Story Progression” mode, which lets the Sims move around at will without controlling or making choices for them. Along with new traits for your Sims, The Sims 3 revamped the life-goal system, which was built around “lifetime wishes”, a single long-term goal that you can choose for each of your Sims that will eventually grant that character ultimate happiness. There are also public events in The Sims 3, such as music concerts, movie premieres, pool parties, barbecues, sporting events, outdoor fishing, and actually attending a public protest at SimCity Hall. There are special skill abilities in this version - special

songs for guitar players, fishing, writing, gardening and painting to name a few.

In 2014, the last and most current Sims game was released - The Sims 4. All new locations came with this version such as piano bars, libraries, nightclubs, and a dense, activity-loaded park that is the game's public hub. One of the new features of this release is Multitasking. Examples include such activities as greeting visitors without putting down their cereal bowls and chatting with the neighbor while gardening. Characters engage and disengage from conversation far more fluidly, as well, and can do so from multiple seated character arrangements. You can build your own cafes and museums as well as homes, and that encourages the degree of obsessive personal attachment that many fans look for in The Sims. For the first time, The Sims felt and expressed emotions. Your Sims can experience a diverse range and depth of emotional states and are influenced by interacting with other Sims, actions, events, memories, and even by the clothing and objects you choose for them. Emotions offer you more choice by giving you the opportunity to create richer stories with even more possibilities. Expansion packs are a big part of The Sims success and keep gamers coming back for more, however, it does come with a price. For instance, if you wanted all the packs available for The Sims 4 which includes 5 expansion packs, 6 game packs, and 14 stuff packs, would total approximately \$500 based on full asking price.

The Sims games have been translated into 22 different languages (including Russian and Thai) and shipped to 60 countries across the world. Will Wright once introduced a mysterious virus to the game,

and as the infection spread throughout the game's world, so did debate on the message boards. Players finally traced it back to pet guinea pigs and shared tips for surviving the outbreak. There were many spinoff Sims games that were not a part of the four regular versions. A few examples of these spinoffs included The Urbz: Sims in the City, a console only game taking place in a hip city setting; The Sims Stories, a spinoff series using goal-directed story mode and The Sims Medieval, the first title in the series to take place in Medieval Times. Will there be a Sims 5? Most are hoping so, but the design of Sims 5 is still not confirmed, so nothing official has been said regarding a potential release date. Many would love to see The Sims join the Nintendo Switch Console. At this time, there is no plan on releasing The Sims on the Switch, but with the huge Nintendo fan base, you never know.

February 2019 will mark the 19th Anniversary of The Sims game. To honor this occasion, you can pick up a cool Sims T-shirt from the website, [www.thesims.threadless.com](http://www.thesims.threadless.com). The Sims 19th Anniversary Pack shirt sells for 20 dollars in black or white. If those aren't to your liking, there's a ton of other cool Sims items on the official website. I have not personally spent a lot of time recently on The Sims Franchise, but growing up it was a cool third person virtual reality that I did take part in and enjoyed. I have no doubt that in today's VR technology that sometime soon we will see an actual Virtual Reality Sims game that puts the gamer into the Sims world and lets them live an alternate reality. I, for one, am very curious about the future of The Sims and what it will bring to the next generation.



**Todd Friedman** is heavily involved in the video game community. He is currently writing for Old School Gamer Magazine, Little Player Magazine, Retro Player Magazine, RetroGaming Times and The Walter Day Collection. He has Co-Promoted the Video Game Summit in Illinois for the past 10 Years. Todd is an avid video game collector with over 3500 console games and 35 systems, One of his main responsibilities is keeping the Walter Day Trading cards alive. Todd holds over 60 world records on the Nintendo Wii game DJ Hero. Todd was also a nominee for the International Video Game Hall of Fame, class of 2016 and 2017.

# Turn and Burn

KITCHEN'S LIFE-LONG F-14 LOVE AFFAIR

By Patrick Hickey Jr.

**F**or many game developers, there's always that one golden goose or white whale. That game or genre that appeals to them the most. The thing that will cement their legacy. The one that regardless of their success on other projects, they always come back to. For Dan Kitchen, despite the fact that he'd worked on dozens of other successful projects, from ports and games based on hugely-successful licensed products to original works, on a bevy of home consoles, he still had his own dragon to catch. A 16-foot tall, 61 feet, nine inches long, 72,000 pound metallic one, as a matter of fact. The F-14 Tomcat. From his work on the Atari 2600 to the Game Boy and the Super NES, culminating with the Game Boy Advance, Kitchen has always found a way to do games based on the former crown of the United States military aviation program.

If you've ever seen the film *Top Gun*, it's easy to see why. The aircraft is a marvel of modern technology, evidenced by over 30 years of active duty. Add in the romanticized tones of the film and it's almost like the plane had a soul. It represented American strength, sex appeal, charisma and honor. For many, it's the reason why they grew up to love aviation. For others, it made them want to climb into the cockpit for themselves. Kitchen, on the other hand, had a different goal. To create an experience in the video game realm where the average Joe could experience what it was like to engage the enemy and dogfight for aerial supremacy. At the same time, not so ironically, his career in video game development could be channeled through a reoccurring theme in *Top Gun*. "A good pilot is compelled to evaluate what's happened, so he can apply what he's learned," Cmdr. Mike "Viper" Metcalf, played by Tom Skerritt, tells the film's main character, Pete "Maverick" Mitchell, played by Tom Cruise, at one point in the film. "Up there, we gotta push it. That's our job. It's your option, Lieutenant. All yours." Make no mistake, it was Kitchen's goal to push the quality of console aviation games, primarily those focused on the F-14 and dogfighting, to the next level.

There was a huge problem though.

Video game technology wasn't quite up to the task of capturing what it was like to feel Maverick and Goose's need, need for speed. But if there was one developer who could get a lock on emulating that experience digitally, it was Kitchen. A



master of squeezing every last byte on every game he worked on previously, Kitchen got games to perform better in spite of many of the limitations that faced most cartridge-based developers of the era. A testament to his dedication and appreciation of the aircraft, Kitchen went on to develop an Atari 2600 game in 1988, Dan Kitchen's *Tomcat: The F-14 Fighter Simulator* and later the Nintendo Game Boy's *Turn and Burn: The F-14 Dogfight Simulator* in 1992, two years before *Turn & Burn: No-Fly Zone* was released on the Super NES in 1994. In-between his own original work on aviation games, he'd also work on a sequel to the immensely popular arcade-styled aviation game, *River Raid* in 1988 and on an aviation game loosely-based on *The Flight of the Intruder* book series in 1991.

And while his vision wouldn't be perfected until he took the experience to the Game Boy Advance in 2001, 13 years after his first flight-sim, Kitchen hit the sweet spot first on the Super NES. While like most Absolute Entertainment Titles, it wasn't a massive door-busting best-seller, it was a game that connected you to its source material and sold well for the publisher to continue to operate and thrive. Like many Absolute titles, it was polished. With sights and sounds rarely seen from a third-party developer on the Super NES, *Turn & Burn: No-Fly Zone* was ahead of its time and not ironically, is still playable today. That has a lot to do with Kitchen's love for aviation.

"Turn & Burn came from my love of naval military aircraft, specifically the F-14. I've always loved flying and have been fascinated by all types of aircraft. I tried to recreate that love of flying in a number of previous games. The SNES was the first system that allowed me to create the experience of real dogfighting. I had created a number of versions of the game starting with *Tomcat: The F-14 Fighter Simulator* on the Atari 2600," Kitchen said. "I was very happy when we decided to put the game on the SNES where I could finally create a more realistic combat experience for the player."

Utilizing many of the lessons learned from the previous games, Kitchen went into the Super NES development process hungrier to make the experience more real than he had in previous games. One of the tricks he ended up implementing was allowing the player to leave the first-person view used in *No-Fly Zone* and in his previous games, to look around the skies for enemies that may not be in their normal view. This view was of the full-motion-video type as well, adding a level of visual appeal not seen in any aerial combat games up until the point. It ended being one of the coolest parts of the game, a bell and whistle that wasn't at his disposal on the Game Boy or Atari 2600.

"I wanted the game to recreate as much as possible the experience of dog fighting in an F-14," Kitchen said. "During actual





combat, F-14 Drivers (a term used by the pilots) and RIOs (Radar Interface Officers) have to be able to view as much of the sky around their aircraft as they can when bogeys are close. Adding the Back-Left and Back-Right views attained this and made it possible for the player to view bogeys that were behind them (at their six o'clock position)."

That re-creation of reality was possible due to a litany of factors, not just adding features. It was about understanding the people who actually fly the jets. In a move that cemented the realism and polish behind *Turn & Burn: No Fly Zone*, Kitchen actually became a bit of a journalist. "During the development of *Turn & Burn I* had the opportunity to speak with two F-14 drivers and hear firsthand their experiences of sitting on the deck waiting for the cat to launch and the stress they felt during nighttime TGLs (touch and go landings)," Kitchen said. "One told me that early in his deployment he had his 'night in the barrel' where it took him three attempts to land on a rolling deck in the rain. I admire these aviators who live on the edge every day and exist for the thrill of going from 170mph at full throttle over the hardtop to 0 in less than a second."

Being able to have missions during, day, night and twilight also added a nice bit of gameplay differential. It took what could have been a bland simulator and provided the necessary spice to complete the package. It was time-consuming, but Kitchen believes the effort was well worth it.

"It took a lot of tweaking to get the colors just right so that the player could experience the change of day but still be able to easily identify the bogeys against the sky colors," Kitchen said.

With realism being one of his paramount objectives, Kitchen didn't go the After Burner route, a wonderful aerial combat game with arcade gameplay, where the player could fire missiles seemingly at will. Kitchen did his research. He understood the aircraft. He connected with it. "My research on the actual F-14 and work on previous aircraft fighter games helped me to make the sense of flying and combat as realistic as possible on the SNES. I wanted to replicate the armaments that an actual F-14 carried," Kitchen said. "For example, the AIM-54 Phoenix Missile is an actual radar-guided 'fire and forget' ordinance that the F-14 carried, usually in clusters of six."

That didn't mean that Kitchen didn't make sure he enjoyed the development process. He also made sure he understood the small things he'd have to do in order to make the game appeal to those who weren't as enthralled by the F-14 as he was. "Well, I'm not saying any footage from outside sources was used, but the full-motion-video of the enemy bogey being destroyed by a missile that appears in the cockpit display looks like it was inspired by a video sequence that appears in *Maverick's* F-14 near the end of the film *Top Gun*," Kitchen said.


Once development began to kick in high gear, all the attention to detail, realism and fun began to reap their rewards. "The first day we got the dog fighting implemented, I was so excited that I stayed up almost another 24 hours straight tweaking it so that the other designers would be able to play it and give me feedback," Kitchen said. "I also spent a lot of time reading about the aircraft's onboard systems and sitting with the artist going over whatever images of the actual F-14 cockpit I could find in books (remember it was before the Internet) to make sure we recreated it as closely as possible on the SNES display."

While many gaming publications, *GamePro*, in particular, appreciated the "eye-popping Mode 7 graphics," which made it,

according to them, "one of the most realistic, and most involving, flight sims of the year," Kitchen sees the game's combat the part of the game he's most proud of. "The aerial combat against the enemy bogeys," Kitchen said. "And the enemy AI was tweaked for quite a while to get the experience to feel like you were actually dog fighting."

While *Electronic Gaming Monthly* called the game "a complete love/hate affair," stating that it wasn't for everyone, they still acknowledged that the game was "very intense and plays well." In their January 1994 issue, *Game Players* made sure to let players know that *Turn & Burn: No Fly Zone* was a "real" combat game, not a blast-em-up." Garnering that type of critical reception, it appeared Kitchen's work was done. "After release, the game was well-received as I was hoping it would be," Kitchen said.

However, Kitchen wasn't finished. Seven years later and his fascination with the F-14 continued. This time on the Game Boy Advance in the form of *F-14 Tomcat*. Similar to the Super Nintendo in terms of hardware capability, the GBA was the perfect device for Kitchen to put the finishing touches on his most important project. "My biggest regret about the Super NES version is that we didn't have time in the development cycle to add a few 'Easter Eggs' that I planned to hide in the game," Kitchen said. "Later in my career, I had a chance to recreate *Turn & Burn: No-Fly Zone* on the Nintendo Game Boy Advance and was able to add some unique hidden bogeys including one that was literally 'Out of this World!' I would like to have [also] made the Carrier Landing Sequence more realistic on the Super NES. I was never quite happy how the sequence ends when the aircraft finally grabs the third arrestor hook and hits the deck."

A perfectionist at heart, Kitchen's *Turn & Burn* franchise, regardless of the system it appeared on, or the name on the cart, is a testament to seeing a project through to the end, whenever or wherever that may be. "I'd like players to feel at 1G sitting in front of their SNES what it's like to launch off a carrier and go from 0 - 150mph in 2 seconds pulling 3.2G," Kitchen said. I would hope that players supporting the SNES still enjoy playing the game. It was exciting to be part of *Absolute* at that time. Our sales were good and the Nintendo market was going strong. I had the opportunity to work on some very prestigious games with some very cool people." 



**Patrick Hickey, Jr.** is the founder and editor-in-chief of *ReviewFix.com* and a lecturer of English and journalism at Kingsborough Community College, in Brooklyn, New York. Over the past decade, his video game coverage has been featured in national ad campaigns by top publishers the likes of Nintendo, Deep Silver, Disney and EA Sports. His recently published book, "The Minds Behind the Games: Interviews With Cult and Classic Game Developers," from McFarland and Company, has already earned praise from *Forbes*, *Huffington Post*, *The New York Daily News* and *MSG Networks*. He is also a former editor at *NBC* and *National Video Games Writer* at the late-*Examiner.com*. He is currently working on a followup, that already includes the developers of such iconic games as *NFL Blitz*, *Conker's Bad Fur Day*, *Tony Hawk Pro Skater 3* and *West of Loathing*.

# Fox's Game

LUCASFILM, MIRAGE, AND THE GREATEST VIDEO GAME YOU'VE NEVER PLAYED

By Shaun Jex



**L**ater this year, Disney will open *Star Wars: Galaxy's Edge*, a theme park experience set in the world of *Star Wars*. Amongst the coming attractions is *Millennium Falcon: Smugglers Run*, which puts visitors in the *Millennium Falcon*. Guests will have specific jobs which affect how the story in the attraction plays out. The ILM Experience Lab, a division of Lucasfilm Ltd., which focuses on virtual reality, augmented reality, and real-time cinema, is creating the ride "film" in conjunction with Nvidia and Epic Games. It's a giant step in immersive entertainment, but for longtime fans of Lucas Film Ltd., it harkens back to the early 1990s and a project known as *Mirage*.

David Fox, who was responsible for classic video games like *Rescue on Fractalus!* and *Zak McKracken and the Alien Mindbenders*, served as the Manager for Entertainment Software for *Mirage*, Lucas Film Ltd.'s first foray into location based entertainment (LBE).

Though the project began in the 1990s, it had its roots in the 70s when Fox was counseling people on their lives and relationships. The work helped him develop ideas for a new kind of entertainment. "I began imagining an Interactive Disneyland where all the attractions would be just as immersive as the theme parks of the time, but instead of static repetitive attractions, they'd be ever changing," Fox said. "People going through these would end up learning more about themselves, being put through experiences that were empowering and enlightening."

Orson Scott Card's sci-fi classic *Ender's Game* fed into his vision and furthered his concept of a simulator that could be used for entertainment and enlightenment. "He very much described the personal growth part of my vision with the *Giant's Game* that *Ender* would play," Fox said. "It would devise puzzles it knew *Ender* would have trouble with because of his limited way of seeing things. To solve those puzzles, *Ender* would

have to break out of his normal patterns and think differently. As a result, the solving the puzzle would also open *Ender* up to new ways of thinking."

Fox joined Lucasfilm in 1982, but it wasn't until 1990 that the company decided they were ready to begin exploring LBE. Fox and a small group formed Rebel Arts and Technology and *Mirage* was born a short time later.


The game placed players inside the cockpit of a craft with two seats: one for a pilot and one for a gunner. As Fox describes it, players sat in a pod with a 120° field of view display. Three roof-mounted video projectors bounced an image off of a collimating mirror to give the impression that players were looking at a distant landscape. An Evans & Sutherland ESIG 2000 image generator drove the video display and an Amiga computer provided the heads down display. *Mirage* also utilized a surround sound system using a rack of MIDI equipment and sampled sounds. The game would link eight of the pods together, with an ultimate goal of selling the experience to theme parks. "The prototype game we created was inspired by *Star Wars*, with 4 X-wings and 4 TIE fighters battling each other," Fox said.

Hughes Aircraft Company handled the engineering and software creation, with Fox and his team designing the pod and game. To keep costs down, the simulator did not have a motion platform. Instead, the team believed the large display and a focus on sound, would create a realistic experience. "I spent hours going through the *Skywalker Sound*'s library of *Star Wars* audio samples," Fox said. "When played through the 5-channel surround sound system, along with a CD of select *Star Wars* music, you really felt you were inside the film."

When it was finished, according to Fox, it was "maybe the best game I've ever played." Sadly, Lucasfilm

abandoned the project in 1992 and Fox left the company. *Mirage* was displayed at the 1992 IAAPA (International Association of Amusement Parks and Attractions) convention, and Hughes continued trying to sell the project, but no one was buying. "I think part of the problem was the technology was just too expensive then, especially the image generator," Fox said.

Today, immersive entertainment is on the rise. In addition to attractions like *Millennium Falcon: Smuggler's Run*, there are experiences like "The Void", a mixed reality form of entertainment that has allowed people to step into the world of *Ghostbusters*, *Star Wars*, and *Ralph Breaks the Internet*. "They're a lot of fun," Fox said. "They have a lot more improvement before they totally nail the effect, but that's inevitable. Of course, the main difference between my original vision and the current crop of LBVR experiences is they are purely games. I don't know of any that aspire to do anything more than entertain, no hidden agendas to enlighten the players."

It has taken decades for the technology and philosophy of entertainment to catch up to the vision Fox began dreaming of over 40 years ago, but he's still excited to see what happens next. "I look forward to it!" Fox said. "And maybe even being a part of a team that helps make it happen." 

**Shaun Jex** is a lifelong gamer, a journalist, and pop culture historian. His love of video games began with a Commodore 64 he played growing up, late night sessions on his NES, Game Boy and Sega Genesis, and frequent trips to the local Tilt arcade. He edits the *Citizens' Advocate* newspaper in Coppell, Texas and writes about Disney and Walt Disney World history for *Celebrations Magazine* and the *Celebrations Magazine* blog. He runs a channel with his wife Kara called "The Marceline Depot," dedicated to Disney, amusement parks, and travel.

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# Driver and Driver 2

By Conor McBrien

**W**hile most classic driving games would make players participate in races, stunts, or demolition derbies, *Driver* has players do things like helping crooks flee the scene of a bank robbery or delivering a stolen car to a chop shop.

In *Driver* and *Driver 2*, you play as John Tanner; a former race-car driver turned undercover cop who has pitched himself to the thugs of the underworld as a reliable deliveryman and an unflinching getaway driver. Under orders from a lieutenant trying to break up a crime syndicate, Tanner heads to Miami and begins the case without his badge or any back-up.

The first game in the series was released for the original PlayStation in 1999 and followed by its first sequel in 2000. They were developed by British studio Reflections Interactive, now known as Ubisoft Reflections. In the late 80s and early 90s, Reflections made titles like *Ballistix* and *The Shadow of the Beast Trilogy* for Atari ST and Amiga home computers.

By the time Reflections started working on *Driver*, they had already created vehicle-based games like *Destruction Derby*, *Destruction Derby 2*, and *Thunder Truck Rally*, all for the PlayStation. They had also been acquired by another company called GT Interactive, hence the change in name to Reflections Interactive.

*Destruction Derby*'s 1995 release kicked off a sixteen-year period where Reflections worked primarily (if not strictly) on vehicle-based games. It was clear that the programming team had a knack for driving games.

When you begin the first *Driver*, the game starts off with a tricky tutorial that you must overcome before you can actually start playing the story missions.

In a strict time-limit, you have to perform a variety of driving maneuvers including a reverse 180 degree turn and a "slalom," which is a term I definitely had to look up when I first played the game as a kid. To make the tutorial even trickier, if your car collides with anything four

times it is considered "wrecked" and you have to start all over.

Despite its difficulty, I think the tutorial was meant to show off that the controls in *Driver* allowed for a variety of realistic motions. There are plenty of optional, advanced driving challenges to undertake, but the game's story missions do not really necessitate any fancy driving because of the level design.

The cities that the player navigates are flat, rectangular grids like many cities in real life, but every turn is a ninety-degree angle. Places like San Francisco have hills that could be ramped off of at high speeds but there's little use for stunts.

One thing that indicates how basic the map designs were in the first game is the back of *Driver 2*'s case, which exclaims: "All-new curved road systems bring the action to life with ultra-realism."

Yes, the game was trying to hype up the fact that the roads were curved.

*Driver 2* does not feature a mandatory tutorial like its predecessor, but the first several missions in the game are a significant step-up in difficulty. One early level has Tanner chasing an elevated train from street level—a likely homage to the classic chase scene in the 1971 film *The French Connection*. Another mission is an intimidating escape sequence from a warehouse district controlled by a local gang. Large utility vans either chase Tanner's car or block his path the whole way.

Missions in both games are timed. The player starts at a certain point on the map and often has to make it to another point on the map in a short period. To make missions easier, you can familiarize yourself with a map's layout by either looking at the map itself or by driving around in "Take a Ride" mode, which features no missions at all and allows the player to roam freely.

Regardless of gameplay mode, you

start playing with two empty meters—"Damage" and "Felony." The former is self-explanatory; if your vehicle hits other cars or nearby structures, the Damage meter will increase until it is full and the car is wrecked. The "Felony" meter increases for various reasons and sometimes fills automatically in certain missions. If you run into other cars (especially police cars) or damage other property, the meter increases and police will begin to pursue you.

If the police pursue you and you lose them, all police cars on the map will be on the lookout for you. In that

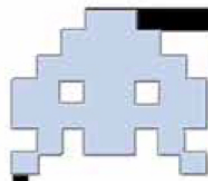


case, you will find yourself sneaking down every street, keeping one eye on the map the whole way.

Alerting the police can make missions that don't already involve them pursuing you much more difficult. So it pays to be a little slow and stealthy in order to avoid encounters with law enforcement. This approach is flawed, of course, because of the strict time limit in most missions,

CONTINUED ON PAGE 44

**Conor McBrien** was hooked on gaming as soon as someone handed him a Game Boy and a copy of Tetris in the mid-90s. His first console game was *Donkey Kong Country* for SNES, which made him a devout *Donkey Kong* fan. He has taken his hobby with him everywhere he's gone, from his home state of Illinois to Florida, from the University of Iowa to Upstate New York. While in college, Conor wrote game reviews for *The Daily Iowan*. Much more recently, he started writing *Game Grappler*—a blog where he wrestles with assorted gaming topics, including the preservation of video games, odd characters, and game analysis.



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## Behind Enemy Lines

HOW ATARI'S VECTOR HIT WAS RECRUITED BY THE U.S. ARMY

By Michael Thomasson

**N**ear the end of 1980, Atari released the first-person combat simulator *Battlezone* in arcades. With its twin stick controls, overhead radar, and innovative plastic periscope, it mimicked an early construct of today's virtual reality set-ups. Since the viewfinder directed the player's line of sight, essentially shutting out the outside world, it gave players the sensation of being in an actual tank as they traversed a barren landscape in three dimensions, hunting enemy tanks and UFOs.

Major Jack Thorpe of the Pentagon's Advanced Research Project Agency (ARPA) stated, "It's important to have training devices that don't appear so obviously to be training devices." Perhaps that is why Army General Donn A. Starry, with a consultant group of retired generals, requested a "training potential" study to determine if video game technology could meet Army training requirements.

Captain Steven J. Cox of the Army Training Support Center (ATSC) reported that there were numerous games with the "potential for military training use" and followed up by stating, "the continuing rise in the cost of fuel, ammunition, and training, plus the constant need for the Army's combat divisions to maintain a high degree of proficiency while saving money, has made us look at any possible training device."

At the time, logistics limited real-world firing exercises to only once or twice a year. Major Boyd Duncan described the root of the problem, stating that "between these exercise

periods gunners lose so much of their skill that a practice period is usually needed before the normal firing exercises are conducted." Hence the need for a practical solution.

Could Atari's *Battlezone* have been such a solution? Atari was commissioned to modify the game for the United States Army to train Bradley armored personnel carrier gunners. This ruffled more than a few feathers within the company, including Atari employee Ed Rotberg, the original programmer of *Battlezone*. Only after being promised by Atari management that he would never be asked to work on any future military work did Rotberg comply and spend three additional months developing *The Bradley Trainer*.

The changes Rotberg made were extensive. The radar system was replaced with an improved magnification, allowing for calculated azimuth angular trajectories. Furthermore, he limited the steering to make it primarily a targeting simulator rather than a tank mobility trainer. Obviously, the alien UFOs were no longer necessary targets in the simulator and were removed. In their place, silhouetted tanks and helicopters of the Warsaw Pact countries were added - all of which followed routes that would normally be taken by an authentic target. In addition to simply firing rounds, missiles and machine gun artillery were also integrated. If a G.I. accidentally targeted and scored a hit on an allied war machine, Tchaikovsky's 1812 Overture would regrettably play. These enhancements required the addition of a math accelerator circuit in the game's custom programmable read-only memory (PROM).

Other hardware changed, too. The twin joysticks were replaced with a two-handled gunner yoke. As a result, the sights and controls looked, felt, and responded like the real weapon. If the twin-sticks seem oddly familiar to you, that is because Atari later re-used them in their popular *Star Wars* arcade game.



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MICHAEL THOMASSON'S  
**JUST 4 QIX**

Atari delivered the modified Battlezone game to the U.S. Army Training and Doctrine Command (TRADOC) in Fort Eustis outside of Williamsburg, Virginia. The simulators' cost to tax-payers is unknown, but considering that the soldiers training on the trainer had much more to lose than a simple quarter in the battlefield, perhaps it was a good investment by the defense department.

The Bradley Trainer was demonstrated at the 1981 TRADOC Commanders' Conference and a study was designed to evaluate its effectiveness. Three test groups were set-up, all of which were pre-screened on their selective gunnery skills. Group A received conventional gunnery training and was prevented from playing the trainer or any video games; group B was partially trained with the trainer; and group C was prepared using the Bradley Trainer exclusively. Following the experiment, all three control groups were analyzed once more using true Army weapons under simulated and live-fire environments.

Thirteen-plus thousand Battlezone coin-ops rolled into the arcade battlefield. The Army's testing results were never released – perhaps even classified. One would assume that the conclusion deemed the endeavor unsuited to the task, as in the end, only two Bradley Trainer units were known to exist. One was delivered to the US Army and eventually lost to time – presumably destroyed; while the other was rescued from the Midway Games rear parking lot dumpster, and is now in the possession of a collector named Scott Evans.



**Bradley Fighting Vehicle  
Gunner Yoke**

#### SIMULATOR SEQUEL

Atari's Red Baron, another first-person simulator, shared the same monochrome vector graphics as Battlezone. Named after the German flying ace Manfred von Richthofen, the player fought for the Allies piloting a World War I biplane. Red Baron also shared the same additional "auxiliary" circuit board that was required for computing the math that simulated the 3D environment in both games

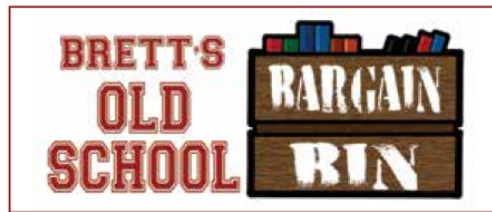
#### EMULATION INACCURACIES

We may never be able to sample the true Bradley Training device even using emulation. While the popular M.A.M.E. software will let you run a modified version of Bradley Trainer using Battlezone's emulation, it is only a facsimile of the full experience. The Bradley Trainer used a mathbox accelerator circuit, the same auxiliary board used in Red Baron. This custom PROM differs from the stock Battlezone, alters the artificial intelligence, collision detection, and more... and sadly has never been dumped.

**Michael Thomasson** is one of the most widely respected videogame historians in the field today. He teaches multiple college level videogame courses, and has contributed to dozens of gaming texts and television shows including MTV's Video MODS and the highly-rated book Downright Bizarre Games. He has written business plans, managed a multiple game-related retail stores, and consults for multiple video game and computer museums. Michael has helped publish 100s of games on Atari, Sega and other console platforms. In 2014, The Guinness Book of World Records declared that Thomasson had "The Largest Videogame Collection" in the world. Visit [www.GoodDealGames.com](http://www.GoodDealGames.com).

# Asteroids and Beamrider

By Brett Weiss



The theme for this installment of Old School Gamer is simulation games, but I'm still on a shooter high from the last issue, so I'm going to spotlight two more shooting games that are easy on the wallet, yet fun to play.

If you're cool with cartridge only, Asteroids Hyper 64 will set you back just \$10 or so, which is cheap for a good Nintendo 64 game. Beamrider for the ColecoVision is more expensive at around \$15 to \$20, but it's well worth it for such a quality title.



## ASTEROIDS HYPER 64

NINTENDO 64

PUBLISHER: CRAVE ENTERTAINMENT

DEVELOPER: SYROX

1999

Back in the mid-1970s, before video games took over the arcades, pinball was my favorite way to waste quarters. As a young kid, I enjoyed Pong (1972) and had a good time with Midway's Gun Fight (1975), but pinball was where I spent most of my time. This all changed with the release of Breakout (1976), Space Invaders (1978) and Asteroids (1979), the vector graphics classic.

I was so obsessed with Asteroids, in fact, that I mastered it to the point where I could play for hours and hours on one quarter. I distinctly remember being kicked out of a Quickway convenience store near my junior high school at 10 p.m., when the store closed. I still had a long row of ships at the top of the screen.

Twenty years after I played my first round of Asteroids, Crave Entertainment released Asteroids Hyper 64 for the Nintendo 64, complete with such updated raster graphics as colorful planets, space debris, starry backgrounds, and elaborately detailed alien ships. Surprisingly, there is no music, and the sound effects could use some "oomph," but the game is a lot of fun.

Unlike Paperboy 64, a truly wretched creation, this is a retro-remake I had a good time with because it retained the flavor of the original game while adding nifty challenges and features, including popcorn asteroids, which are challenging and unusual because they get bigger and faster as you shoot them (up to a certain point), and radioactive asteroids, which are somewhat like Kryptonite—when you get too close to them, they zap your ship's powers in different ways, depending on what color they are. You'll enjoy blasting your way through the various asteroid types and figuring out what strategies work best for each.

Another aspect of this game that keeps the Asteroids concept fresh—even for those tired of the original—is the notion of zones, each with a different playfield that affects the action. For example, each level of Zone 2 has a black hole that forces you not to loiter in the center of the screen, and Zone 4 has an alien queen that cannot be killed, no matter how many times you shoot it.

Further, up to four players can compete in two multi-player modes: The Knockout Game, a battle to see who can get as many points as possible in order to stay in the lead, and the Color Clear Game, where players blast only those asteroids that match the color of their own ship. Only after destroying all of your own asteroids should you fire on other colors. Both multi-player games end when one ship remains.

The best thing about Asteroids Hyper 64 is that it keeps the basic control system of Asteroids intact. You can still spin, thrust, shoot, and warp into hyperspace smoothly and efficiently with the entire screen as your battlefield. In addition, the programmers included a number of cool special weapons, lots of enemy ships, and a shield feature similar to that found in Asteroids Deluxe.

As you might expect, there is a replica of the original Asteroids game hidden in Asteroids Hyper 64. To unlock it, go to the Main Menu, hold the L button, and then press left C, right C, top C, bottom C, A, top C, bottom C, left C, right C, start.

**Brett Weiss** - Noted video game historian Brett Weiss is the author of 10 books, including the Classic Home Video Games series, The 100 Greatest Console Video Games: 1977-1987, Retro Pop Culture A to Z, and The SNES Omnibus Volumes 1 and 2. He's had articles published in numerous newspapers and magazines, including the Fort Worth Star-Telegram, AntiqueWeek, Game Informer, Classic Gamer Magazine, Video Game Trader, Video Game Collector, Filmfax, and Fangoria.



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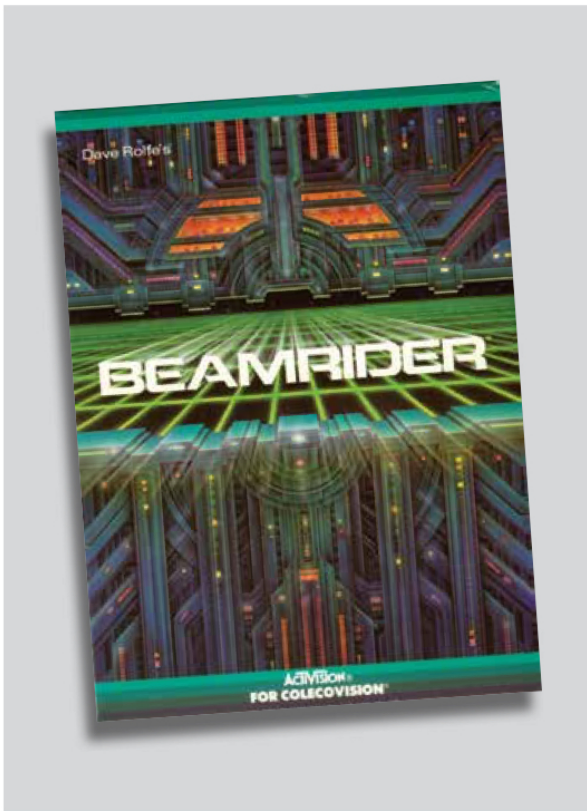
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## BEAMRIDER

COLECOVISION

PUBLISHER: ACTIVISION

DEVELOPER: ACTION GRAPHICS

1984

In *Beamrider*, you control a Light Ship that moves back and forth at the bottom of a grid. This grid is called a Restrictor Shield, and it is designed to protect Earth from alien invasion.

Your job is to clear the grid of Enemy Saucers, Bounce crafts, Blue Chargers, Green Blockers, Chirpers, Magnetic Mines, Red Zig Bombs, and Orange Trackers. These alien vessels ride the beams up and down and back and forth, wreaking havoc on the screen. Armed with an unlimited amount of Laser Lariats and a handful of torpedoes, you must shoot everything in sight.


After you have destroyed fifteen Enemy Saucers, a Sentinel Ship will cruise across the top of the screen. After you complete each sector, you will return via hyperspace to a space station where you will prepare to leave for your next mission. There are 99 sectors in all; a new enemy is introduced every other sector up until number 16. In addition to the enemies, a Yellow Rejuvenator will occasionally appear onscreen. Allow one of them to land on your deck and you will

receive a free ship.

Unlike such games as *Space Invaders* and *Galaxian*, the ship in *Beamrider* cannot move in small increments; it must always stop on one of the five vertical beams on the grid. Since you can't move in small increments, you must develop new strategies not found in similar games. While this element creates new challenges, it doesn't necessarily make it more fun than other games in the genre, just different. In the video game industry where every decent game concept is copied again and again, different is certainly a good thing.

Like many games bearing the Activision name, *Beamrider* is a marvel in terms of design. The controls are smooth, enemy ships move in relatively unpredictable patterns, the difficulty level increases at a nice pace, and the objectives for playing the game are easily defined, yet challenging to master. With the restriction of being able to stop your ship on only five beams, the game could've easily been frustratingly difficult, constantly placing you in all but impossible situations, but that is not the case.

The graphics are simplistic for a system with the capabilities of the ColecoVision, but the ships look cool and are unhampered by blinking. There's no music, but the sound effects, which evoke a futuristic world, make up for this absence to a large degree. *Beamrider* was also developed for the Atari 2600, Atari 5200, Intellivision, and various home computers.

Noted video game historian Brett Weiss is the author of 10 books, including the *Classic Home Video Games* series, *The 100 Greatest Console Video Games: 1977-1987*, *Retro Pop Culture A to Z*, and *The SNES Omnibus Volumes 1 and 2*. He's had articles published in numerous newspapers and magazines, including the *Fort Worth Star-Telegram*, *AntiqueWeek*, *Game Informer*, *Classic Gamer Magazine*, *Video Game Trader*, *Video Game Collector*, *Filmfax*, and *Fangoria*. 



# Flip Grip: Bullet Heaven

By Rob Faraldi

**S**hmups (short for “shoot ‘em ups”) were a mainstream genre decades ago, but have since become a persistent niche. Some of the more popular and notable shmups include *Radiant Silvergun*, *Ikaruga*, *M.U.S.H.A.*, and *Raiden*. Certain classic consoles including TurboGrafx-16, Sega Genesis and Sega Saturn are popular for being “shmup machines,” as there are a high concentration of excellent original titles and arcade ports for these systems. Shmups usually consist of vertically (“Tate” in Japanese) and horizontally (“Yoko” in Japanese) scrolling titles, though there are exceptions. While horizontally scrolling shmup arcade ports translate well to the home, many vertically scrolling arcade ports only take up a small part of the screen if viewed in the proper aspect ratio, akin to watching video taken in portrait mode on a smartphone on your TV. While some vertical shmups do allow for a proper full screen mode, it requires the user to rotate a television vertically to play. Some shmup fans have gone to great lengths to play in Tate mode, but it has been a hassle until now.

Enter the Flip Grip, a \$12 piece of plastic that turns a Nintendo Switch into a Tate shmup fan’s dream machine. Setup is easy: insert the Switch screen vertically into the Flip Grip’s dock and slide the Joy-Cons into the Flip Grip’s rails and start playing. It’s that simple. Certain buttons and ports are obscured while using the Flip Grip such as those used to control volume, but there is a way to manipulate sound while playing. Once assembled, you’ll notice how solid the Switch feels and looks with the Flip Grip attached. It’s very handsome and sturdy, and feels as if it were a first-party product brought to market by Nintendo. If I were to offer some criticism, inserting the screen into the Flip Grip feels a little too snug for my taste. It seems as though Flip Grip is leaving faint marks on top of the Switch after inserting and removing it a few times. This may be a design flaw or it may be an error on my part. Regardless, it didn’t detract from my enthusiasm for the product.

While there don’t seem to be many original shmups developed for Switch, there are a number of excellent ports available. I tested *Danmaku Unlimited 3*, *Strikers 1945*, *Strikers 1945 II*, *Samurai Aces*, *Dragon Blaze*, *Gunbird*, and *Gunbird 2* and they all looked and played great with the Flip Grip. The added screen real estate

helps with immersion and really draws you in. Audio is crisp and clear from the Switch’s speakers too. While it’s nice that these games allow for a vertical mode, the menus were still stuck in horizontal mode with the exception of *Danmaku Unlimited 3*, making it a little clumsy to cycle through them. Not all vertical shmups offer the option to play in Tate mode either. Surprisingly, a newer vertically scrolling shmup, *Shikhondo - Soul Eater*, doesn’t support Tate mode at all. The issues mentioned have nothing to do with Flip Grip, but I would like to see broader developer support going forward. There is no reason not to support this wonderful slab of black plastic.

To anyone who doesn’t play shmups or other titles that depend on a vertical screen, Flip Grip isn’t for you. But for those who do, shmup fans in particular, this isn’t simply a device, it’s a gift. It’s a love letter to a group of gamers who are often overlooked by the mainstream. And because of Flip Grip, there is a real case to be made that Switch is a shmup machine (almost) in the same ballpark as the very best classic consoles. Sure, Switch may lack original shmups, but that’s OK. The Switch library is like a greatest hits collection of some of the very best of the genre, and Flip Grip allows you to play vertically scrolling titles precisely as they should be experienced. It may seem simple, but it feels magical.

So, what are you waiting for? Get a Flip Grip today.

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# Old Atari on Switch and New Atari on 4 Switchers

HEAVY 6'S AND LIGHT 6'S TOO

By Ryan Burger and Ric Pryor

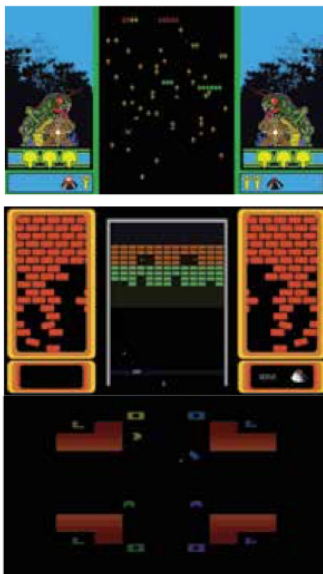
**N**ew Atari-related releases are coming fast and furious, from many different directions recently. AtariAge.com has been publishing tons of new games, many of which were first released at the Portland Retro Gaming Expo and to the public quickly afterwards. Additionally, Atari is constantly re-releasing its Flashback Classics series on new game consoles as the new generation comes out, this time on the Nintendo Switch, which was one of the reasons I bought the Switch!

## 2600 RELEASES ON NEW HARDWARE BY RYAN BURGER

Atari has now released Flashback Classics Series for the Nintendo Switch with 150 games included in the download (now available in download and physical format). It includes approximately 30 arcade games, including favorites like Tempest, Crystal Castles, Warlords, and Asteroids. Some of the games are also set to go into Tabletop mode, where you can use a Flip Grip to turn the screen on its side in Portrait Mode (Flip Grip Review by Rob Faraldi also in this issue). The other 120 games in the system are first party titles developed by Atari in-house back in the late 1970s and early 1980s. Some

of my console favorites included in it are Adventure, Fatal Run and the Sword Quest Series including Water World. I still have to play through the Sword Quest series, which I intend to do soon. While the first two games in the series, Earth and Fire, are pretty common, Water is a very rare cartridge, and this is one of the few ways you can play it without shelling out big bucks. Yars Return (the sequel to Howard Scott Warshaw's Yars Revenge is also included, which debuted back on the Flashback 2 in 2005.

Can't find a friend locally to play Atari with you on your Switch? That was sometimes a problem back in the day when we were all trapped inside on a Snow day in Ohio, but now you can play over the Internet with others. I think I need to find a community of FlashBack for Switch users to be able to schedule competitions, as no one popped up while I had the host mode enabled this evening. If anyone that knows of such a community please contact me at rb@oldschoolgamer.com. Most, if not all, of the games had such great functionality, plus Leaderboard and Achievement systems have also been added. They have also included original arcade bezel art in the gameplay screens, manuals for console games, multiple versions of some games (2600/5200/Arcade), and more! Personally, I would love for them to add all the 7800 games that were released in a similar collection, but it seems more people have the nostalgia for the 2600, 5200 and the



Arcade releases, understandably.

This is a really comprehensive archive of Atari titles from the 70s and early 80s. With all the ways to play Old School console games, this is one of the more elegant interfaces and collections out there.

[atari.com/games/atari-flashback-classics-switch/](http://atari.com/games/atari-flashback-classics-switch/)

## ATARI 2600 NEW RELEASES BY RIC PRYOR

### Mappy

Anyone who follows the Atari 2600 homebrew scene knows the amazing work Champ Games has done bringing classic arcade games to the VCS. Anyone who hasn't been following the Atari 2600 homebrew scene, and particularly the amazing work Champ Games has been doing, should start right now with Mappy. In this port of the 1983 Namco game, the player controls a police mouse recovering stolen goods from the hideout of a gang of literal cat burglars who, for reasons I'm sure seemed like a good idea to them at the time, have replaced all of the stairs with trampolines.

Mappy is an astoundingly faithful port of the original game. So faithful that I would feel no reservations whatsoever about deleting the Mappy arcade ROM from my computer if I were the sort of person who had a hard drive full of illegally obtained ROMs that I played using a certain multi-arcade emulator...which I am not. Wink wink.



### Space Game

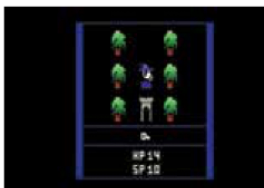
It's not difficult to find yourself getting hung up on Space Game's unimaginative name. Is it supposed to be ironic? Has the English language finally run out of words that can be combined with "Space" to create a video game title? But when you actually play Space Game, you'll discover that all the effort that didn't go into creating a clever title went into making a first-rate shooter.

Created by Karl Garrison and Maggie Vogel, a couple working on their first Atari homebrew together, Space Game takes place, obviously, in space. Charged with defending humanity's colonies from the alien Kraal, you fight wave after wave of invading enemies, collect power ups, and face off against giant bosses. Not exactly uncharted video game territory, but Space Game packs a lot of variety into its tried and true premise, including a large variety of aliens with unique attack patterns, two different bonus stages and an excellent soundtrack. If you like space games, Space Game is definitely worth a look.



### Dungeon II: Solstice

In theory, I love role-playing games. I like the idea of creating and growing a character while solving puzzles and exploring a large, open world at my own pace. In reality, the first time my character misses a couple of

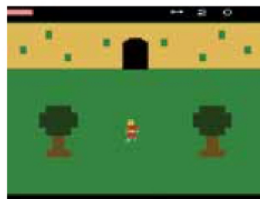


attacks in a row and is killed by a low-level goblin I'm only fighting to grind out some XP, I switch the game off and turn on an episode of The Great British Baking Show.

Dungeon II by David Weavil looks and feels every bit like the classic PC role-playing games it seeks to emulate. You move your character, either a Wizard, Faerie or Warrior, through a tile-based world, engage in turn-based combat with a variety of evil creatures and find the magic artifact that will return peace and prosperity to the land. But because it's a relatively short game with no character progression and randomly placed items, it often feels more like game 3 of Adventure than Ultima III. If you're jonesing to fight some orcs but aren't looking for a long campaign, Dungeon II is a good way to get your fix.

### Anguna


If your tastes lean more towards Legend of Zelda style action RPGs, Anguna checks most of the boxes on your checklist. In Nathan Tolbert's semi-sequel to his 2008 Game Boy Advance homebrew of the same name, you control an unnamed hero who has been captured by the forces of the evil Goblin King. Once you've escaped his dungeon, you have to find the Goblin King and defeat him.



While Anguna's graphics and sound effects aren't as impressive as other recent 2600 homebrews, the sheer depth of the gameplay easily makes up for the lack of eye and ear candy. The world of Anguna is impressively vast with a large overworld and multiple dungeons populated by a wide assortment of creatures. Using the Color/B&W switch toggles between the game action and a status screen with a map and a password that lets you pick up where you left off next time you play, a welcome addition to a game of this scale. There's more to Anguna than can be done justice in a two-paragraph review. It's a game that will keep you playing for a very long time.

### Assembloids 2600

Sticking with the theme of homebrews for other platforms adapted to the 2600, Assembloids is Martin Wendt's VCS port of his 2012 Commodore 64 homebrew, which is itself an adaptation of Ilija Melentijevic and Richard Davey's 2010 Flash game Quartet. The goal is to complete creatures by moving tiles into empty spaces on the screen, with more points awarded for making a creature with four pieces of the same color.

The gameplay is simple but, like all good puzzle games, challenging and compelling. As the game progresses and you are given less time to move each piece, Assembloids becomes a frantic test of your reflexes. The creature graphics are impressive with new monsters to discover as you progress. Assembloids is unique and addictive and a welcome addition to the 2600's lamentably small library of puzzle games. 



[Atariage.com](http://Atariage.com)

# Entering the Digitized Era – Part 1

By Warren Davis

**In the beginning, there was the dot. The white dot. Alone in a void of blackness. This was the world of Pong, Computer Space, Breakout and many more. Crude graphics and no color. These were the earliest arcade video games – many implemented solely through hardwired circuitry, no CPU, no software. Some using rasterized graphics, some vector graphics. Some tried to imply color by using cellophane overlays, but let’s face it. They were still black and white.**

There’s some debate about which arcade game was the first to introduce colored pixels. Galaxian was probably the first hit game with multi-colored raster graphics (in 1979), even though there were others before it. And Tempest is considered the first game using multi-color vector graphics in 1981. Once we were in the world of color, there was no going back. In this article, I’m going to talk exclusively about rasterized graphics.

In the early days, colors were extremely limited. Systems usually had a color resolution of 2 bytes (or 16 bits) per color. That meant a color consisted of 5 bits of Red, 5 bits of Green and 5 bits of Blue. That translated to 32 shades of each or 32,768 possible colors (32x32x32). If a game system had enough screen memory to allow for 2 bytes per pixel, then every pixel on screen could have any one of those 32,768 colors. We’d call that a “true-color” display. But memory back then was expensive, so to keep costs down, screen memory was generally limited to show only a small subset of the possible colors. This subset was called a “palette”. So instead of storing 2 bytes for each pixel, you stored an index

into the palette. For a 16 color palette, that would require only 4 bits, you could fit two color indices into a single byte. That made screen memory 4 times smaller than a “true-color” display would have been.

A 16 color standard was fine for games like Defender, Berzerk and Space Invaders (a game originally built for black and white, then re-released with actual color hardware), which still used blocky, monochromatic, simple graphic shapes. But most developers in this still fledgling industry didn’t want to maintain the status quo. They wanted to push the envelope.

Color resolution wasn’t the only limitation, of course. There was also pixel resolution. Most arcade systems supported a display that was 256 pixels across and 240 pixels tall (when oriented hori-

Black and White	1 bit per pixel	8 pixels fit in 1 byte
16 color palette	4 bits per pixel	2 pixels fit in 1 byte
256 color palette	8 bits per pixel	1 pixel fits in 1 byte
32,768 true color	15 bits per pixel	1 pixel fits in 2 bytes
16,777,216 true color	24 bits per pixel	1 pixel fits in 3 bytes

Color representation using...			
15 bits			
5 bits Blue	5 bits Green	5 bits Red	2 bytes
24 bits			
8 bits Blue	8 bits Green	8 bits Red	3 bytes

**This table shows how memory requirements change with different color resolutions, from B&W to 24-bit true color**



A couple of digitizers for the Amiga computer from the late 1980s. On the left, Live by A-squared and on the right, Digi-View from NewTek, showing the color wheel you had to shoot through

zontally). The monitors were usually 19 inches diagonal. This puts you in the realm of about 20 dots per inch. Not so great. But the limitations weren’t stopping people from flocking to arcades and pumping quarters into cabinets. So the manufacturers didn’t feel any need to spend more money on higher resolution components.

And the artists of the day rose to the challenge, despite these pesky technical limitations. Pac-Man took the industry a major step forward. Released in 1980, the characters in Pac-Man were still somewhat simple, but evolved beyond adjectives like “blocky” and “crude” to become what would define arcade game graphics over most of the next decade...“cartoony”. The characters seemed to have personalities, despite being somewhat monochromatic. It turned out there was a lot you could do with 16 colors. Some games, like Donkey Kong, used larger characters to allow them more detail and definition. Q\*bert added the illusion of a third dimension as did Zaxxon.

But for me, at that time, the holy grail of taking arcade games to the next level would be a 256 color palette system. This would require one byte per pixel to store an index between 0 and 255, which would double screen memory, but it would also allow graphics to look much more photorealistic than was possible



with only 16 colors. And I believed very strongly in moving video games closer to photorealism.

The year 1983 marked the beginning of a laserdisc fad in the industry. With the success of Dragon's Lair, every major manufacturer started working on a laserdisc system. I think most people in the industry thought that was the future. Who needed more colors when you could have virtually unlimited colors on your laserdisc? But that all fell apart pretty quickly when operators realized the disc players inside the cabinets weren't ready for prime-time. All you had to do was bang the side of the cabinet, the disc would skip, the game would crash and you'd ask for (and get) your money back. Not very good for business.

In 1986, I was working for Williams, and memory had gotten cheap enough that a 256 color arcade game system was looking like a viable next step. This meant rethinking the way we generated our art. In a 16 color world, our art tools were fairly simple. We'd have software that put up a large grid representing a sprite. The artist would then choose the 16 colors in their palette and literally pick a color and drop it into a space in the grid. They had to do this manually for every pixel in every image. Most artists planned their sprites out on graph paper and used the art tool last to generate the sprite in memory. This was before Photoshop existed. Microsoft Paint had only just been released in 1985.

But in a 256 color world, doing all that manually was going to be ridiculously time consuming. What else could we do?

I'd heard about a video digitizer that was available for the Amiga computer. It was made by a company called A-Squared and it allowed you to attach a black and white CCTV camera to the Amiga, and through a process of shooting video over about 30 seconds through a rotating color wheel with 4 filters... red, green, blue and clear... you could generate what looked like a true color photographic image on your computer screen.

This was pretty close to magic in 1986.



The image on the left is a true-color image with thousands of colors available. The image on the right has been reduced to 256 colors, with the palette shown under it. You might be able to see some of the artifacts introduced by reducing the number of colors. Note: this palette was created with modern tools, which have algorithms that yield much better results than those available in the 1980s.




We had some Amigas around the office, so I made sure to get one of these digitizers to play with. The results were amazing, but not very practical. For one thing, whatever you were pointing the camera at couldn't move. And spending 30 seconds turning a wheel to get one image wasn't particularly efficient. Plus the setup required a specific type of camera used for surveillance. You couldn't just plug in any consumer camcorder or VCR and pause videotape playback to grab a single frame out of a motion sequence. So it just wasn't practical for our purposes.

In addition, the images generated by the digitizer were "true-color" with up to 32,768 colors, not 256. It occurred to me that at some point, I was going to need some new tools to generate a 256 palette from a series of digitized images. The problem was, those tools didn't exist! So I was going to have to write them myself. I started going to libraries and digging

into technical journals, sifting through the latest algorithms being developed. Compared to today, the 1980s was still the dark ages of computing. So much of what we take for granted now just didn't exist then, or was in some early theoretical stage of development.

I managed to find some algorithms related to what was called "color quantization". This is basically a fancy name for the process of finding a subset of colors from a larger group of colors to best represent a particular image. Exactly what I needed! I implemented the methods I found, and tested them on a varied selection of "true-color" images. They worked! Kind of. I mean, the results weren't quite as photorealistic as I was hoping for - if the source image had a lot of colors, the "paletted" version could have a lot of artifacts - but they were way better than "cartoony".

Meanwhile, unbeknown to anyone, the crucial piece of the puzzle - a digitizer suitable for our purposes - was being developed by a small R&D group working within AT&T in Indianapolis. The story picks up next time with Part 2.. 

**Warren Davis** is a classic videogame creator best known as the designer and programmer of the original Q\*bert arcade game. He also co-designed and programmed *Us. Vs. Them*, an innovative laserdisc title featuring scenes with live actors interspersed with sci-fi combat gameplay composited over actual flying footage. His other titles in the arcade industry include *Joust 2* (for Williams), *T2: Judgement Day* and *Revolution X* (for Williams/Bally/Midway). He was a pioneer in the use of digitized video. His WTARG system was used in many of Williams' most successful games, including *NARC*, *Hi Impact Football*, the *Mortal Kombat* and *NBA Jam* series', *T2*, *Revolution X*, and more. In 1995, Warren moved to Los Angeles to work for Disney Interactive on a variety of home titles. For a short time, he was an Imagineer with Walt Disney Imagineering. After Disney, he worked as a senior programmer on the console game *Spyro: Enter the Dragonfly*, and programmed an edutainment title, *The Lunar Explorer*, and spent some time at Industrial Light and Magic.

# Intruder Alert..Intruder Alert!

By Kevin Butler



**NAME: BERZERK**

**MANUFACTURER: STERN ELECTRONICS**

**YEAR: 1980**

**TYPE: VIDEOGAME**

**TEAM LEADER: DESIGNED AND PROGRAMMED BY ALAN MCNEIL**

**B**erzerk is a two-dimensional maze-style game that involves you attempting to escape killer robots in a never-ending gallery of mazes. Somewhat simple in design, Berzerk can also be fiendishly devious depending on where you get located in the next maze. The robots are programmed to terminate you with extreme prejudice and they do their job well. One of the most unique aspects of this game is that it has speech (to be precise, a vocabulary of 24 words). Depending on what one rates as speech (via a speech data ROM or through electronic means with no data ROM), it is either Berzerk or Stratovox (also made in 1980) that can be considered the first game to incorporate speech. Berzerk is also considered to be the “grandfather” of Robotron 2084, since Eugene Jarvis cites it as being his inspiration to create a game of this nature but with significantly more intensity. For a more detailed description of the game and gameplay, go to <https://gamefaqs.gamespot.com/arcade/584080-berzerk/faqs/24584> for my FAQ.

Berzerk can be considered a game with two components. The first component itself is the game. The game consists of the player, robots, Evil Otto (named after a disliked boss), and the various mazes. The player is controlled via an eight-way joystick and a fire button (aim controlled by eight-way joystick). There are 876 unique mazes you can go through (more explained later on how this works). The second component is the speech component itself. Speech is provided by the TSI S14001A chip. The TSI S14001A used a data file with the 24 words to provide the speech for Berzerk. This is what gave Berzerk its uniqueness among video games up to that time.

During these early days of arcade games, the goal was to create a game with as few chips as possible. This meant programming space was at a premium and one had to get the most amount of program in the least amount of space. Alan had 8Kb of ROM to create this game. This meant everything from

the mazes to the AI of the robots had to be put into that small space. Creative programming was a must and Alan was able to implement some unique programming to get the most out of the 8Kb. Since Alan already was well versed in computer graphics, he was able to design all the various parts of the game (player, robots, Otto, e.g.) - it was the maze that was a challenge. Alan realized that he couldn't put hundreds of completed mazes into the program or they would definitely take him way beyond the 8Kb he was allotted. This meant he had to find another way to do it. He did this by creating a maze generator by using a 16 x 16 “box” in which the mazes were created. This gave 65536 possible rooms. After eliminating all the duplicates, you end up with 876 unique rooms. The maze generator started at the zero room. A random number was then generated and it provided the “seed” for the next room to be created. This enabled a player to traverse an apparent endless array of mazes. One unique feature was that the game would remember the last room you were in and, if you backtracked, you would end up in the same maze you left. After various tweaks and play testing, Alan had achieved a true miracle by getting a lot of content into a very small space.

Unfortunately, Alan McNeil passed away in December 2017. I was able to talk to his brother Bruce McNeil and get more information about Alan before he created Berzerk as well as things that Alan did during and after Berzerk.

**OSG:** *First of all, I would like to express my condolences and sympathies on the loss of your brother.*

**BRUCE** McNeil (BM): Thank you, I appreciate that very much.

**OSG:** *How did Alan get involved with computers? Was he involved during his high school years?*

**BM:** During his junior and senior years in high school (1969-70), he was involved with hobbyist computers. In addition, he did work with the bigger IBM systems doing punch cards for the IBM Fortran.

**OSG:** *Did he continue with computers when he graduated?*

**BM:** Yes and no. From 1970-71, he studied architecture at Cornell for a year. After that, he went into art studies at the University of Illinois in Chicago. At that time, he began to work with another professor in creating primitive computer graphics. He was also involved with developing the gas plasma display for computer-based art for the PLATO system, plus creating the first user groups. Eventually, he graduated with a BA in art.

**OSG:** *Did he continue along the art and computer track?*

**BM:** He did. First he started to learn programming so he

# STERN GOES BERZERK!

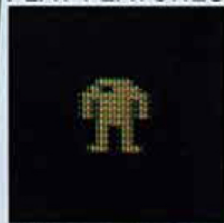
If you think we went crazy developing Berzerk, you're right! This is the first time we've ever put all of our technology and wit to work in one video game. The result is a video masterpiece that not only drives players absolutely Berzerk, it drives profits directly to operators.

## THE BERZERK LINEUP OF INNOVATIVE FEATURES:

- Unsurpassed 30-word vocabulary allows game to communicate to player.
- 64,000 random maze patterns appear on video screen for explosive—and non-repetitive—action.
- Newly designed "Joy Stick" enables player to move image of humanoid in 8 different directions.
- 10 highest scores-to-date register on screen after play is over.
- Memory also stores 5 highest scores-to-date, even when machine is unplugged.
- Attract mode beckons players by voicing—"Coins detected in pockets"—at timed intervals.
- All logic boards housed in accessible pullout drawer in cabinet front, providing easy service for technicians.
- Sophisticated self-diagnostic programming routine.



## PLAY FEATURES



Robots pursue humanoid (player) through one of 64,000 possible maze patterns.



Humanoid avoids robots by manipulating "Joy Stick," and destroys robots by firing weapon.



"Evil Otto," an indestructible force, appears randomly on screen to pursue and destroy humanoid. He must be avoided at all costs!

"You'll really flip over this game, too!"

Stern Electronics, Inc./1725 Diversey Parkway  
Chicago, Illinois 60614 (312) 935-4600  
Telex 25-4657/Toll-Free Service No. (800) 621-6424  
Designed and developed by Universal Research  
Laboratories, Inc., a Stern subsidiary.

MONROE DIST. INC.  
Flyer provided by [Arcade-Museum.Com](http://Arcade-Museum.Com)  
Cleveland, Ohio 44114

**STERN**  
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could apply his art along with computer graphics. During this period, he also built an Altair computer, from a kit, to further his knowledge of computers. While working at a computer store, he learned about programming graphics on the early microcomputers. In addition to this, he also dabbled in trading using the primitive computer systems that were in place at that time.

**OSG:** *When did he get involved in the arcade industry?*

**BM:** In 1978, he was approached by David Nutting and Associates (DNA), which was owned by Bally/Midway, to work on a couple of their arcade games and eventually to work on the Bally Astrocade. Unfortunately, problems developed with the system and it never was able to be marketed. So Alan asked David Nutting, owner of DNA, about designing his own arcade game. He was told that he wouldn't be able to due to lack of experience and it would take at least two years for him to have the necessary experience. Alan didn't take that too well and left. As luck would have it, Stern Electronics was looking for programmer so he applied. The job involved reprogramming their pinball machines.

**OSG:** *So, he started in the pinball industry instead, after wanting to go into the arcade industry.*

**BM:** Alan learned how the pinball programs worked by reverse-engineering the programs that ran the pinball machines and rewrote them so the machines would be more flexible. Alan's condition for doing this is that he wanted to design an arcade game. Stern was happy to comply since they wanted to break into the arcade industry.

**OSG:** *The oft told story is how Alan had a dream that led to Berzerk being developed. Can you add any background to this?*

**BM:** Alan liked to experiment a lot. I know on his early computer systems he used to try to program robots on his old computer system but that didn't exactly turn out the way he wanted. The idea, though, stuck and when given the green light by Stern, Alan already had an idea of how to do things.

**OSG:** *Did Alan do the game himself or did he have others help him?*

**BM:** No, Stern was just starting out in the arcade industry so he did it all himself. The artwork, graphics design, programming, and all the debugging were done by him. He was a one-man department, so he pretty much had total freedom to do what he wanted. Alan was a perfectionist, so the game went through several revisions to get it right.

**OSG:** *How did he manage to get speech integrated into the game since this is one of the first (if not the first depending) arcade games that had true speech synthesis?*

**BM:** Alan originally had the game making the usual electronic noise usually associated with an arcade game. He said that one day, someone came around and said they had a chip that allowed blind people to hear what they were doing. The chip itself was limited to 24 words but that was all that was needed

at the time for the products coming out that utilized this chip.

**OSG:** *It seems that he is most associated with Berzerk since that is the game he designed. Was he pretty happy with the final product?*

**BM:** He was, for the most part. There were things that he wanted to do but unfortunately, hardware limitations and budget restricted him in what he could and could not do. He programmed Frenzy as a direct sequel to address these shortcomings but it never really came to fruition. By the time all this was going on, his time with Stern was ending.

**OSG:** *He didn't design any further games with them?*

**BM:** No, he had other projects in mind and wanted to go out on his own.

**OSG:** *What did he do after he left Stern?*

**BM:** He went back to his first love and that was graphics and multimedia. With the advances made in computers and hardware, he was able to do more with his love of art and programming. He developed the program that became Adobe Director and he also worked on other projects of this nature. He was with SSI for a time and he did his own work in the late 80's. Microsoft even offered him a job working with their multimedia division and also with designing the hardware that could run it.



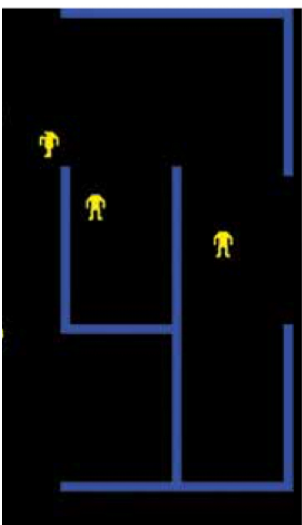
**OSG:** *Sounds like he did pretty well for himself. What did he do for entertainment?*

**BM:** Well, his favorite games were Might and Magic, Wizards, and a lot of the MMORG's that were coming out. He enjoyed the fact that you could go online and play these. This was a dream of his from his days working on the PLATO system which worked somewhat similarly but was a lot more primitive.

Bruce and I discussed other facets of Alan's life and all the other projects he was involved with. I thanked Bruce for his time and again expressed my condolences on his loss.

As stated above, fate would step in when a salesman came by selling a speech chip. Alan immediately became intrigued and the rest is history. Various words and phrases were included, such as "intruder alert, intruder alert", "chicken, fight like a robot", and "the humanoid must not escape". Putting together other words gave other phrases and gave more "life" to the game. The oft quoted price per word was \$1000. I contacted Todd Mozer who is a cofounder of Sensory Inc. Todd is the son of Forrest Mozer who patented the algorithm and hardware for the first speech synthesizer that used true speech. Todd relayed that his dad had the specialized equipment for creating the digitized speech from record-

ings. His dad then would take those digital recordings and place them into a speech ROM for the speech synthesizer to “read”. Todd figured that since his dad was the only one doing this, it could cost anywhere from \$700 to \$1000 to create the chip with those words on it. This was a one-time cost, since after the chip was created, it could then be duplicated. In talking to David Carver, a tech support engineer at Stern Pinball Inc., he believed that with the utilization of the TSI S14001A chip, Berzerk was the first arcade game that had true speech. The way the speech synthesizer chip worked was actually pretty simple in theory. A command would be received from the game to implement speech. Said command would hit the TSI S14001A chip. The TSI S14001A chip would then find the address of the specific word or words that were needed and draw them from the speech data ROM.



I had the honor and privilege of talking to Ed Bernard. Ed is the individual who designed the TSI S14001A speech chip that was used in the Berzerk game for speech.

**OSG:** Thank you so much for talking to me Mr. Bernard. Did you start working with computers in high school?

**ED Bernard (EB):** When I was in high school in the early 1960's, computers really weren't an integral part of the classroom. In addition, the primary computers were the mainframe systems that were very large. No, I was more involved with electronics and learning in that area.

**OSG:** What did you do after high school to further your electronics knowledge?

**EB:** I went to Oregon State University from 1962-1966 and got my BS in both physics and math. Also, my experiences with computers actually started with the ALWAC III-E system we had at the college. This computer system used a rotating drum memory. I then attended Cal Tech and got my MS in Physics in 1968. My first job was working at North American Rockwell doing plated wire memory for 1.5 years. From November 1969 to March 1970, I went to work at Xerox Data Systems (XDS) on their plated wire memory project. I then transferred to their integrated circuit group where I developed a MOS model circuit simulation for them.

**OSG:** When did you start working on chips and integrated circuits?

**EB:** My big break came in May 1973. A man by the name of Gene Potter founded a company called Silicon Systems Incorporated (SSI). At XDS, he managed a group designing bipolar ROM and RAM. Gene was a wonderful mentor and friend, and I learned a lot from him. I was an early employee hired by Gene. SSI had a contract with Signetics and I was picked to be in the group that helped create the bipolar chips and also to create the integrated circuits. In addition, I served as the liaison for developing a mini-computer 8-bit interface chip. I continuously worked on

custom designs for creating the chip templates from provided algorithms.

**OSG:** How did you get involved with the TSI S14001A?

**EB:** Telesensory Systems Inc. (TSI) came to us to design a speech chip for them. The algorithm was based on Forrest Mozer's theories of digitizing and compressing speech. They needed a chip to make this speech to assist those who were sight impaired. Their project would be a talking calculator. I was the one responsible for designing the chip based on that algorithm. In 1975, I designed the die for that chip and the first chips were produced. The chip was used in the TSI Speech+ calculator which was released in 1976 and became the first calculator to actually use speech (which was stored on a data chip in compressed form).

**OSG:** That must have been quite a thrill to know you designed a chip that would potentially help millions of people and also to lead to bigger things.


**EB:** It did and I was very proud of the job that we did getting that chip out so it could be used in the calculator. When I saw the end result, I was pretty impressed and I even got one of those calculators.

**OSG:** What did you do after the TSI project?

**EB:** Among other things, I helped to design a targeting system for Hughes Aircraft, designed transmitter and receiver chips for garage door opener electronics and developed an in house test system. I left SSI in 1984 and effectively retired. Since then, I've been able to dabble in many different projects and relax.

Mr. Bernard and I talked a bit more about various computer and electronic things. I want to thank Mr. Bernard for taking the time to talk to me and help me to get the other half of the story.

Getting back to the maze generator, to get an idea of how little code is required to generate mazes, head to this site: [https://rosettacode.org/wiki/Maze\\_generation#BASIC](https://rosettacode.org/wiki/Maze_generation#BASIC). On this site, there is code for a multitude of BASIC's but they all achieve the same thing, generating a randomly created maze.

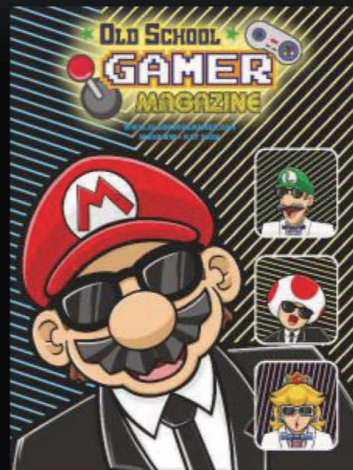
I wish to thank Bruce McNeil, Ed Bernard, Todd Mozer, and David Carver for their assistance in writing this article. I would also like to state that although Alan McNeil is no longer with us, his legacy will live on, not only for creating one of the first (if not the first) arcade game with speech, but for his many other creations throughout his lifetime. 

**Kevin Butler** - He has played video and arcade games since the early 1970's until he joined the Navy in 1983. While in the navy, he continued his hobby of programming (Worked for Majicsoft in the mid-1990's which specialized in Atari ST games) and playing video games. After retiring from the navy in 2004, Kevin started to write FAQ's for GameFAQ's specializing in doing retro-arcade games. These FAQ's have also been a part of the MAME project in regard to gameplay and history. He currently lives in Neosho MO with his wife and son, who is also a video game hobbyist.

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