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ISSUE #12 • SEPTEMBER 2019

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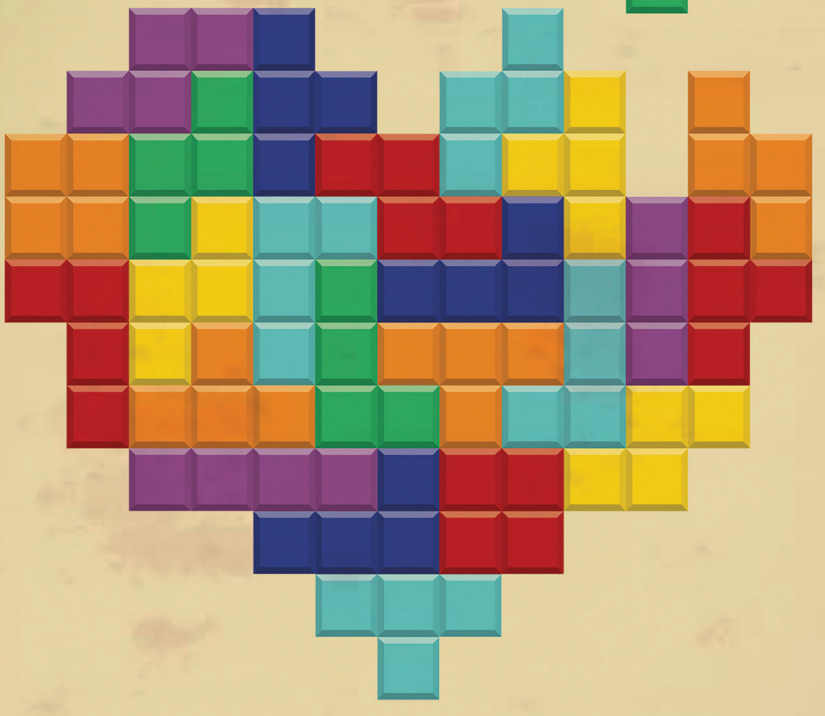

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Shipping address: OSG • 807 NE Park St • Grimes IA 50111

Postmaster – Send address changes to: OSG • 807 NE Park St • Grimes IA 50111
Postage paid at Grimes, IA and other mailing locations.

Old School Gamer Magazine (ISSN# 2574-8076 ONLINE/2574-8068 PRINT)
is published by BC Productions, Inc.
807 NE Park Street • Grimes, IA 50111

Magnavox ODYSSEY

By Ethan Johnson

The Magnavox Odyssey, the world's first game console, wasn't actually successful upon its initial release. While it would reimagine itself with the Odyssey 100 and 200 dedicated consoles as well as the Odyssey 2, the original model only sold 350,000 units over three years without any sort of true competition for comparison. However, despite the lackluster reception, the Odyssey made Magnavox a great deal of money. How so? Through a great American past-time: Litigation.

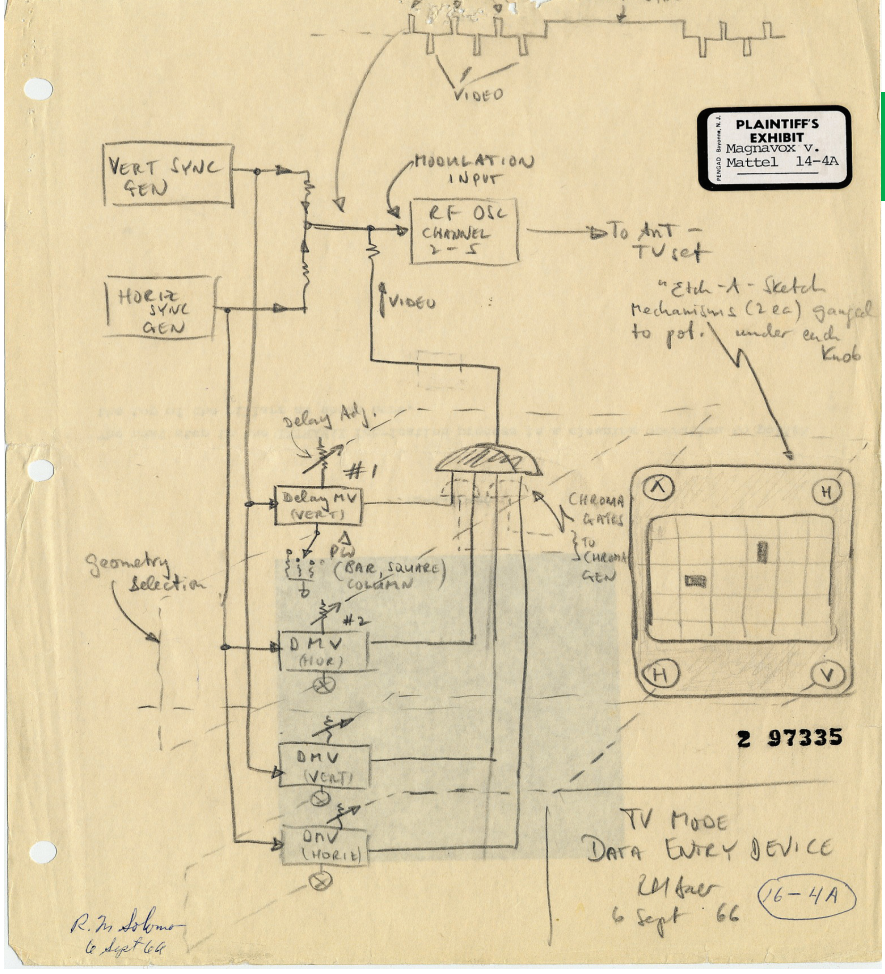
When Ralph Baer at Sander's Associates was creating the Odyssey, he kept very detailed documentation nearly down to the day of it's progress. This was important for having a legal claim to the technology they were working on, to show that it predated any other. The scope of their work was very specific as well. Baer made sure all of his patents related to games being played on a TV set – the video in video games – not any sort of screen (like in Spacewar!).

It's important to understand, though, that what they patented wasn't the very idea of a video game. Concepts like that cannot be patented, so they had to specify what their inventions truly covered. The main invention that Baer's team was able to claim was something specific to the Ping-Pong game on the Odyssey, the original idea of Bill Rusch. On October 18, 1967 Rusch first documented the idea for that game, and what the team had claims on was something much more specific to patent:

1. The invention displays objects on a television screen.
2. There are at least two objects, Object A (the paddle) and Object B (the ball).
3. When Object B hits Object A, Object B will go in a different direction then where it was first going.

At a basic level, this is Pong, Breakout, and the "ball and paddle genre". At a broader level, this could apply in many other ways. Basically, anything where an object hit another and then bounced, like – say - the trampolines in Mappy. But it did not specifically mean that all video games were covered under the patent scope. Space Invaders, for example, couldn't be said to have a 'bouncing' object. However, if a company did lay claim to a game with those characteristics, Magnavox could sue.

In 1973, pretty much immediately after Pong clones started to proliferate in the coin-op industry, Magnavox's legal counsel was contacting companies like Midway and Atari about this infringement. Though famously Nolan Bushnell got the idea for Pong from a viewing of the Magnavox Odyssey Ping-Pong game, that fact was largely immaterial next to the fact that all of these companies



Ralph Baer Design Document for Odyssey from 1966 as used in legal case.

copying Pong had those characteristics described in the patent. Ball and paddle coinciding, the ball bounces.

In April 1974, the legal battle that would come to encompass much of the notable arcade video game industry at the time began in earnest. The combined case would pit Magnavox and Sander's Associates against Bally plus it's distributing arm Empire Distributing, Williams Electronics and it's parent company Seeburg, Chicago Coin, Allied Leisure and Universal Research Laboratories (the companies behind the Paddle Battle game), Atari, and later Sears upon the release of Home Pong. This war, waged largely in Chicago, would prove the veracity of the claims to which Baer's team asserted themselves.

To disprove that the "bounce" concept and execution was patentable, the lawyers on the defendants' side would pull out everything they could to rid the Odyssey of the bearing of "first". This would include Nolan Bushnell's attempts to place his conception of a video game before Baer (an ultimately misguided effort, due to the specificity of the patent) and the lawyers digging up every single precedent game that might be material evidence of this distinction. William Higinbotham's Tennis game, Spacewar!, and many more obscure games were brought forward to establish that the Odyssey had nothing unique to which the inventors could lay claim.

The case would eventually reach the court in 1976, but prior to that, Magnavox and Sander's were able to reduce the challenge to their claims. Atari, Bally (with Empire distributing), and Sears would work out an agreement with Magnavox agreeing to pay them royalties for dropping the suit. Allied Leisure had their case reassigned to Florida and Universal Research went bankrupt before proceedings were underway. Atari settled specifically due to their impending purchase by Warner Communications, an imposition which could have prevented them from getting the money they needed to finish the Atari VCS.

Assigned to see out the rest of the case was the Honorable Judge John F. Grady, who was the newly assigned Federal Judge for Northern Illinois. Grady was an accomplished law practitioner, but he was not very knowledgeable about modern technology. Much of the time prior to the court case was dedicated to familiarizing himself with terms like "video" and "transistor". His interpretation of the Ping-Pong patent would set the precedent for all of Magnavox's following litigation, based largely on his understanding of the digital circuitry involved.

The Magnavox Odyssey is really nothing like any other video game device at a functional level. There are no integrated circuits – though there are transistors and diodes – and no memory whatsoever. It's limited functionality was built into its DNA as a device intended for mass market consumption, but the design could never be scaled. Even the Odyssey 100 and 200 series immediately diverged from Baer's original design because it was so antiquated. This, however, did not matter to the Court.

Judge Grady's ruling, after years of deliberation and several weeks of testimony, decided not to take into account the specifics of the technology involved. What he viewed as important was that all these games used a video signal on a standard TV (unlike the prior mainframe games), they all had the collision with subsequent direction changing, and that Sander's Associates had been very specific about what it's patents covered. Disregarding the specific manner of circuitry and technology involved, Judge Grady not only ruled in Magnavox's favor but distinguished Baer's basic patent on the Odyssey (the less material one about the hardware itself) the status of a 'pioneer patent', establishing it as the first video game in a legal sense.

Bolstered by this decisive victory, Magnavox would go on to sue or broker with any major company who did not pay their licensing fees. This would include Nintendo, Sega, Mattel, Bally (again), Taito, Capcom, Konami, and Activision. The latter case was actually the most devastating, proving not only that the Odyssey patents applied to all software developers but saddling the company with a debt of 20 million dollars in legal fees. The company would be saved by the current CEO, Bobby Kotick.

In retrospect, the consequences of the initial ruling in Chicago were very negative. The interpretation of the Court made it so that games as divergent as Pong, Mattel's Major League Baseball, and Activision's Ice Hockey were all infringing despite how they were based on existing sports and all diverged in their methods. Almost no other cases in video games would be won on such a broad judgment.

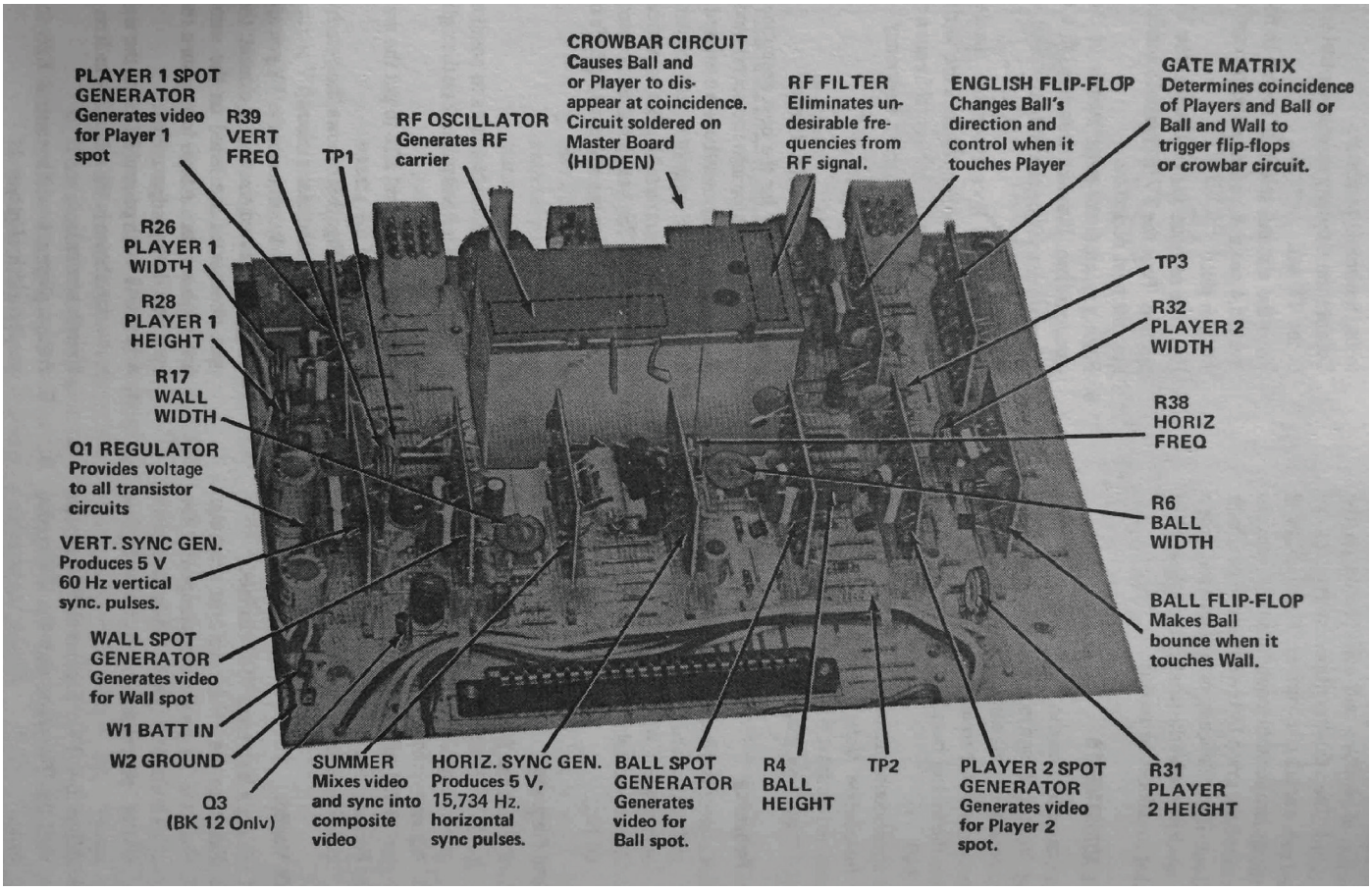
To put it in less complicated terms, let's look at something a bit more familiar. Contrary to the Internet rumor, the Nintendo Zapper does not work using a lightbulb when you pull the trigger. The Magnavox Rifle, however, will trigger because it's only looking for brightness. These are two different methods of achieving a similar effect, and yet Magnavox was able to claim their lightgun technology was stolen by Nintendo because of that broad application.

It's unknown, exactly, how much money Sander's and Magnavox gained through litigation, not counting the standard licensing fees they also elicited. Atari had to pay $1.5 million – though that was a special case – and Konami paid $495,000 for games released within a two year span. They continued suing NES developers like Data East and Tecmo well after the expiration of their patents in 1989, even giving a kick in the teeth to a failing Acclaim in the 2000s, but the relevance of the patents and decisions on technologies by other judges made it so the 1977 court decision was largely limited to the video game field.

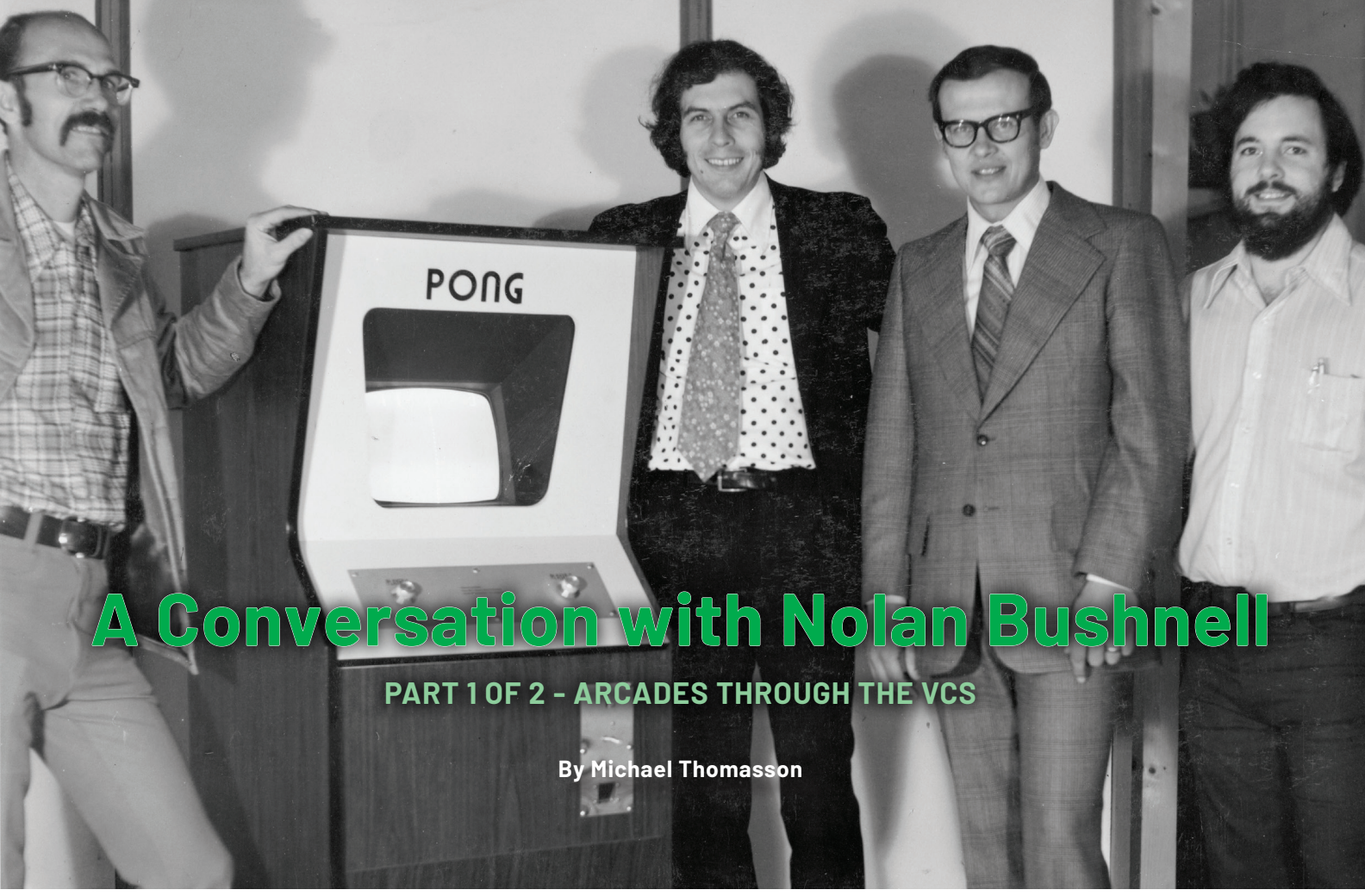
In these ways, Magnavox had a definite impact even if they never attempted to remain a player beyond the crash and the Odyssey's technology had hardly any direct influence on the development of the industry. Patents would largely go by the wayside in terms of video game litigation, and copyright over ideas – like the Blizzard v. Valve over Dota – became the way video game companies would battle it out in court. Perhaps in one important way, Magnavox did presage the attitude of companies in the new American corporate age: Namely, that they were going to sue sue sue.

Above: Attendees at Midwest Gaming Classic playing on Odyssey
Below: Technical Inside View of the Odyssey

A special thanks to Alex Smith and Keith Smith for helping with interpretation of these legal records. Thanks to the Chicago National Archives staff for hosting me during my research.



Ethan Johnson – Ethan hold a BA in Game Design from Columbia College Chicago, class of 2017. His primary interests in research and writing are of the formative period of video games in the 1970s covering mainframes, arcades, and home consoles. He has spent a great amount of effort in tracking down obscure sources in libraries as well as importing Japanese books to translate. More and more my interest has expanded into an international focus with connections in many Japan and European regions. Currently he writes research guides for the VIdeo Game History Foundation and has collaborated on the Sega Arcade Revolutiohn and the CRPG Book Project and runs "The History of How We Play" game research blog.



A Conversation with Nolan Bushnell

PART 1 OF 2 - ARCADES THROUGH THE VCS

By Michael Thomasson

Sometimes that amazing crossing of paths happens and you just get so excited that you have to jump on it. That opportunity came for our publisher, Ryan Burger at CES this past year when he ran into Tyler Bushnell who is working to make his place in the gaming industry just like his Dad, Nolan Bushnell did 40+ years ago (Check out PolyCade.Com for more information on what Tyler is doing). What follows is the first part of a 2 part interview done by Old School Gamer with Nolan Bushnell with thanks to Tyler Bushnell.

OSG: *Our readers would like to hear some early stories from Syzygy to Atari. Perhaps a nugget or two that hasn't been rehashed again and again in the history books. Your time in school, working at the Lagoon Amusement Park, that kind of stuff. What was your inspiration?*

NOLAN: I feel like I was probably the only guy who was both an engineer and a carnie. My amusement park experience was in early college from 1963 to 1968. I went from actually working on the midway to being a department manager for three years.

I've always considered my management time as my MBA. It was "hard knocks", because I was managing 150 kids: hiring, training, firing. I managed merchandise percentages, labor costs, the whole thing. I was essentially running a $3.5 million business, or $12 million run rate, because it was $3.5 million over a summer, a four-month summer! Inside, I had a couple of kids who reported to me. They gave me the understanding of the economics behind the coin operated games business. That knowledge was really instrumental in being able to create the first coin-op video game, because I knew the math. I knew what it had to become.

OSG: *You understood what the operators were pushing. At that time, they were mostly dealing with pinball and jukeboxes. Money wise, giving half of the proceeds to the venue, keeping half of it - the whole shuffle.*

NOLAN: The whole nine yards.

OSG: *Okay. So how did that transition from seeing Steve Russel's Spacewar and inquiring, "Hey, this could be something more than just what geeky engineers do"? If I could simplify it...?"*

NOLAN: Only if I could drop the cost. When I was playing Spacewar it was on a $500,000 computer! Clearly the math on that didn't work. I knew there had to be a different way. Following graduation, I worked at Ampex and honed my digital skills - my understanding of how to create digital circuitry, digital timers, and others. All of a sudden it all fell together, giving me the skillset that I needed to build Atari's first game, Computer Space.

OSG: *And that's where you started to bring other people into the mix such as Ted Dabney?*

NOLAN: Correct. Ted Dabney was my office mate at Ampex. He ran the display area within Ampex. I was on the digital recording side, where the structure was created. For example, I created the digital signal generator and Ted interfaced it with the monitor. That was how we patched the job.

OSG: *Okay. So, Computer Space eventually makes it to market. It's not a runaway success, but kicks-off the coin-op industry.*

NOLAN: Right. It's funny. I think that Computer Space was considered a commercial failure by many, but for me it was a runaway success. I mean, I was happy, I did about $2.5 million in sales.

OSG: *That's not half bad. Especially in 1970s dollars.*

NOLAN: Exactly. It's not as big as what came next, but it still was big. It also produced investment royalties that helped fund the startup that led to Atari.

OSG: *That is because Computer Space was released through another company. You and Dabney were just the development house, correct?*

Computer Space - Image Courtesy of Arcade-Museum.Com

NOLAN: Correct. We licensed Computer Space to Nutting Associates, but we got a royalty. Remember, this was really during the infancy of venture capital, so I hadn't even heard of venture capital. The only way to build a company at the time was by internally generated cash flow. Ted and I each put in $250. That's all the startup capital we had. Everything else we had to earn, so managing cash flow was just as important as the technology. It was the hard part.

OSG: *You saw Ralph Baer's handiwork, but already had similar ideas stirring in your head at that point. Give me a little bit more information in that neighborhood.*

NOLAN: Well. We'd been in the video game business for about two years and all of the sudden we heard, "Gee, you've got some competition with a big company, Magnavox." So, I had to go up and see what was going on. I looked at it and I thought, "Boy, this is really a piece of crap."

OSG: *Well, despite being primitive, the Odyssey had evolved from an idea on paper to reality over a period of six years. It was a major accomplishment.*

NOLAN: So, I looked around the room and people were kind of having fun with it. By happenstance, that was the day that Allan Alcorn showed up for his first day at work. I had talked him into coming aboard a couple weeks before, but it was actually his first day. I drove back down and he asks, "Okay. What do you want me to do?"

I described a ping-pong game and I thought, "This is a real simple game, this will be a good learning project," thinking it was just going to be a throwaway. A couple weeks later he got the first part of it going and it was kind of fun. We made little tweaks on it and it got to the point where we were staying late after work playing the damn thing.

We didn't have a factory yet, so I was still thinking that we were simply a studio. We were just going to do design work and continue to make our money through royalties. I had landed a contract from Bally to develop their next coin-op game.

Prototype of Pong - Image Courtesy of Arcade-Museum.Com

It was to be a driving game, and of course a driving game was a lot more complex and more difficult to design.

I thought, "Hey, maybe the ping-pong game is fun enough. Maybe they'll take this game instead." So, I got on an airplane and returned to Chicago with a prototype under my arm. We'd done a second prototype at the time and Al and Ted put it in a bar while I was back there. That's when the famous story of the cash box spilling over happened.

OSG: *So, after meeting with Bally, you weren't contractually obligated to give them the ping-pong game anymore and were able to pursue the project on your own.*

NOLAN: Yeah. I figured out that we had just enough cash to build twelve of them. We sold all twelve and then we built another thirty-six. Those turned around and funded another hundred. The building materials were about $300, and we were selling them for $900. We had a nice margin. That's how we bootstrapped ourselves up.

OSG: *How long did it take for the purchaser of the coin-op to recoup their initial $900 investment?*

NOLAN: About two months. That was the magic of it. It was earning so much money - about $200 to $300 a week. It didn't rocket science to recognize that it was a pretty damn good investment.

OSG: *Atari's games were a lot like traditional Chess: simple to play, but tough to master. The classic games still stand the test of time. Following Pong and a series of driving games, what did you envision for Atari?*

NOLAN: Like the old saying, "only the paranoid survive." We were competing with companies that had big factories and a lot of money that we didn't have. We were operating an assembly line within an old roller-skating rink at the time just to get the square footage cheap. We didn't know how to control inventory. I mean, we were making it up as we went along. Everybody else had been in business long enough that they had all those systems and procedures in place. But we had one skill that they didn't have - we could design and invent stuff. So, innovation was our only way to maintain our growth. As a result, we just started designing games as quickly as we could to fill the demand while building diversity.

That turned out to be the right strategy because with each game we learned a little bit more; our factories got a little more efficient, our systems got a little more polished, and we made a little more money. Pretty soon we became just as efficient as the other guys. We ended up making as much money as the competition, and we were cleaning their clock just because of innovation.

OSG: *Following Pong's release, how long did it take for the copycats to hit the market? I know that the Texas Instruments "Pong-in-a-chip" solution certainly made it easier for less reputable operators.*

NOLAN: Concerning Pong in the coin-op market, we were about six months ahead. There were at least twenty different knock-offs for the home market.

OSG: *I know, I have more than my fair share of the home versions. The knock-offs came very quickly. Obviously, popular companies like Coleco got in the game. Nintendo even had its fingers in helping with some stuff. It seems that any group within the electronics industry entered the fray.*

NOLAN: In time, we were probably doing four to five different games each year, and with each game release we had fewer and fewer knock-offs. That was pretty encouraging, actually.

OSG: *The story of Sears releasing Pong for the home is pretty well known, but what led to the VCS and giving up the company?*

NOLAN: With the 2600, we were planning to actually take Atari public, but the stock market sort of did a lurch. The market wasn't good for a public offering at the time - we had to pull it. We knew we needed a lot more cash in order to build a different factory and to set up production facilities. We really had to fund a lot of inventory... all of which required cash that we didn't have.

OSG: *So that's why the call went out effectively for another company to acquire, or significantly invest in, Atari?*

NOLAN: We initially went out to get another company to make a strategic investment. We didn't think of selling the whole company. But then Warner Communications came along and said, "Rather than an investment we'll put all the money in that's necessary and give you guys a great big birthday present. Plus, you can cash out a little bit." That actually sounded appealing. The cash flow stress was a roller coaster and really wearing on me... and it could have continued for several years. I was mentally and physically exhausted and needed the vacation.

This interview continues in the next issue of Old School Gamer Magazine with the the Chuck-E-Cheese Story. Thank you to Mr. Bushnell for the time he spent with us on this article. Stay tuned for How Nolan Bushnell revolutionized the way people eat pizza and have fun doing it!

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.

Space Wars

By Kevin Butler

Space Wars was the first vector-driven arcade game. Its success would enable Atari to create their own vector generator creating games such as Asteroids and Battlezone. Space Wars also enabled a fledgling company called Cinematronics (established in 1975) to finally be a part of the major arcade craze that hit, although Space Invaders wouldn't come around for another year. Space Wars has its roots 15 years prior in a computer game called Spacewar!. Steve Russell was asked to demonstrate the capabilities of the PDP-1 in 1962 at MIT. He decided that since the space-race was on, a spaceship simulator/trainer would be the logical next step. With the help of others, they got a working version of said trainer done in 1962. Improvements followed and the finished product was distributed to other college campuses. In the late 1960's, Larry Rosenthal, a student at MIT, saw this game and decided that he could create a system that would specifically run this game and even offer the possibility of it being a commercial success. After being turned down by several of the big name arcade machine manufacturers, he happened upon Cinematronics, which desperately needed a good game to keep its doors open. Larry provided said game in the form of Spacewars. In the next few pages you will get to hear from both the creator of Spacewar! and the creator of Space Wars. If you want to see a simulation of the original game on a simulated PDP-1, and also the pre-compiled code (all public domain), head to this site: https://www.masswerk.at/spacewar/

STEVE RUSSELL

My first interview was with Steve Russell, the original creator of Spacewar! It was an honor to hear about the beginnings and what went into one of the first games.

OSG: *When did you first get interested in computers and electronics?*

STEVE Russell (SR): When I was in grade and middle school, I had a Lionel Train set. It was here I learned how to put electronics together and learned about circuits. I continued to expand upon this knowledge in high school. In 1949, at the age of 12, I was visiting an uncle in the Boston/Cambridge area. It was here that I saw a Harvard Mark I computer (an electro-mechanical system). It used a big ship's propeller shaft running the width of the room for timing and power. It used paper tape and cards for program input while it used a typewriter to print out results and tables. This was designed by Professor Aiken. After seeing this, I took a basic electricity course and got into ham radio. I also learned about circuits by disassembling and reassembling WWII radio receivers.

OSG: *After you graduated high school, what did you do to pursue you interest in electronics and computing?*

SR: From 1954-1958, I decided to get a degree in Mathematics from Dartmouth. During my junior year, I took a summer job working with John McCarthy at MIT in electrical engineering. I did work on an IBM 704 that was just installed and we were using the latest compiler which happened to be FORTRAN. I did "number crunching" and learned about using punched cards for programming. In my senior year, I started programming for an LGP-30 which was a small computer with a magnetic drum and a typewriter.

In the fall of 1958, I started working at the MIT Artificial Intelligence Project for professors Marvin Minsky and John McCarthy. Professor McCarthy figured out that something was needed that was close to FORTRAN, but suitable for manipulating symbols as found in mathematical expressions. He, therefore, created primitives to implement list processing on the IBM 704. This meta-notation was designed for humans to make it easier to code. Professor McCarthy wrote a simple expression for an expression evaluator in this new language, which he called LISP, and I translated this expression evaluator into 704 assembler language.

OSG: *With all this work at MIT, did you ever get your degree?*

SR: No, I never got my degree, but I had an excellent education for all the work I was doing at MIT and much of the future work I would do.

OSG: *How did you build on the work you already did?*

SR: I implemented LISP to do mathematical calculations

of 2nd year calculus among other things. After I got it mostly working, Jim Slagle (who was a grad student) started using the LISP language for symbolic mathematical integration. Jim found an unexpected bad feature. I rewrote the LISP interpreter with an improvement to the LISP language to fix this in the spring of 1959.

OSG: *So when did you first get involved with creating Spacewar!?*

SR: In 1961, I was continuing to work with LISP and other computer projects. DEC donated a PDP-1 to MIT. At the time, I was a member of the Tech Model Railroad Club. The PDP-1 was right down the hall from my office. At that time, Professor Minsky stated that the PDP-1 had two unique things over the IBM and LGP: A typewriter with an interface that responds to keystrokes and it also had a simple graphical display. In the fall of 1961, I suggested that someone should write a program to demonstrate the display and interactive capabilities of the PDP-1. Since the space race was in full swing at the time, I suggested doing a spaceship trainer. Everyone thought it was a good idea so I was "volunteered' to program it. My big problem was that I wasn't good at the numerical analysis (sine and cosine). Alan Kotok acquired the math routines and said "Now what's your excuse?". I was shamed into writing some code. The original game had two ships that fired torpedoes at each other. These torpedoes would blow up ships, torpedoes, or yourself. The controls were simple left, right, thrust (fire rocket engine), and fire a torpedo. I had a central sun and random stars.

OSG: *So this first version, did it work well?*

SR: It did, but it was definitely missing things. Many people helped to improve the game. Peter Sampson programmed the constellations based on real star positions. Dan Edwards, who also worked on the AI project, figured out how to speed up the display with a "just in time" compiler. One of the issues was the fact that the gravity from the central star had no effect on the torpedoes because there wasn't enough time to compute it and keep the game running at a reasonable speed.

The program worked as a two-person game. The goal to create something for training and fun was achieved. Hyperspace was added later and the final version was finished in spring of 1962. Software, in general, could not be copyrighted or patented at the time.

OSG: *After you finished this project, what did you do next?*

SR: During the fall of 1962, I went to Stanford with Professor McCarthy to do a variety of computer projects. Stanford had just introduced Computer Science as a new degree. In addition to maintaining LISP, we started work on making a PDP-1 into a multi-user computer. This PDP-1 had a custom display, drum, and modified hardware to run a 12 station system. Initially, the system was almost fast enough for characters to be displayed but they were unreadable initially. This setup was used for computer science and instruction. I and several others created a primitive flight simulator on this PDP-1 system. It only included landing lights and street lights. The system was reasonably accurate, but it was very poor in details and boring to play.

From 1969 to 1970, I also worked on the PDP-10 for the Computer Center Corporation in Seattle, Washington. This start-up sold computer time via dial-up terminals. Among other things, I did customer support and training. The system, though, was not reliable and crashed a lot. We also tried to keep ahead at the Lakeside School in Seattle with a teletype attached to the computer. Students, such as Bill Gates and Paul Allen would come to the company after hours to test and crash the system.

OSG: *It sounds like you did quite a bit after doing Spacewar! Did you continue your work with timesharing on computers?*

SR: No, from 1970-79 I worked for DEC and did work for Chase Manhattan Bank. I also helped with a couple of game startups and even worked with some experimental physics. In the 80's, I

Space Wars- Image Courtesy of Arcade-Museum.Com

even assisted Digital Pictures in creating Night Trap. Since then, I've been retired and I assist monthly at the Computer History Museum by showing everybody Spacewar! on the working PDP-1 that they have there.

OSG: *It sounds like you have done quite a bit to advance computer science to where it is right now. I did forget to ask, what did you think of Larry Rosenthal's version of Spacewar!?*

SR: I didn't have a chance to play it until long after it came out. I haven't spent much time with it but some of the options make a game that is fun to play. Like most of the later generations of Spacewar! designs, it has many more options, some of which are too fast paced for my taste and abilities. I admire several things about it including:

It does more with less electronics and expense than other versions I have seen. This is no big surprise since the hardware was designed later and electronics had gotten faster and less expensive.

+ The vector display is clever and works well.

+ The whole design turned out to support other popular games, in addition to Asteroids, which is very Spacewar!-like.

+ The prototype fits in a carry-on suitcase.

OSG: *I want to thank you for your time and answering my questions.*

LARRY ROSENTHAL

My second interview was with Larry Rosenthal, which was also an honor. He is the creator of Space Wars. He took Steve Russell's idea and created a dedicated computer that could actually play the game and it was small enough to put into an arcade box. Here is his very interesting story on how he pulled this off.

OSG: *When did you first get involved with computers and electronics?*

LARRY Rosenthal (LR): At the age of 4, I was plugging lamps into extension cords. Around the same time, my father bought me a No. 6 dry cell, a knife switch, a 3 volt light bulb and a door buzzer. I remember building a circuit on a wooden board using the parts my father bought me and taking it into my kindergarten class for show and tell. My teacher was afraid someone was going to get electrocuted. When I was 11 years old, I received my first ham radio license. I earned several more advanced radio licenses, but eventually let them expire. Forty-five years later, I wandered into a ham radio booth at a local Maker Faire and walked out with my license reinstated.

OSG: *When did you work on your first computer?*

LR: My first computer programming experience was in 1967 when I was a junior in high school. Myself, a dozen other students, and a school advisor were allowed to use the IBM 360/30 at Sandoz Pharmaceutical one evening a week. That's where I learned to program in FORTRAN on a mainframe computer with 32K of RAM and about 1/1000 the computing power of the phone in your pocket today.

OSG: *What did you do after you graduated high school?*

LR: I went to MIT and majored in Electrical Engineering. While visiting MIT as a high school senior, a friend, who was showing me around took me to one of the computer labs to show me several of his favorite games running on a DEC PDP-1. The one game I remember playing was Space War. Steve Russell, who was not a student at MIT, was the main programmer of Space War. I had always wanted to meet Steve, and several years ago at California Extreme, I finally met him. Steve told my wife that I was a lot smarter than he was because I figured out how to make money off the game. After graduating in 1972, I moved to the other coast to go to the University of California at Berkeley where I earned my MSEE in 1973. It was at Berkeley where I took a class where we built a computer around the Intel 8008 microprocessor. When I set out to build my Space War game, the skills that I learned in that microprocessor class came in very handy.

OSG: *How did you get involved with Space War after you graduated? You saw it on the PDP-1 at MIT, but what convinced you it could go commercial?*

LR: While on winter break at Berkeley I went back to MIT to visit friends. In the student center at MIT, I saw a Computer Space arcade machine. Computer Space was a very crude space battle game. My immediate reaction was, "what is a crude thing like this doing here where the original Space War game was developed". After getting my MSEE from UC Berkeley, I decided that I had had enough school and decided that I was going to build a "real" Space War game for home use.

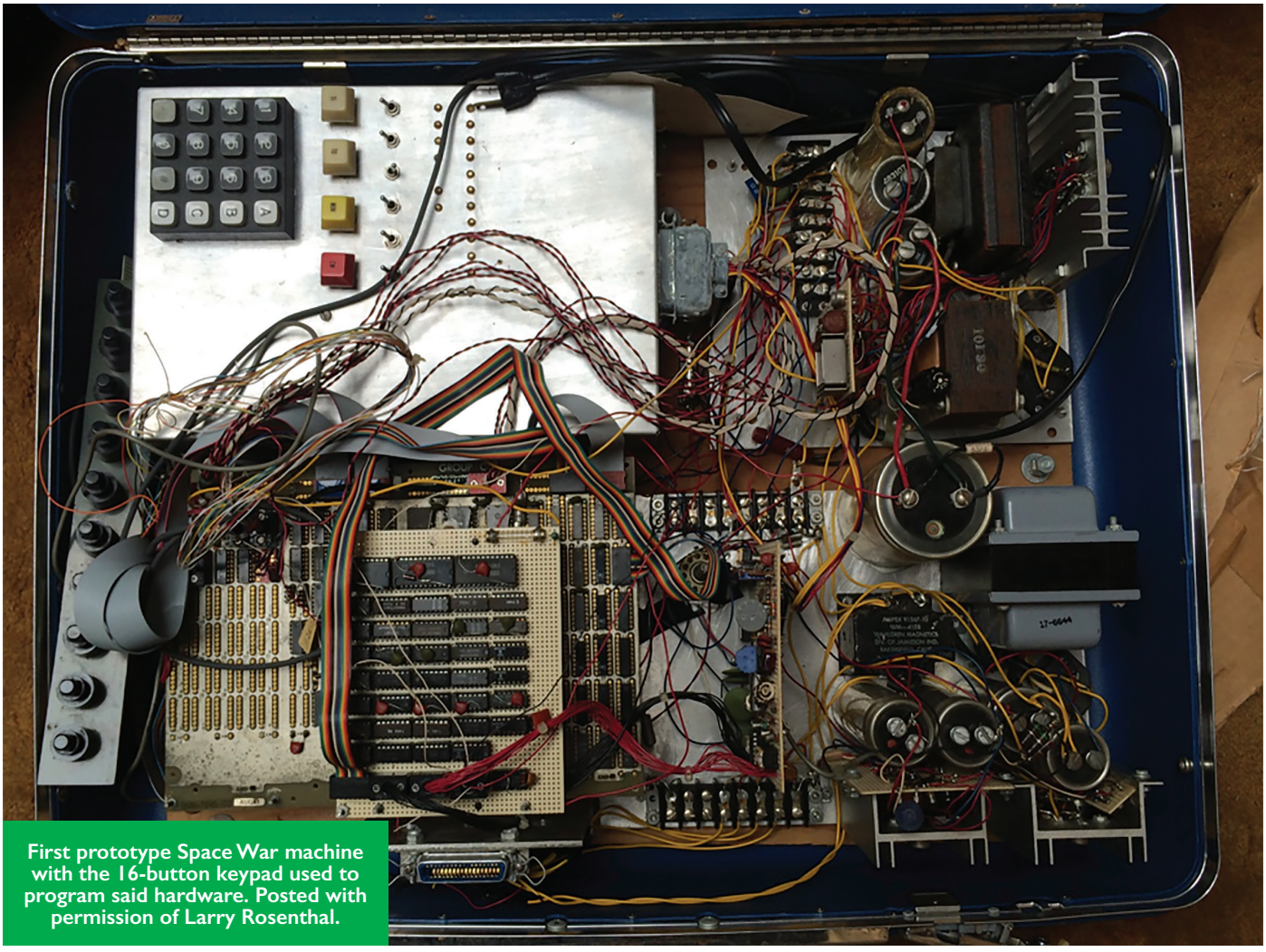
OSG: *So how did you go about creating your version?*

LR: I remember telling my parents what I was going to do and they immediately said that I needed to get a real job. Luckily I didn't listen to them. Within days of beginning work on the home version of Space War, I realized that the technology didn't exist to make it happen. I then decided to make an arcade version using standard raster technology. Again, after about a week I realized I could not get the resolution I needed to display the ships using standard television monitors. It was at that point that I began working on the vector display system that eventually made it into the arcades, and was ultimately copied by other game manufacturers.

To build the vector display system, I basically gutted a standard television set and drove the deflection coils directly. By varying the intensity of the electron beam and controlling the current through the horizontal and vertical deflection coils, I was able to draw vectors (lines) on the CRT display of arbitrary lengths in arbitrary directions. I looked at a number of different vector drawing systems. They were either too expensive to implement or too slow. Ultimately, I combined ideas from several different systems and developed a system that could be built inexpensively and had the speed that I needed.

OSG: *Since you figured out the vectors portion, that means you needed some method to control those vectors.*

LR: Yes, needed a computer to drive the vector generator. Actually, I built the computer before developing the vector



First prototype Space War machine with the 16-button keypad used to program said hardware. Posted with permission of Larry Rosenthal.

generator. I need the computer to test out the various vector generating systems. The fastest processor available at the time was the Intel 8080 which was way too slow to control a "full blown" version of Space War. I built a computer from scratch using approximately 125 SSI (small scale integration) and MSI (medium scale integration) TTL (transistor transistor logic) chips. To program the computer, I built a control panel with a 16-button keyboard that allowed me to enter in hexadecimal characters (0 – 9 and A – F). The control panel had switches and a hexadecimal displays that allowed me to do such things as examine memory, single step, insert break-points, and read and write the program to and from magnetic tape. I modified a Sony cassette player to handle the digital information. During development, I burnt a number of lines into the CRT. If the vector stopped moving or moved too slowly, the electron beam would literally burn the phosphors off the inside of the CRT. After a little more than two years of development, I had a working game and I packed the electronics into a suitcase to carry around to various game distributors. They were not impressed. I then built a second generation prototype and put it into a game arcade in Berkeley in December, 1976. The program had to be loaded from tape and a motorcycle battery was added to provide backup power in case the machine was unplugged. Immediately after getting the machine running in the arcade, I hopped a plane to Boston to visit my girlfriend. When I returned a week later, the coin box had over $400 in it. I then knew that I had a hit.

NOTE: *To understand machine code and assembly, one must understand the concept behind these two types of languages. Mr. Rosenthal created his own computer to run Space Wars. In order to communicate with said computer, it has to have an instruction set that can tell the computer what to do. Each type of CPU has its own instruction sets. For instance, the 6502 (used to run most early Atari games and Apple computers) has a 56 instruction set. The Z80 (Zilog used to run many other arcade games has a 158 instruction set) while the Motorloa 68000 (used to run the original Macs and Atari ST line of computers) has a 56 instruction set. Mr. Rosenthal's system had about 40 instructions to control both the computer and the vector generator. In order to code these instructions, he used the 16-button keypad attached to his prototype. He programmed directly in machine language, which is the language a computer can use directly to execute code. For instance, the following code (using the 6502 instruction set which I am familiar with, starting at location $1000) has no real meaning unless you know the instruction hex codes and how many bytes they may require:*

1000- A9 02 69 05 8D A0 0F 60.

Disassembled it will read like this (WITH the mnemonics of the instructions):

```
1000- A9 02        LDA #$02
1002- 69 05        ADC #$05
1004- 8D A0 0F     STA $0FA0
1007- 60           RTS
```

This code basically adds two numbers together and puts the result into a memory location. As you can see, it can be a real chore to code like this but it also creates the fastest executing code. Now imagine creating about 4000 or so lines of code in machine language.)

OSG: *What other things did you add to the game?*

LR: My computer was fast, but to keep the cost down, it had its limitations. For example, it did not have a multiply or divide instruction. Multiplication and division routines would have to be implemented in software and be relatively slow. I added gravity by utilizing tables of logs and exponents that I loaded into memory and used Newton's Law of Gravity to implement the gravitational sun in the game. Since multiplication is simply adding logs and division is subtracting logs and then exponentiating the result, I was able to perform the multiplication and division needed to compute the gravity quickly using log and exponent table lookups. If you can remember what a slide rule is, it performs multiplication and division by adding and subtracting logs.

OSG: *Who did you demonstrate this prototype to and what was their level of interest?*

LR: In the first half of 1977, I was in talks with Midway about the system. We talked back and forth from about February to June but unfortunately they weren't willing to pay me an acceptable royalty. In September of 1977, I approached Cinematronics and they were very interested. It seems that they were in need of a unique video game to keep the company alive. I happened to be in the right place at the right time.

OSG: *Since your system was basically discrete logic chips and electronic components, how did you work with Cinematronics to get this game into production?*

LR: After Cinematronics saw the demo for the game, they were really interested in it. They immediately negotiated a licensing deal with me so that they could get into production as quickly as possible with Space Wars. Going from a prototype system to a production product took about six months and a lot of long days. Being young and not knowing any better, I ultimately started my own company, Vectorbeam.

OSG: *Now, you have already licensed Space Wars to Cinematronics, what was the purpose of starting up Vectorbeam?*

LR: I wanted to have my own company. After coming up with some mediocre games, I found myself heavily in debt, and in 1979, I began searching for someone to buy Vectorbeam. I talked to Steve Jobs about acquiring my technology, but it never got past an initial phone conversation. Steve kept asking me, "how cheap can it be built, how cheap can it be built?" In the end, Cinematronics offered to buy Vectorbeam and take over the debt as long as I included the vector generating patents in the deal.

OSG: *After you got out of the arcade business, what did you do next?*

LR: I developed a new game system controlled by the Motorola 68000 microprocessor. I used a C language compiler running on IBM PC's to develop the games for the new system. PC's at that time were relatively slow and in 1982, I purchased a VAX 750 mini-computer running Berkeley UNIX to speed up development. From 1986 - 1994, I worked on writing my own C compiler that would produce faster more efficient code than other commercially available compilers. I figured that if I built a compiler with the features and performance that I wanted, I would have a product that people would want to buy.

OSG: *It looks like you stuck with computers after you sold your first arcade game and its technology?*

LR: I still found my first passion was developing electronic products that I thought I could sell. After the C compiler venture I developed a simple device for finding your misplaced keys. I discovered that no consumer product is simple. I had a prototype key finder working in less than a week. However, things such as the design for the plastic case for the key finder cost $75,000 and the tooling took almost a year. The company can be found at keyringer.com and I have been working with it for almost the past 20 years improving on it and keeping it going. The key finder business is not making me rich, but it's making too much for me to walk away from it.

Mr. Rosenthal and I also spent some time discussing other aspects of both electronics and computers, as well his keyringer business.

I would like to thank both Steve Russell and Larry Rosenthal for taking the time to share their incredible story and experience with us. We also truly appreciate them sharing their schematics, drawings and photos with our readers so they can get a true sense of the complexity of what they were doing with the limited technology available at the time. It's truly awe inspiring. It has been a pleasure and an honor.

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 with regards to gameplay and history. He currently lives in Neosho, MO with his wife and son, who is also a video game hobbyist.

Colossal Cave Adventure 1976

By Ken Horowitz

As gamers, we fondly remember certain titles that defined specific periods in our lives. Some of us grew up with one console or computer that became synonymous with our childhood or adolescence. That kind of impact is remarkable and likely beyond the scope of what the developers of those games ever had in mind. It's a testament to what an integral part of our popular culture gaming has become.

There are specific games, however, that go beyond a personal transformation. Some affect the industry as a whole, forever changing the way games are made and forging a path that becomes a well-trodden highway. They introduce elements that other games adopt and expand, and their impact is still felt decades after their debut.

Colossal Cave Adventure (CCA) is perhaps one of the most recognizable video games fitting this description. Will Crowther's 1976 original was based on a combination of his hobby of cave exploration in Kentucky and his enjoyment of Dungeons & Dragons. Crowther came up with a text-driven fantasy adventure that captured the attention of Stanford's entire Artificial Intelligence Laboratory. A graduate student there named Don Woods greatly expanded on Crowther's game the following year, resulting in a groundbreaking text adventure that enamored players and created an entire new genre of gaming. Upon its debut, the simple text adventure bogged down the Stanford AI Lab time-sharing system so badly that Woods had his vacation interrupted by a call from a very annoyed lab administrator. It had become a phenomenon, appealing to people beyond Stanford's campus. In an interview for this article, Woods explained the game's attraction: "I think Adventure showed people that computers were not limited to abstract simulations (e.g. Hunt the Wumpus) and simple rote procedures like managing the cards in Solitaire."

Adventure titles to this day owe CCA a massive debt. Indeed, CCA would continue to inspire developers and bedazzle gamers for years to come. Many later adventure classics have their origins in the first piece of interactive fiction and have gone on to become influential titles themselves. For instance, Scott Adams' Adventureland, which was released in 1978, was heavily influenced by Crowther and Woods' work. At the time, he was a programmer at Stromberg Carlson and involved with their first Digital Central Office. A colleague had installed CCA on the Digital Equipment Corporation (DEC) mainframe he was using, and Adams soon found himself playing the game before work in the morning and after quitting time. The experience prompted him to create his own adventure title, using all his creativity to squeeze his concept into the 16K memory of his TRS-80 microcomputer. Adventureland was born, and it led to an entire series of more than a dozen games. "I have literally gotten thousands of emails over the years from folks who said my adventure games were extremely influential in their lives, "he said in an interview with the author. "Many started careers in computers because of my classic games. A good number of them then went to start numerous companies that are extremely well known today. I am talking many major companies that have literally influenced millions. If it hadn't been for CCA, I would never have written those games which touched all of those people. I fully believe that CCA is truly the cornerstone of the entire computer gaming industry as we know it."

Perhaps the best-known computer game to take its cue from CCA was 1977's Zork. Created by Tim Anderson, Marc Blank, Bruce Daniels, and Dave Lebling; a quartet of MIT alumni who were part of the esteemed institution's Dynamic Modeling Group, the result of the ever-present programming urge to improve existing code. Lebling recalled their impression of CCA in a 2010 interview: "We all agreed Adventure was wonderful; When it hit the MIT Lab for Computer Science, no work was done for two weeks, but we thought it could be improved." The college crowd loved the game and wanted more, but there was nothing else like it, so in the spring of 1977 Anderson and his friends set about creating the next great adventure game. MIT had no qualms about their work, so long as it was after hours. The group used the time to expand upon the amount of text commands that could be implemented. "Necessity was the mother of invention," explained Blanc. "We wanted to put adjectives and preposi-

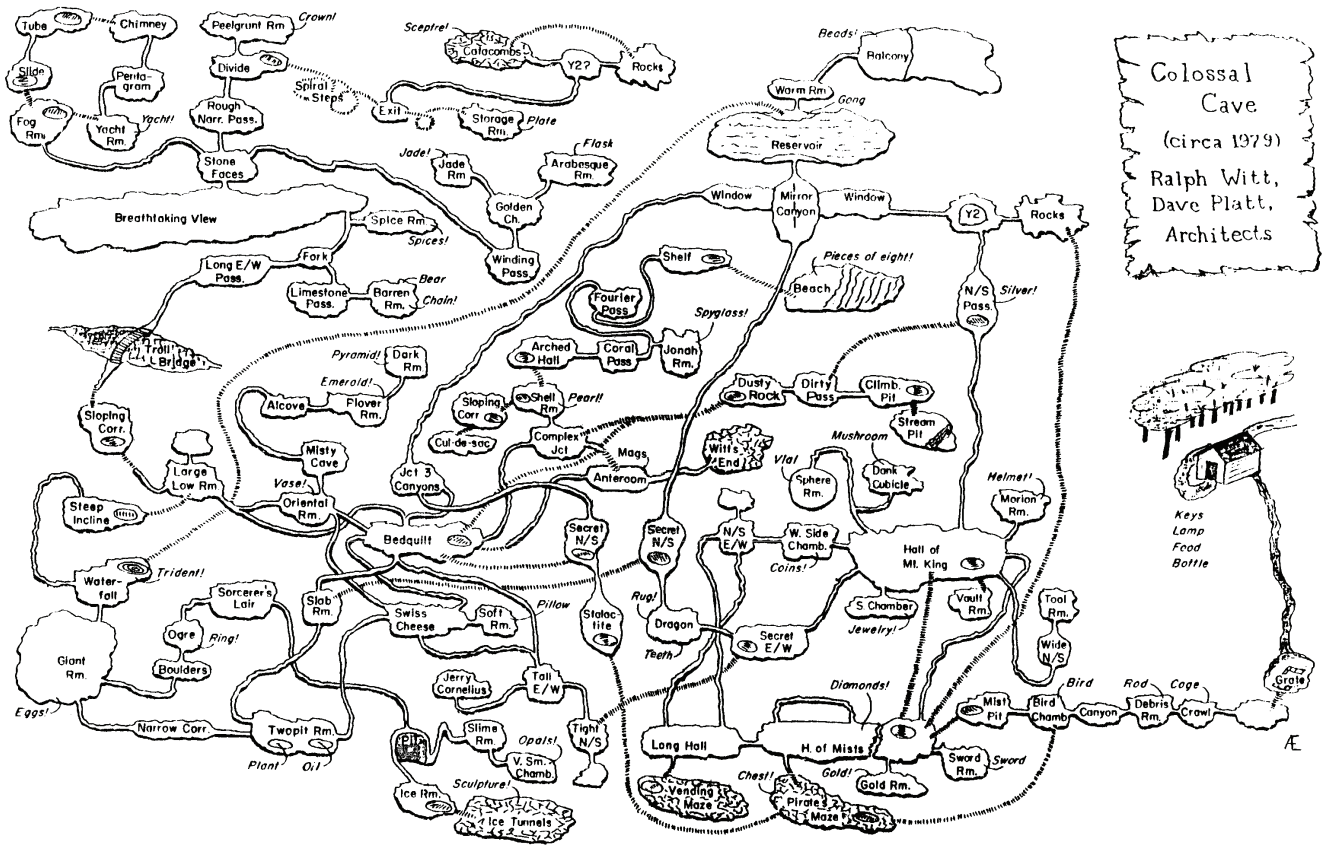
tions into the parser, which is the part of the game through which the player communicates with the game's environment." Zork blossomed into a franchise that sold a quarter million copies by 1984 and solidified interactive fiction as a computer gaming staple.

The shockwave CCA sent throughout the computer industry was felt in Sunnydale, California as well. There, 26-year-old Atari Designer Warren Robinett was finishing up his first game for the VCS console, Slot Racers. He was looking for his next project, and one day, his housemate Julius Smith invited him to the Stanford lab, where Smith worked as a graduate student. He wanted to show Robinett an amazing new game he was playing. Robinett was fascinated by CCA's design – the room layouts, the obstacles, and the ability to collect items and use them. He soaked it all in and looked for a way to bring the wonderful experience he had playing it to the VCS. Robinett's supervisor told him that it would be impossible, but he labored in secret and made it happen. The game was released in 1979 and sold over a million copies, "a combination of passion and stubbornness," according to Robinett.

The fact that so many video game pioneers were able to enjoy Crowther and Wood's classic is both fortuitous and unfortunate. Without their exposure to the game on the mainframes where it was widely distributed, it's possible that none of the legendary titles they created would have ever seen the light of day. The pure technical environment in which they played and enjoyed CCA gave them an untainted view of a colleague's work and pushed them to build and expand its design. The downside was that since the game was distributed freely, those later ideas were created without any legal responsibility to Crowther and Woods. Thus, the pioneering work of these two men came without the financial bounty it would command today.

Woods, for his part, recognizes the standards CCA set for adventure games, such as inventory limits: "Well, my friends always blame me when any game - computer or otherwise - sets a limit on how much stuff they can carry. I actually point the finger at Crowther for that particular limit, by the way." Levity aside, Woods appreciates the love the game has received over the years, and he is quite aware of how influential it has been. "I think a lot of computer games," he admits, "both today and in between, involve simulating some sort of 'world' and letting players imagine they are traveling in and interacting with that world, and that whole mindset is something I think traces back to Colossal Cave Adventure."

Overall, not a bad way to be remembered. Most legendary games are remembered fondly. Few actually spawn an entire genre and influence several future classics.



Ken Horowitz - Dr. Kenneth Horowitz is an English professor who has taught research and writing for 20 years. He is the author of "Playing at the Next Level: A History of American Sega Games" and "The Sega Arcade Revolution: A History in 62 games," both by McFarland & Co, His work has also been featured in numerous video game publications like GamesTM and Hardcore Gamer Magazine. Ken has also published academic articles in professional publications such as Language Magazine and the Hispanic Educational Technology Services Journal.

Exploring The Classic Text Adventures of Scott Adams

By Bill Lange

Until the late 1970s, electronic gaming consisted of playing one of the hundreds of ping-pong console variants on your home television, an LED-based electronic handheld game, or possibly playing a text-based computer game ... if you were lucky enough to have had access to a mainframe and/or minicomputer at work or school.

The nascent microcomputer industry began to slowly take off in the late 1970s with the availability of the first appliance computers for the mass market, notably with the release of the "1977 Trinty", which included the Commodore PET, the Apple II, and the Tandy/Radio Shack TRS-80. Prior to the release of these "take them out of the box and plug them in" appliance computers, most microcomputers were sold in kit form and had to be hand assembled, which usually required an electronics background and mad soldering skills.

Even with the release of these early appliance computers, quality commercially-released software was still hard to come by. Many new computing hobbyists learned to program by typing in text-based game programs from BASIC source code listings printed in various computer magazines and books. Mike Mayfield's 1971 Star Trek space conquest game and Gregory Yob's 1973 map exploration game Hunt the Wumpus, first published in the People's Computer Company newsletter, were two popular games that found their way from the mainframe and minicomputer world of businesses and universities to the memory-constrained microcomputer world.

At around the same time, Gary Gygax and Dave Arneson's genre-creating fantasy-based tabletop role-playing game Dungeons & Dragons (D&D) was growing in popularity and spreading, particularly across college campuses. Themes and elements from D&D, and its competitors, soon found their way into mainframe and minicomputer based computer games, usually with the computer acting as the Dungeon Master, or game referee, rolling the dice and crunching the numbers.

One such game, Colossal Cave Adventure, began life in 1975. Originally developed by Will Crowther as a cave exploration game, it was later significantly expanded by Don Woods with fantasy role-playing game elements. This game was huge, both in popularity and in size (for the time). The game consisted of 3000 lines of FORTRAN code and 1800 lines of data. It had 140 map locations, 293 vocabulary words, and 53 objects. While this game would go on to become one of the most influential titles in gaming history, it was simply too large to fit into the tiny RAM space and small mass storage devices (cassette tapes and floppy diskettes) of the day's microcomputers.

By 1979, the TRS-80 was the best selling line of the appliance microcomputers and had the largest available catalog of compatible software, including games, in the market. This was certainly helped by the then ubiquitous Radio Shack stores and

catalogs, and its legions of technology-astute fans.

One of the earliest TRS-80 computers sold ended up in the hands of Scott Adams, a systems programmer at Stromberg Carlson. Adams was introduced to a version of the massive 300K byte FORTAN-based Colossal Cave Adventure game running on Digital Equipment Corporation PDP-10 minicomputer at work. He was hooked. He wanted to create his own text adventures on his TRS-80. But how could he fit such a huge game in a 16K microcomputer? As a System Programmer, Adams had experience writing compilers and operating systems. He came up with the brilliant idea to create an "adventure compiler" and an "adventure interpreter". This solution allowed him to create many adventure games and compress the data to fit into the small memory footprint of the TRS-80.

After months of work, his first game, Adventureland, was released and the Scott Adams' Adventure Series was born. At first, the text-adventure games were written in TRS-80 BASIC, but Adams quickly switched over to assembly language for speed and playability. Ads begin to appear in hobbyist magazines such as BYTE and SoftSide. As orders came in, Adams would hand-copy the cassettes for customers. Later, The Software Exchange of Milford, New Hampshire, and Creative Computing Software began to publish the Scott Adams' Adventure Series games as well.

The games became so popular in the commercial entertainment software starved world of the late 1970s that the business quickly outgrew Adams' home. He then created his own development and publishing company, Adventure International (AI). It became one of the first companies to primarily develop, package, and sell commercial computer games for the microcomputer market.

Scott Adam's Graphic Adventure Series ad from Creative Computing Magazine

The original twelve text adventures in the series, released by AI between 1978 and 1981, included: Adventureland, Pirate Adventure, Mission Impossible (or Secret Mission), Voodoo Castle, The Count, Strange Odyssey, Mystery Fun House, Pyramid of Doom, Ghost Town, Savage Island - Part I, Savage Island - Part II, and Golden Voyage. These games were available for many of the various microcomputer platforms of the day, such as the Atari 8-bit, the Apple II, the TRS-80, the Commodore PET, the Commodore VIC-20, the Commodore 64, the TI-99/4A, the PC, the Spectrum, the Exidy Sorcerer, and the NEC home computer in Japan.

These text adventures consisted of some three dozen or so map locations, and used a two-word sentence parser, such as "GO EAST", "GET MATCHES", and "DROP TORCH". They were also among the first commercially available computer game programs written entirely in assembly language. Later, the original twelve text adventures were updated and enhanced with high resolution color graphics and the series was re-released by AI as the Scott Adams' Graphic Adventure series.

In the July 1980 issue of SoftSide magazine, Adams published two programs, Adventure Builder and Adventure Interpreter. Adventure Builder created a data cassette tape of the original TRS-80 BASIC language version of Adventureland. Adventure Interpreter would read the cassette tape and allow you to play the game for the cost of the magazine and a few hours of typing. It also allowed you to learn the secrets of how the BASIC version of Adventureland worked. Again, in the December 1980 issue of BYTE magazine, Adams published code to create and interpret the TRS-80 BASIC language version of Pirate Adventure.

In a 1981 catalog (Vol. 2, Issue 5), AI listed the Scott Adams' Adventure Writing System (SAAWS) as an "Available Soon" product. SAAWS was an enhanced version of the "adventure compiler" and "adventure interpreter" that was used for creating the Scott Adams' Adventure Series. It doesn't appear that this system was ever actually released commercially and it doesn't seem to appear in later AI catalogs. SAAWS currently seems to be lost to the annals of history ... just waiting to be found.

Adventureland may have been one of the first games with in-game advertising, as it included an in-game billboard advertisement for the next game in the series, Pirate Adventure.

In possibly another first of its kind, in 1981, AI created a "Collector's Edition" by packaging together the original twelve texted adventure in a Limited Gold Edition Scott Adams Adventure Series boxed set consisting of twelve cassette tapes or three diskettes, a numbered certificate of authenticity, and an autographed photo. The boxed set cost $100.00 (in 1981 dollars) and was available for the Apple II, the TRS-80 and the Atari 8-bit computers.

In addition to the tough and varied puzzles, the thing I remember most about the Scott Adams' Adventure Series, and AI's products in general, were the amazingly drawn artwork for their ads, catalogs, and print matter. While not part of the Scott Adams' Adventure Series, AI's Stone of Sisyphus with artwork by Raymond Bayless comes to mind.

Like many companies in the wild west of the video game console and home computer markets of the mid 1980s, AI went bankrupt and closed down. For the most part, Adams left the gaming industry behind, moving on to develop business software.

Recently, Adams returned to the gaming industry, creating a new company called Clopas which is creating, what he calls, Conversational AdventureTM games. In addition to a new adventure game, Escape The Glomer, based on Brian Jacques' Redwall series of children's fantasy novels, his company is developing Adventureland XL, a reinterpretation of his original Adventureland for the Amazon Alexa and other modern platforms. See www.clopas.net for more information.

If you are interested in trying out any of the Scott Adams' Adventure Series games, and you certainly should be, open your

favorite web browser and navigate to https://archive.org. You can search for any of the titles listed above (as well as many, many other programs) and try them out using simple, in-browser emulation. Don't forget some scrap paper, a pencil, and a good eraser for mapping out the game's locations and for taking copious notes.

If you are interested in learning more about text adventures and interactive fiction in general, I highly recommend Jason Scott's 2010 film, GET LAMP: The Text Adventure Documentary available on https://www.youtube.com, and Nick Montfort's 2003 book, Twisty Little Passages: An Approach to Interactive Fiction.

AN INTERVIEW WITH SCOTT ADAMS

OSG: *How did you first get started in creating and publishing computer games?*

SA I had an entrepreneurial spirit since I was young. One time I converted our family garage into a slot car rental playground, for example. I have always enjoyed games and had written a number of computer games on mainframes and also on kit computers. Once the first appliance computers (i.e. prebuilt and ready to use) hit the market, the rest just happened!

OSG: *In 1980, you published the BASIC source code for Adventureland in SoftSide magazine and the source code for Pirate Adventure in the December 1980 issue of BYTE magazine. What was the impetus behind publishing the BASIC source code for a product that you were still selling, albeit, in a much faster and cleaned up machine language version?*

SA BYTE magazine approached me to do the article. I had spoken on it at an industry event in New York, I think it was, and the games were starting to make some serious inroads in the marketplace. They suggested the format of the article and I was willing to do it.

OSG: *In a recent interview (available on https://www.youtube.com) with Kevin Savetz, Steve Meretzky mentioned that, due to the rampaid piracy at the time, Infocom often sold more hint books than they did of their actual interactive fiction games such as Zork. Did you see similar trends with Adventure International products?*

SA: Yes. I actually sold the original hint sheets for the game and then later a hint book when we had enough titles. As far as I know we were the first to do this. I did notice that the hint books were selling more copies than the games!

OSG: *Speaking of Infocom, did you see them as a prime competitor?*

SA: Yes along with Sierra Online that was run by Roberta and Ken Williams. Infocom went for larger scale games while we tended to concentrate more on the smaller footprint machines. Sierra was more about point and click style games. It was fun to see what everyone was creating then. Lots of new things constantly coming out

OSG: *Why did you leave the computer gaming field in the mid 1980s?*

SA: There was a major crash in the industry then. Lots of hardware producers let the field. We had made a mistake and licensed the Marvel games to Commodore computer and they really dropped the ball in regards to packaging and promoting. They ended up paying a very large sum to both us and Marvel for their screw ups. In any case we did not have deep pockets or investors and so weren't able to ride out the down turn.

OSG: *You recently made a donation of your early works to The Strong - National Museum of Play (https://www.museumofplay.org/) in Rochester, New York. Can you give us some highlights of the donated materials?*

SA: Many original packages from Adventure International, along with magazines. Also included in the collection was some of the very first original game packaging. It was a baby bottle bag, business card and a cassette tape. I also included the very first computer game I ever wrote. It was in high school and written on an IBM mainframe in APL/360. It was a game of tic tac toe you played against the computer. I taught myself to program and it consumed my interest. The high school had a remote terminal consisting of an IBM selectric typewriter with and APL ball head. There was an acoustic modem for dialing up the mainframe. None of the teachers had any clue on how to use it or how to program. I bought myself the APL/360 operators manual and just winged it.

OSG: *Any chance we will see a Limited 40th Anniversary Platinum Edition boxed set release of the original Scott Adams Adventure Series?*

SA: LOL! Now that is an interesting idea. Sadly though, all masters, etc. for the classic 8-bit games are long gone, along with my software tools I used in creating them.

OSG: *You've been very active in the gaming industry over the last few years. You created a new company, Clopas. You've been attending and speaking at development and gaming conventions. You've released a new game, Escape The Glomer. You've even written an introduction in a new textbook on game development, Introduction to Unity 3D with C# – The Exodus Adventure (2nd Edition) by Philip Conrod and Kris Murray. What else are you currently working on?*

SA: I and my team are currently working on a 40th anniversary salute to Adventureland, the game I wrote that started it all. It is called Adventureland XL and will be available for modern platforms. We are also doing some small fun projects for another company that I can't really discuss at this time.

OSG: *Scott, I can't thank you enough for taking time out of your busy schedule to answer a few questions for me. I really enjoyed your games in my youth and I'm looking forward to your future endeavours.*

Bill Lange - Bill is a software engineer. He designs and develops cloud based software solutions. He resides in NJ with his wife Lucy and their dog Yoda. In his spare time, he likes to tinker with game programming, 8-bit computers, and the classic arcade machines of his youth.

That 70's Show, or The Pinball Wizard Breaks Out!

FROM THE WRITER FORMERLY KNOWN AS THE JADED GAMER

By Bill Donohue

Early pic of the band, thats me on the left. The guy with the best hair, don't laugh... that was important back then.

Editor's note: In order to capture the entire zeitgeist of the decade in question, I had to attempt a simulation of my mindset at that time. As a result, I've had several "beverages," I've driven the neighborhood crazy by playing every hard rock '70's song I can remember through my 50-watt Marshall stack (to be honest, I could have plugged in the 100-watt Marshall stack, but I have developed something akin to mercy in my old age), I inserted the first four Foghat albums into my stereo on infinite repeat, and... I PLUGGED THE VIDEO PINBALL MACHINE IN TO THE 60-INCH TV!!! Why? Wait for it...

The 70's was a very special time for me: I'd survived the '60s with only one bad trip, I graduated college in '73, and by '75 I'd secured the mandatory blue collar, 9 to 5 job; all of which meant I was ready to become a Rock and Roll star just as soon as I could.

To that end, I found myself a band of like-minded fellows and we proceeded to make ourselves the best band Chico had ever seen. We called ourselves "SIGH" and we practiced seven days a week, four hours a day. As much as we all wanted it, it became evident very quickly that we needed something that would help get us through those rare times when the Muse wasn't working. That something was VIDEO PINBALL!

I'd been given an Atari Video Pinball machine for Christmas by my Dad back in 1977 (this is the same Dad who gave me the Vic-20 computer and several Scott Adams adventure games, but that's another weird story), and since I didn't watch TV back then, the Video Pinball game was always hooked up and ready to rumble... and rumble it did...

The console that I'd been given had three games residing in its silicon memory:

Pinball, Basketball, and Breakout. While Pinball always got the competitive juices flowing, it was Breakout that became the schwerpunkt of Rock God status. Basketball? Hey, Rock stars don't play basketball!

In Breakout, the object is to clear the screen of a 3 layers of multicolored bricks by hitting them with a Pinball. If you did it right, you focused on one side or the other, where a breakthrough would result in the ball bouncing between the top of the screen and the layer of bricks, racking up a huge number of points and ultimate Rock Star status. What am I talking about?

Lowest score in Breakout? The beer run was your job, and, by the way, so was the cost of the inspirational fluid. Highest Breakout score of the current song-writing period? You got to name the new song. This idea may have been a mistake. One of our biggest songs was titled "Shoe Lace." Personally, I blame the bong...

But wait... there's more...

If you had the highest Breakout score before a show, you got to ride shotgun in the band van. It doesn't seem like much, but there were no seats in the back of the van; just cold stamped metal and about 20 huge speaker boxes, drum cases, guitar cases, and the ubiquitous cases of beer. If you survived the Bumpy Back Road Boogaloo back there, a Nantucket Sleigh Ride held no fears for you.

You know, that Foghat was a damn good band...

Time takes its toll on all things without mercy, and SIGH and Breakout are no exceptions to that rule. We did become Chico's favorite band for a while, but we eventually broke up. Breakout kind of faded away after that, but something else magic happened, years later...

Cut to the 1990's. My band was called The Rockin' Chair! (and still is!) and we were all Super Bomberman 2 addicts. We started every rehearsal with a fiver or two and ended each rehearsal the same way. We wrote songs about the game; (He Ain't Got) No Boot and Hypmotized still kick ass to this day. And on top of that, Hudson Soft invited us to play their Super Bomberman 3 release party! And if you think you got what it takes, we will gladly hand you your ass anytime. Yeah, we're not just a good band, but we bomb with the best of 'em!

But I still have the most Breakout points... so I'm a Rock Star... Let's Boogie!!!

Bill Donohue - He ruled over The Cleansing and The Rinsing with an iron fist. Yes, he's back. He's the man formerly known as The Jaded Gamer... Bill Donohue!

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SPACE INVADERS

THE STORY OF HOW TOMOHIRO NISHIKADO REVIVED THE EARLY COIN-OP INDUSTRY AND INADVERTENTLY HELPED SAVE ATARI'S HOME VCS CONSOLE

MICHAEL THOMASSON'S JUST 4 QIX

By Michael Thomasson

In the late 70s, PONG clones were running amok and the market was so saturated that the coin-op industry was in a real slump. The release of Space Invaders shook things up, turned the industry around, and made video games a staple of entertainment from that point forward.

In Space Panic, a very vulnerable astTo fully understand the origins of Space Invaders, some of Tomohiro Nishikado's previous projects should be examined. His first mechanical game was Sky Fighter II, a carnival-like shooting game that used a model airplane, mirrors, and a bit of technical trickery to conjure the illusion of a plane hovering about atop a scrolling cloud backdrop. It was an impressive feat for 1971 that, at its heart, was a shooting game, as was Western Gun, another popular title he created in 1975. During the period in-between, Atari released Pong and kicked off the early video game era as video games slowly replaced traditional mechanical-driven fare. Pong influenced Nishikado to make his first video game, Soccer, and eventually Western Gun, which Midway altered and improved upon by introducing a microchip when they brought the game to America as Gun Fight. After seeing how integrated circuitry could leapfrog old-tech, in 1975 Nishikado re-created the Sky Fighter II combat flight simulator mechanical game as a video game using microchips, and renamed it Interceptor.

As a more seasoned video game designer, Nishikado started on his next project. The working title for the game was originally Space Monster, pulling "monster" from a chart-topping song at the time by Japanese female pop music duo Pink Lady. Since the cabinet artwork was designed during this period of development, it featured colossal human-like monsters that are absent from the actual game. Management stepped in and professed that "monster" was out, and that "invaders" were in!

Believe it or not, Space Invaders wasn't originally going to feature space aliens. One report alleges that it was based on one of Nishikado's nightmares involving space aliens that attacked young school children eagerly awaiting Santa's arrival one Christmas Eve. That rumor has never been verified (or denied) by Nishikado, but we do know that he enjoyed Atari's block-busting ball and paddle game Breakout, and pondered a scenario where the blocks evaded player gunfire instead of the ricocheting ball and fired back at the player. The blocks were to be replaced by more fighter planes, but the tech at the time was unable to depict believable aircraft movement. Wild west cowboys and military soldiers were next in line to march across the screen, until Taito's management expressed moral concerns and once again stepped in demanding that no human life could be executed on-screen.

Changes needed to be made, and with homo-sapiens out, Nishikado looked at the popularity of anime Space Battleship Yamato (StarBlazers) and George Lucas' live action film Star Wars and deemed the cosmos to be the setting for his new game. The initial invading space alien was inspired by the tentacled space aliens in H. G. Wells' novel War of the Worlds. The additional enemy characters were modeled after marine life which is so prevalent in Japanese island culture: the squid and crab. Prior games simply moved static graphic sprites about the video screen. Nishikado alternated the sprites to give movement to the enemies' appendages and as a result the game was the first to feature fully-animated characters.

Since Space Invaders is so deeply woven into pop-culture, there is no need to go in-depth concerning gameplay details. Most people breathing know that the objective is to pile up as many points as possible in order to defeat wave after wave of advancing aliens. Players must fire a horizontally moving cannon before the aliens descend upon the surface while dodging alien fire by hiding behind one of the three destructible defense bunkers. For a big bonus, don't forget to blast the occasional mystery ship that rockets across the upper stratum of the playfield.

Good game design is essential in designing a solid game. However, technical barriers and dumb luck can sometimes do the trick just as nicely. One of the more memorable elements of Space Invaders is the rhythmic thumping sound that is made as the alien invaders advance. As enemy ranks are diminished, the pace of the

alien's encroachment gains momentum and the game becomes more chaotic. Mimicking how a human heartbeat pounds harder when stressed, the thumping sound speeds up, making for a very dynamic experience. However, the gradual increase in speed as the invaders are destroyed was the result of a maxed-out central processing unit. As the enemy count is reduced, there is less work for the CPU to compute, and the game program runs more quickly. Fortunately, when Nishikado discovered the bug, he recognized its value and left it intact!

Designing arcade hardware during the infancy of the industry was quite challenging. Nishikado compiled what he learned from his previous projects and merged them with the latest tech to fabricate a microcomputer from scratch... a process which he found to be the most difficult of tasks. He originally wanted to release a full color game, but the numbers just didn't add up. The CP/M (Control Program/Monitor) was simply too slow for the task. However, the technology had improved when the game was published for home consoles a few years later and color graphics were introduced.

Space Invaders is often credited with being the first game that displayed "high scores," but in reality, it was Midway's 1976 title Sea Wolf that retained and displayed top scores first for competing players to aim to beat. It should be noted that Taito's Speed Race (also created by Tomohiro Nishikado) allowed extra driving time when a pre-determined high score was reached, and that game series pre-dated Sea Wolf by two years, being released in 1974.

Upping the high score became a worldwide phenomenon. Obsessed players learned to exploit the program, discovering that the UFO was triggered by how many shots the player fired. Players learned to exploit programming bugs, such as the "safe spot" directly below a bottom row invader. Nishikado recalls, "One day I saw a really good player putting up some high scores around 150k. When I looked closely at what he was doing, I saw that the very bottom row of invaders' shots seemed to pass right through his ship. It's because I programmed it so that their shots would come out just a little bit in front of the invaders." With the world mesmerized by the coin-op hit, it wasn't long before its reach expanded.

The first version of Space Invaders to invade a home video game system was for the Bally Professional Videocade, also known as the Bally Astrocade, in 1979. This unlicensed version was promptly renamed Astro Battle when Atari officially licensed the game to be released on the Atari VCS in 1980. Space Invaders was the first arcade title to be ported to a home console. While Bally's version was a solid entry, it paled in comparison to Atari's version, which included 112 variations of the game that added moving shields, zigzagging laser bombs, size and speed variations, as well as invisible enemies to hunt; greatly extending its value. Many people bought an Atari system predominately to play the game in their living rooms. The king of the arcade quickly became Atari's savior as the warehouses previously full of unsold Atari VCS consoles thinned out and units were rationed to department stores to meet the increased demand. Space Invaders became the first video game to sell over a million copies, garnering it recognition as the premiere "killer app." Ultimately, that number more than doubled and propelled Atari to the forefront of the home video game industry. Space Invaders has been ported to just about every platform to debut since, and will likely reappear indefinitely.

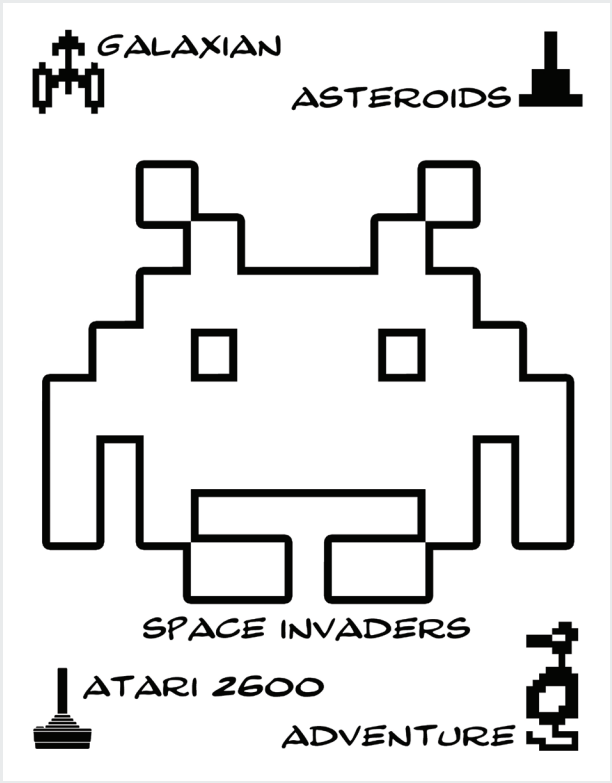
Space Invaders was labeled as the "highest-grossing entertainment product" during its hey-day, and few coin-op video games have rivaled its success. Over 360,000 coin-ops were sold the first year alone. Space Invaders surpassed one billion dollars in sales by July of 1981. During the initial four years in the arcades, Space Invaders grossed 3.8 billion dollars, profiting $450 million. The combined sales on all Space Invaders projects surpassed $13 billion in 2016, making it the highest-grossing video game of all time!

Of course, a legacy consists of more than just sales numbers. In this world of seven and a half billion people, there are few that are not familiar with Nishikado's most famous creation. Many of the video game industry's greatest professionals cite Space Invaders as their introduction to the field, including Shigeru Miyamoto, the father of Donkey Kong, Mario, and Zelda; and John Carmack and John Romero, the creators of Doom.

In fact, Space Invaders touched this article's author in a profound way. On a hot summer day of '78, my siblings and I hopped on our banana-seated Schwinn bicycles and pedaled three miles to our local Dairy Queen with change jingling in our pockets to purchase a juicy Mr. Misty crushed-ice slushee. We walked in the door dripping in sweat, and to our surprise, there was a crowd gathered around a strange husky box decorated with some mighty scary monsters painted on the side. The cabinet held a monitor, and when I witnessed a teen rapidly mashing the buttons on a control panel, it dawned on me that this wasn't a television broadcast, but an interactive game... and the rest is history!

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.

WHO'S ON THE COVER?



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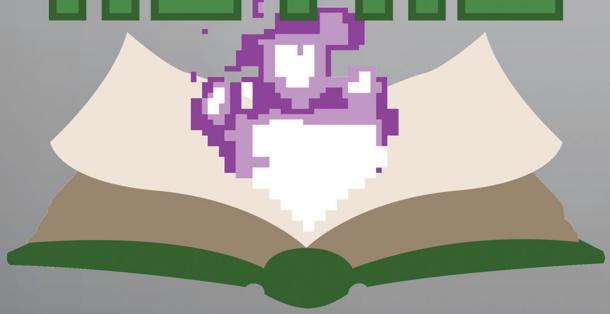
LEGEND OF RETRO



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So You Want to Be a YouTuber

By Brett Weiss

If you know me well, you know I love a good bargain, and YouTube is about as good as it gets. If you've got a device to play it on, such as a modern game console or computer, a Roku device, a Blu-ray player, or a smartphone, YouTube gives you countless hours of free viewing: everything from rare concert footage and sports highlights, to funny babies and cats, to your favorite YouTube gaming personalities..

Some of my favorite YouTubers include Kelsey Lewin, Metal Jesus, The Gaming Historian, Shawn Long, and Kinsey Burke. I also like the Angry Video Game Nerd, especially when he's being serious, such as with his Cinemassacre movie reviews. These modern-day minor celebs keep things breezy and fun, entertaining the viewer while providing interesting info.

A few years ago, I decided it would be a good idea to begin creating YouTube content of my own. Not only would it be another fun and productive creative outlet, it would bring attention to the video game books I write, which is hard to do in a digital world. Around three years ago, I began a video podcast with my friend Curtis Newton, who ran a PlayStation website that brought gamers together from around the globe.

Curtis and I were a good fit. He kept viewers up to date on all the latest video game releases while I provided a historical perspective. We talked about other aspects of pop culture as well, such as music, movies and TV, trading jabs, laughing a lot, and in general having a great time. People seemed to enjoy the show, and Curtis had big plans going forward, such as getting the podcast on other platforms and adding such post-production flourishes as special effects and gameplay footage.

Unfortunately, after a few episodes, Curtis began feeling poorly, suffering from nausea, dizziness, and headaches. His symptoms would come and go, and sometimes he would have to postpone recording for a week or two. I knew things were getting bad when we were attending a Star Trek convention in Dallas, and he left complaining about a headache before the keynote speaker—William Freaking Shatner—gave his talk.

Sadly, things took a turn for the worse. In January of 2017, my wife Charis and I were headed to a press junket at a video game-themed restaurant in Frisco (north of Dallas) when we got the type of phone call you always dread. Curtis's good friend Tammy was the bearer of the bad news. My good friend had died earlier that day, killing any YouTube aspirations I may have had. Obviously, the loss of Curtis, a good man with a big personality and an infectious laugh, was vastly more important and impactful than my silly YouTube dreams, but I was nonetheless disappointed that this effectively ended my "career" as an onscreen gaming commentator.

After Curtis died, I didn't progress healthily through the steps of grief that the experts advise. Rather, I stayed at the angry stage pretty much the entire time, with plenty of sadness sprinkled in. Finally, as of a few months ago, when the angry started to fade into a general feeling of loss, I was ready to give YouTubing another go. This was partly due to the blunt suggestion of a Facebook friend. I was bemoaning what had happened with Curtis, and he simply and pragmatically said, "So, become a YouTuber."

And become a YouTuber I did. However, before I started, I needed to think of an angle that would separate me from the pack. I didn't want to be just another reviewer or commentator on whatever was going on in the world of retro gaming. Well, I'm old, I reasoned, and I've been through a lot in the gaming world, so I went with that and created a show called Tales from a Retro Gamer, where I regale viewers with stories of growing up a gamer in the 70s, 80s, 90s, and beyond.

Fourteen episodes in, and things are going great. I get a lot of positive feedback and am quickly within view of 1,000 subscribers, which is how many you need to begin monetizing your videos. I'm hardly an expert on YouTubing (and my delivery is far from perfect), but I have learned a few things about the process already. As such,

I'd like to share 10 pointers for those of you who want to start creating your own videos, and for those of you who can't seem to get many views on the videos you've already uploaded.

1. YouTubing feels surprisingly similar to public speaking, even though you may just be talking to the camera and one or two other people in the room. Any chance you have to give a public talk, such as being a panelist at a convention, take it. It will help you hone your speaking skills.

2. A surprising number of people don't know what it means to subscribe to a YouTube channel, so when promoting your show during an actual video or on social media, tell your audience exactly what to do: click on that little "subscribe" button on the right, just below your video. You should also ask questions that inspire comments.

3. Watch popular YouTubers to get ideas. Keep what works, but add your own spin so you don't look like a copycat.

4. A popular topic doesn't necessarily mean a popular episode. Putting "Nintendo Switch" or "Fortnite" in the description doesn't guarantee you thousands of views. In fact, these types of topics are so heavily covered, your video might get lost in the shuffle. Do what you can to stand out.

5. When filming, make sure you have bright lighting (even temporarily putting a 100-watt bulb in the overhead light fixture can help) and good background visuals, such as a wall full of games.

6. Pop culture buffs and video game fans love cool T-shirts, so try to wear a different one for each episode. Sometimes you can get a free T if you ask, such as from a convention promoter wanting to get the word out on their show—just promise you will wear it in a forthcoming episode.

7. To acquire free art for your show, such as a header for your channel or Facebook page, hold a contest on social media where you'll give away a prize to the winner. This is a win-win: you'll get some cool graphics, and the artist will have fun and gain exposure.

8. Hand out flyers for your show at conventions, especially early on when you have fewer than 1,000 subscribers. In addition to the obvious—sharing on social media—this will get you new subs.

9. Add post-production to most of your videos. Talking head episodes are fine, but you'll want to put in photos, music, gameplay footage, and other flourishes to build and maintain a large audience.

10. Have fun. After all, you're talking about a subject you love. Producing a good YouTube show, even one with a shoestring budget, takes a lot of time, so you might as well enjoy it. Your enthusiasm will show, which is always a good thing when trying to add views and subscribers.

Creating YouTube videos is harder than it looks and takes a lot of practice to get good, so keep plugging away. I'm new to this myself, so I've got a lot to learn as well. Hopefully, these tips will help you on your way to becoming a YouTube superstar, or at least a happy content creator with a decent-sized audience.

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. Check out Brett's new YouTube show, "Tales from a Retro Gamer."

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Parsippanny, NJ • AVGC - A Video Game Con • *avideogamecon.com*

SEPTEMBER 14-15
Oaks, PA • RetroCon • retrocons.com

SEPTEMBER 28-29
Hartford, CT • RetroWorldExpo • *retroworldexpo.com*

OCTOBER 16-19
Chicago (Wheeling), IL • Pinball Expo 2019 • *pinballexpo.net*

OCTOBER 18-20
Portland, OR • Portland Retro Gaming Expo • *retrogamingexpo.com*

OCTOBER 19-20
Arlington, TX • Retropalooza • *retropalooza.com*

NOVEMBER 2-3
Syrcacuse, NY • Retro Game Con • retrogamecon.com

NOVEMBER 15-16
Houston, TX • Houston Arcade Expo • *houstonarcadeexpo.com*

NOVEMBER 16-17
Cleveland, OH • Cleveland Gaming Classic • *gamecleveland.com*

NOVEMBER 22-24
Orlando, FL • Free Play Florida • *freeplayflorida.com*

DECEMBER 8
Sacramento, CA • SAC Gamers Expo• *sacgamersexpo.com*

Convention & Event Update: July-August 2019

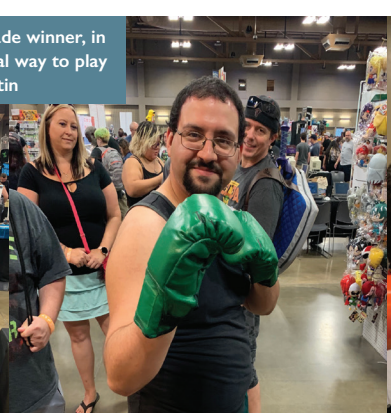
AUSTIN, PHOENIX, ST LOUIS, LONG ISLAND, AMES, PITTSBURGH, CHICAGO & CLEVELAND

By Old School Gamer

Walter Day Trading Card Presentation Ceremony and the vendor floor at the Video Game Summit in Chicagoland, Il

Winner of the RepliCade drawing from New Wave Toys, one jam packed aisle and something unique at the CCAG Show in Cleveland - a testing station for games and consoles to reassure buyers!

Tim "Boomshakalaka" Kitzrow with the RepliCade winner, in Arizona, and Some awesome cosplay and the real way to play duck hunt at Classic Game Fest - Austin



VIDEO GAME SUMMIT CHICAGO, IL BY RYAN BURGER

Some events we go for the crowds, some for the spread of games, and some events we go to meet new people. Friends of Old School Gamer have produced a great event in the Chicago area for the last couple years called the Video Game Summit, and Old School Gamer has been hearing about it ever since Todd Friedman, one of the promoters, started working for us nearly 2 years ago.

I was able to attend, along with Advisory Board Member and Industry Legend Walter Day, along with summer marketing intern Dagan White and were treated to a fun event well worth the drive from our Grimes, IA headquarters. Thanks to the staff and everyone involved. We felt very welcomed and enjoyed our stay in Chicago.

videogamesummit.net

CCAG SHOW CLEVELAND, OH BY RYAN BURGER

Since approximately 8-10 years ago when I started going to retro gaming conventions, starting with Milwaukee's Midwest Gaming Classic, I've heard of a cool one-day event held just outside of Cleveland, Ohio, and I finally was able to attend it. While not as insanely crowded as some of the other expos have been in the past, Cleveland holds its own very well when it comes to an excellent swap meet-style show. If you live anywhere in Ohio or as far away as Western NY or Western Pennsylvania, like Pittsburgh, you need to attend the CCAG show.

CCAG stands for "Classic Console and Arcade Gaming Show"! For me it was all a blur, flying in late Friday night and flying back out Sunday after experiencing an expo floor that was full of retro-gaming goodness. While there was not much in the way of gaming competitions or panels/seminars, this show still far exceeded my expectations. There were more people that wanted to get Old School Gamer magazine in their email box and, as one would expect in Cleveland, great people to talk to.

ccagshow.com

CLASSIC GAME FEST AUSTIN, TX BY BRAD FEINGOLD

I want to quickly say something before talking about the Classic Game Fest that was in Austin, TX July 27-28. I have never been outside of the Austin Airport in Texas, and I have never seen so many taco and bbq trucks, Uber scooters, and so many hospitable people in one area. I was impressed and want to go back. Having said that...

The CGF, held at the Palmer Events Center downtown Austin, was yet another eye opener for everything in the world of retro gaming. Setting up for the event, I was given a warm welcome by the crew from Game Over Videogames, a business that has several locations all around the Austin area. They were extremely helpful and accommodating to everything I needed to get set up.

The other vendors were also the same way. Compared to some of the other shows that I have been to, I would say that there were more artists at this one. The type of medium used was a wide variety: paint, print, metal, leather, beads, and more, which created a high level of challenge as I decided what I was going to purchase.

As for the product vendors, there was no shortage. Besides the t-shirt, sticker and patch vendors, patrons were given several options to go after from the little variant made Lego-type characters to the latest in gaming consoles. I even came across a vendor that had an old television that actually had a Nintendo system built into it. Can you say RETRO?

In addition to the regular vendors, we were graced with the presence of the 501st Legion from Star Wars, the Texas Ghostbusters crew, and a few professional

cos-players. Oh, and I can't forget about the unlimited sweet tea refill from Pecos Pete's Natural Tea Soda Co., as well as hanging out with author OSGM contributor and author Brett Weiss as well as Jeffrey Wittenhagen. This was only one side of the vendor hall.

Through the door, there was a stage set for talk sessions, concerts and costume contests. Also setup was a small museum of old gaming systems with some set up for game play. There was also a set up of unplayable systems just to bring back some memories.

Along with the classics, there was a lineup of classic video games and pinball machines. In the midst of it all was EON. OSG was honored to cover the release of the GameCube HDMI Converter, the EON GCHD MK-II. However, this time, they showcased the EON GCHD MK-II for the Nintendo 64. After speaking with a representative from EON, they stated that this was a great seller for them and they can't wait to work on their next project.

Overall what an event. I just wish it has lasted longer. This is the 3rd time someone from Old School Gamer has attended the show, and without a doubt we will keep coming back.

classicgamefest.com

REPLAYFX
PITTSBURGH, PA
BY RYAN BURGER

As part of a 1-2 punch, four days of retro gaming started at ReplayFX in Pittsburgh and ended in St. Louis, MO. I was able to get a tease of everything ReplayFX is about, skipping the massive crowds. This event is run by the Replay Foundation, which is a 501(c)(3) nonprofit that promotes the preservation, restoration and enjoyment of pinball technology. And while there were thousands of competitive pinball players there, that isn't the end all be all of this event. It's an event that has been happening for years, featuring more than 1000 full sized arcade and pinball machines, hundreds of consoles and probably nearly a hundred eSports PC's.

What impressed me the most was all the people that were proud to be part of the mission of ReplayFX donating their time and resources to the cause. According to the Pittsburgh Gazette, more than 20,000 people attended the event. Like I said, we were able to get a preview of the event before the crowds, however, Old School Gamer is looking forward to coming back next year for the full weekend.

replayfx.org

MO GAME CON
ST. LOUIS, MO
BY RYAN BURGER

What can I say about MoGameCon that I haven't said about all the other cons we went to in July and August. Let's say that they didn't string up a Chicago Cubs fan the moment I arrived, and after they found out about my baseball "preferences", they invited us to come back next year and bring more friends. The show consisted of a nice sized exhibition floor, two seminar rooms and some basic competitive gaming. It was another show we look forward to returning to and getting more involved in the upcoming years.

It's a fun event - just a five hour drive for us, that brought out Walter Day for a meet and greet, and a seminar where we talked about competitive gaming, the Billy Mitchell controversy of the last year or so, and presented collectible cards to more deserving members of the retro gaming community.

MoGameCon is held on a Saturday in early August each year, and this year the organizers pulled out all the stops by bringing Norman Caruso, Pat Contri, Walter Day, Jay Hatfield of the Game Chasers and Old School Gamer scribe Brett Weiss, as well as our friend Terry Diebold and his Nintendo Playstation for all to see and play. Check it out next year and we will hopefully see you there.

mogamecon.com

GAME ON
PHOENIX, AZ
BY BRAD FEINGOLD

Game On Expo, so far this year, was the hottest expo of the year...Literally!!!! The temperature in Phoenix, Arizona during the week that I was there averaged between 100-113 degrees. And they said it was a dry heat. But inside, where it was nicely air conditioned, the sites and sounds were hot as well.

In one corner was the Retro World Series games, playing the traditional tournament games on several systems, spread throughout the years. In another corner, there were different tables set up for certain games to play just for fun. There was also an arcade area set up by Cobra Arcade Bar and a few other local contributors. But the meat and potatoes of the convention, of course, was right in the middle.

The vendors, artists, celebrities and forums are what most people came for The first part of the floor consisted of vendors from several retro video game stores as well as independent game makers. I had a chance to play some really great new independent games on display that I feel have a lot of potential.

I did finally get to meet the folks behind Limited Run, who take a good number of games that are only launched digitally and make arrangements with the content owners to create physical copies of games for release. I would say they got most of my money at this convention, and hope they work on new collaborations (Cough – Contra and Castlevania Collection).

Then there was the artist alley, which consisted of the widest variety of artists that

Walter Day and the Video Game Dads talk to attendees at Mo Game Con

National Guard eSports Team Semi Trailer and a small portion of the Gaming Floor at ReplayFX

I have seen at one convention. Besides the regular painting, pencil and digital drawings that were throughout the rows, there were also new types of artists that created buttons, knitted characters, and also a growing form of pixel art that appears to be growing in popularity.

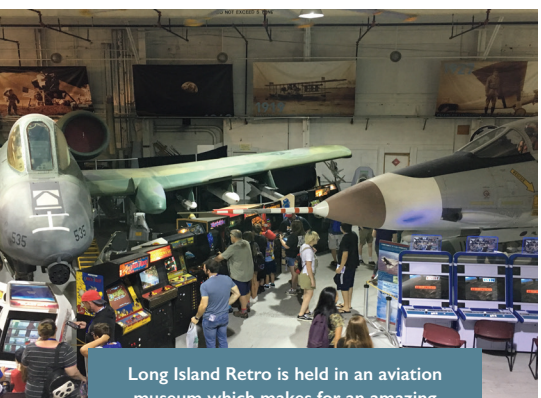
Outside of the artist alley, there was one artist who had a booth right next to mine. All I could do was drool at the quality of his workSmitty Tut Designs, displayed on the back of his booth, some of the finest custom made metal shields I have ever seen that represented not only movies and comic books, but video games as well. He also had book ends in the shape of video game characters and wide range of aluminum pennants for sale. Of course I got the Star Wars one.

And what expo wouldn't be complete without hearing the voice of Tim Kitzrow, the voice of NFL Blitz, wherever you go? He and Daniel Pesina, Johnny Cage and Scorpion from the original Mortal Kombat game, made their presence known.

The highlight of my trip was being able to meet the voices of some of my favorite projects. Charles Andre Martinet, the voice of Mario; Kenny James, the voice of Bowser, and Jen Taylor who is the voice of Princess Peach in the Super Mario franchise. But I did forget that Mary Gibbs was going to be there. If that name doesn't sound familiar, she was the voice of Boo in Monsters Inc. She was three years old when she was in that movie.

But this little article is just a taste of what goes on at these shows. There is so much more. Forums, contests, giveaways, costumes, music, art, clothes, collectibles, etc. Bottom line - to get the real effect and meaning of one of these shows, just come on over..... but bring lots of water so you don't get dehydrated..

gameonexpo.com



Long Island Retro is held in an aviation museum which makes for an amazing backdrop for all the arcade and gaming action

LI RETRO
LONG ISLAND, NY
BY BECKY BURGER

For the second year in a row, Old School Gamer Magazine attended the Long Island Retro Gaming Expo at the Cradle of Aviation Museum in Garden City, New York, where we handed out copies of our magazine, signed up subscribers, and raffled off a New Wave Toys/Replicade Amusements Mini Atari Tempest Arcade Machine Replica to one lucky attendee.

The retro gaming expo takes place in the outstanding Cradle of Aviation Museum in and amongst the museum amazing collection of artifacts and exhibits. There were tons of vendors, arcade video game machines, pinball machines, and a huge collection of retro consoles and computers. The retro gaming expo is held in conjunction with the Long Island Tabletop Gaming Expo with its own vendors, demonstrations, and active gaming tables of various board games, miniature games, and role-playing games. Both shows and the museum are all included with your admission. The show's informative Event Program lists the many speakers, events, and contests held throughout the busy weekend.

This year I found time to attend two of the many speaker sessions. Leonard Herman gave an informative talk on his close personal relationship with Magnavox Odyssey creator Ralph Baer. Herman talked about Baer's life and work. Herman also touched on other early gaming pioneers such as Ted Dabney and Nolan Bushnell. I also attended the YouTube content creator Modern Vintage Gamer (Dimitris) talk on "The History of Copy Protection in Video Games". Both talks were well attended, presented great information, and the speakers answered lots of questions from the attendees.

I also spent some time talking to Joel Albino, the operations manager for the event. We talked about the show and his personal collection. I offhandedly mentioned to him that I recently acquired a rare, but non-functioning Atari/Syzygy Engineering PONG arcade machine. He proceeded to introduce me to George Portugal, who had just recently repaired the museum's equally rare Nutting Associates/Syzygy Engineering Computer Space arcade game. Computer Space was on display and playable during the show. Now, thanks to George Portugal, the PONG arcade machine is now also fully functional and we are planning to have the two machines on display next to each other at next year's show.

If you find yourself in the Long Island area next summer, you should really check out this show. There is a lot to see and do, for both electronic and tabletop games. And the aviation history buffs will love the venue as well. For more information see https://expo.liretro.com.

litretro.com

NEXT LEVEL EXPO
AMES, IA
BY RYAN BURGER

This show, based forty minutes away from OSG HQ, has a way to go to make it a regional draw, but for an Iowa show, it's probably one of the largest annual events in Central Iowa. For us, the highlights of the show were the eSports competition area (run by Midwest eSports) and our new Hyperkin/Old School Gamer Retro Challenge, playing the Nintendo World Championship special cart from RetroUSB, and Pac-Man for the 2600 on the RetroN 1 HD and RetroN 77 units from Hyperkin. These consoles were fantastic to play the vintage games for the NES and Atari 2600 on 50" LCD TVs for the competition.

Look for more from the show in the future as Old School Gamer hopes to bring more retro goodness to this nice little show in our own backyard.

nextlvlexpo.com

Next Level Expo's major highlights were the eSports arena by Midwest eSports and the debut of the Hyperkin Retro Challenge by Old School Gamer!

eStarland

By Ryan Burger and Billy Mitchell

In this issue of Old School Gamer, we are profiling two stores that we love for different reasons. The first, which you will read about elsewhere in this issue, is a smaller sole proprietorship. Jason took his passion and built a store that caters to like-minded gamers who come into his Florida store every day. The second one is run by a number of people who share a similar passion for gaming, headed by a management team that loves the industry. The difference is that they sell an insane amount of games to gamers and businesses through their online store and their mega-location just outside Washington DC. This story starts with the president of that store, eStarland, Chris Kong.

Chris came to the United States in 1987. "I was working at construction and there were other chances to go to school," he explains. "So, I had to work really hard to save money to start my own mail order video game exchange club...not giving up, and also trying to do it in a unique way. It was worth it - coming up with a new way of thinking. That's one reason we're still here and we'll be doing better in the future, and will not stop the innovation."

At one point in the 1990s, he had up to 30 stores with 8 stores just in the DC area. However, he didn't see the stores moving in the direction he wanted them to go, so he started focusing his efforts on the site we visited earlier this summer in Chantilly, Virginia. It's a single location of over 12,000 square feet, with 3,000 of it for showroom and the rest being warehouse and offices. He claims he could stock over 20 Gamestops with the merchandise he has in just that one location—imagine that: twenty mall-sized stores stocked to the hilt with games from the 1970s to current, cool video game merchandise, consoles, controllers of every kind imaginable, and more!

We had a great discussion concerning the news that a major player in the video game industry with over 4,000 stores is failing. His explanation is that there is not one person with passion, just thousands of employees, so thus no owner, no pride.

Chris considers building the community of gamers to be a key to growing the business. "Selling products to customers is not the heart of this place. We need to communicate. You need to build a community around your video games. So, there's a community event where we bring in gamers and they set up tables to sell their merchandise or games to other gamers."

This event, called Gamers Exchange, brings gamers into the store a few times a year for a swap meet and socializing. He tells us—and we heard from others—that everyone loves it.

eStarland is a blessing to this industry, a labor of love by people who care, like so many others we've met over the last two years of producing Old School Gamer. We all need to support these businesses, so they can prosper and continue to serve the retro gaming industry that we all love.

Estarland.com

Entering the Digitized Era – Part 3

By Warren Davis

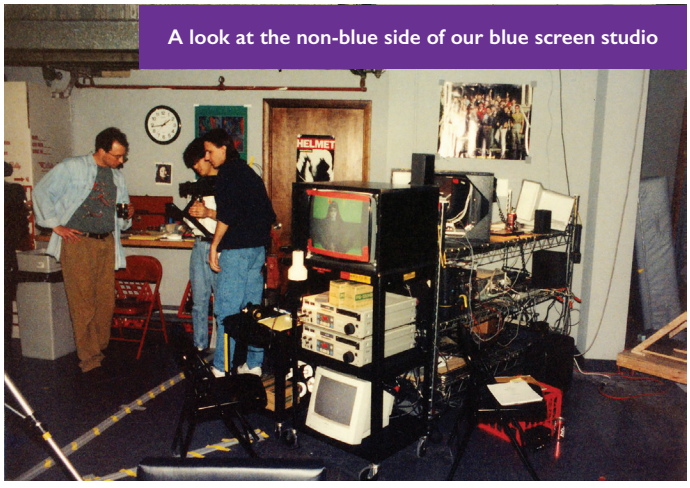
In Parts 1 and 2, I talked about the development of WTARG, the software I developed at Williams/Bally/Midway to allow artists to incorporate digitized video of live actors in our games. My exploration into digitizing began in 1986, and the first version of WTARG came about a year later. It was crude, dependent as it was on available memory and the speed of both PCs and the digitizing hardware we used—Truevision's Image Capture Board, part of its Targa line. In 1988, shortly after USSA was cancelled (a game I was working on with John Newcomer), I left Williams and developed a completely new video game system for Premier Technologies with the help of a couple of ex-Gottlieb colleagues, Kan Yabumoto and Jun Yum.

This new system had separate foreground and background planes which were each capable of displaying digitized images. The only game that came out of this endeavor was the unique and somewhat bizarre Exterminator, with graphics from my old Q*bert collaborator, Jeff Lee. The concept, surreal as it was, was that your joystick controlled a disembodied human hand which could squish bugs as well as shoot energy bolts. I digitized my own hands for this game, and Jeff created all the photo-realistic backgrounds and foreground sprites. The game was plagued with myriad problems, but as far as the digitized graphics, I was very proud of its look. It was eye-grabbing and really looked different from any other game in the arcades.

Joe Perry gets tended to before a shot.

But due to the sales failure of that game, no other games were ever released on that system, and I ended up back at Williams in 1991 where (as mentioned in Part 2) I was surprised to find that no one had taken advantage of advances in technology to update WTARG. Ed Boon and John Tobias were using the same WTARG for Mortal Kombat that was used for NARC three years earlier! Once I finished my work on T2:Judgement Day, I set about bringing WTARG up to date. The latest hardware from Truevision, the Targa Plus, included built-in Chromakey. I eagerly added support for that to WTARG, and soon after, our in-house blue-screen studio was built featuring professional lighting and cameras, a large "Chromakey Blue" backdrop, athletic pads for falls and a treadmill for walking and running animations.

A look at the non-blue side of our blue screen studio



But the addition of Chromakey didn't make image acquisition any easier for artists at first. Initially, actors were videotaped in front of the blue-screen for artists to later strip out the background on frames they wanted to keep, much in the same way they pain-stakingly did before the blue-screen feature. Manual stripping of the background was very time consuming, and artists hoped that the Chromakey would do that for them. But the resolution and quality of VHS tape resulted in lots of blue bleeding into the actors' bodies. So they had to manually clean that up, which was just as time consuming (if not more).

The solution was to remove videotape from the equation. Memory speed and PC bus speeds were improving to the point where I was able to grab frames and save them directly to the hard disk at a rate that was not quite real time, but still adequate (maybe 10 or 15 frames per second). These images were much crisper and required less manual cleanup by an artist. We added a PC running WTARG into our blue-screen studio for instant acquisition, and that resulted in a major streamlining of the digitizing process.

NBA Jam was among the first games to take advantage of the new studio, as well as some improvements to the proprietary graphics chip on our videogame hardware. A new scaling feature meant we no longer had to store multiple copies of the same character at different sizes to create the illusion of depth. More palette memory was also added, so that more colors could be devoted to each character. I responded by adding more palette management features to WTARG.

But memory, specifically the memory available for image storage, was still a precious commodity. Sal Divita, one of the artists who worked on NBA Jam, recalled that whatever actors were digitized doing basketball moves had to have their skin retouched to be the same color and palettized so that the skin color of their bodies could be set dynamically. Heads were separate from bodies in that game. And since only one version of a body going through all the moves was stored, each instance of that body had its skin color set

for the particular athlete whose head was attached to it. Of course, many of us who worked at Williams famously had our heads digitized and added to NBA Jam Tournament Edition, where anyone could play as us by entering our initials and birthday.

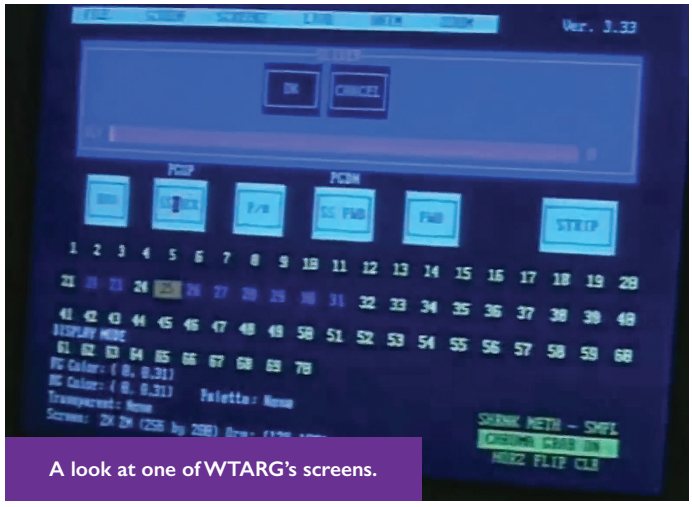
For Revolution X, we had Aerosmith in our studio for three full days (with a couple of the guys returning the following week for some reshoots). George Petro and Jack Haegar, the game's lead programmer and artist respectively, had a list of shots planned out for all the band members, who appear a few times during the game to interact with the player, and later become hidden throughout the game to be found as a side goal, resulting in a special ending if you find them all. I was there during that

Tom Hamilton gets his mark.

shoot (my job was clacking the clapboard and announcing each shot) and the band couldn't have been more willing to cooperate. They did everything asked of them with 100% effort. Watching Steven Tyler going through his performance moves while lip syncing Aerosmith songs as he was being digitized was just absolutely thrilling.

By the time we made Revolution X, WTARG had progressed to a point where we could shoot an actor live, and, within a minute, the animation was loaded to our game hardware and displayed. It could then be saved and tweaked later.

Cruisin' USA was in development around the same time and Eugene Jarvis and his team used WTARG to generate digitized textures to apply to the 3D polygons in that game, which gave it a more photo-realistic and distinct look from any other racing games out at that time.

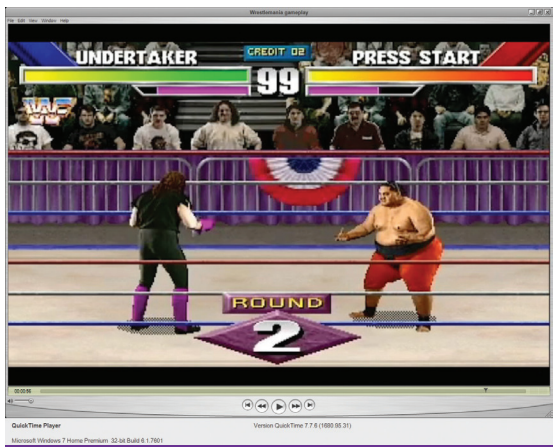


A look at one of WTARG's screens.

I left Williams (again) in 1995 to pursue opportunities in the home game market in Los Angeles. But I continued to work on WTARG for a short time as a contractor. My primary goal was to create a version that would run under this new operating system that was starting to catch on – it was called Windows 95. Up till then, WTARG had always run under MS-DOS. Early versions of Windows seemed too clunky and difficult to work with, so a conversion wasn't really desirable. But Windows 95 indicated the arrival of a mature and full-featured operating system that offered a lot of advantages for an app like WTARG.

The next games to use WTARG were Mortal Kombat 3 and WWF WrestleMania, both released in 1995. By this time, Williams had upped the pixel resolution of its hardware to 512x480. Pretty much every video arcade game before had a pixel resolution of 256x240. The sharpness of the image gained by the smaller pixel size coupled with increased color resolution made the graphics of those games really stand out. And more memory for images meant more frames per second and smoother animations.

For a while, it seemed Williams was way ahead of the curve in its use of digitized imagery. Other companies jumped on the bandwagon, but most games failed to make a splash. However, with the arrival of 3D polygon hardware for both home and arcade systems (made possible by the continuing increases in CPU speeds and memory density as well as decreases in memory prices), most everyone abandoned movie quality 2D graphics as a goal and put all their efforts into 3D modeling. Those efforts, 20 years later, have achieved stunning results, but I'll always be a little nostalgic for the look of those early to mid-90s classics.



WWF Screenshot

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.

Designing Yars' Revenge
(Part 1 – The Inception)

By Howard Scott Warshaw

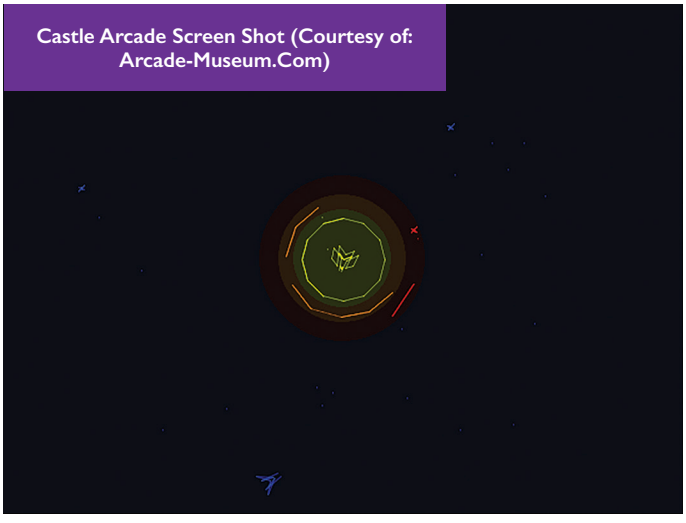
"Talent borrows, genius steals." -Oscar Wilde

My first game for Atari ultimately became what is now known as Yars' Revenge. This is not how it started. Originally it was assigned as a coin-op conversion of a Cinematronics arcade game called Star Castle.

The key to design is knowing what you're trying to do. Logically, you might assume my design goal here was to bring Star Castle to the 2600, but you'd be mistaken. This was my first video game, consequently my design goals were:

1) To Make a Splash – I want my debut to be a contribution, establishing my reputation as a game maker.

2) To Create a Sensory Experience – I want it to be a distinctive, eye/ear catching extravaganza that cannot be ignored.



Castle Arcade Screen Shot (Courtesy of: Arcade-Museum.Com)

3) To Break New Ground – I don't want to iterate on existing material, I want to create something fresh and innovative.

Was I asking a lot? Sure, but why aim low? This is what I'll strive for and the results will fall where they may. Now, let's look at Star Castle as a candidate and see how it fares with these three goals.

1) Splash? Star Castle is a decent game with some interesting mechanics. Vector graphics are easy in coin-op but miserable to recreate on the 2600, and I could see the particulars of this game would be a nightmare. It was clear to me from the outset…this game will suck on the 2600. Would it be a contribution? More likely a charity case.

2) Sensory Experience? The on-screen motion is interesting, but the focal point is always the center of the screen. Black & white vector graphics are not known for stunning visuals. In fact, all the color in this game comes from a plastic overlay. Not the eye candy I'm looking for. The sounds feel a bit limited and somewhat monotonic. Star Castle is kinetic but not dynamic. I want to do better.

3) New Ground? Let's face it, when you're doing a knock-off, innovation is not the thrust of the work. It didn't take me long to realize that coin-op conversions are the opposite of what I want to do.

My primary implementation goal was to create an action game I would enjoy playing, and Star Castle wasn't going to do it. Therefore, my first task was changing my assignment…creating room for me to do something different. As a veteran of a few days, I went to my manager Dennis and told him straight up that this game would suck on the 2600. However, I felt I could take some of the basic mechanics and tweak them into something that would play much better on our console. Fortunately, Dennis was receptive to the idea and said, "Go for it!" (this would never have happened two years later in the Age-of-Marketing, but that's another column entirely)

So, if not a direct translation, what would I do? Well… talent borrows, genius steals!

Where does Star Castle shine? The basic mechanic of having to break through obstacles to expose the target is nice, and the fact the target fires back with a major weapon is also good. Constant danger creating the need for constant motion is an essential action game criterion in my eyes.

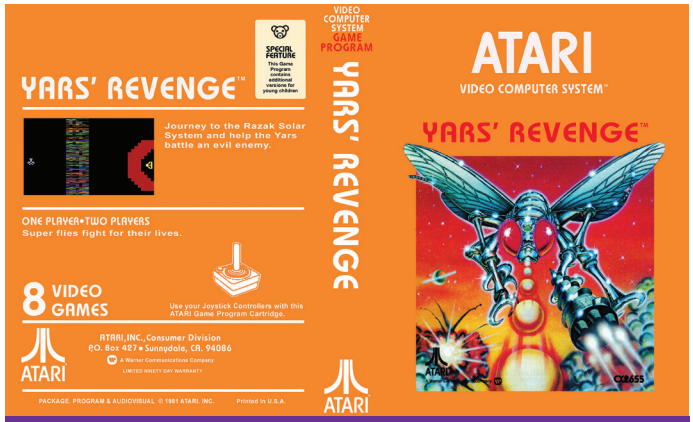
On the other hand, line drawing is nightmarish on the 2600 and the central visual focus gets tiring. How shall I

change it? I'll push the target to one side of the screen to create room for play and change the shield from lines to bricks which are easier to display.

I'll add a high-power player weapon and put it on the opposite side for visual balance. And maybe something shiny in the middle.

It was amusing to me that Star Castle was made by Cinema-tronics because I approached this development like moviemaking. Being a huge movie buff, my design thinking for games is very cinematic. I think of screen composition and how game action drives eye movement. If I can keep your attention continually moving up, down, right and left, this will increase the intensity of the experience. With the drone forcing the player into vertical motion, and the player's weapon moving left-to-right and the target's weapon moving right-to-left, a compelling dynamic could be achieved. Next, I'll animate both graphics and color, resulting in a sensually intense visual ballet! At least that is the hope.

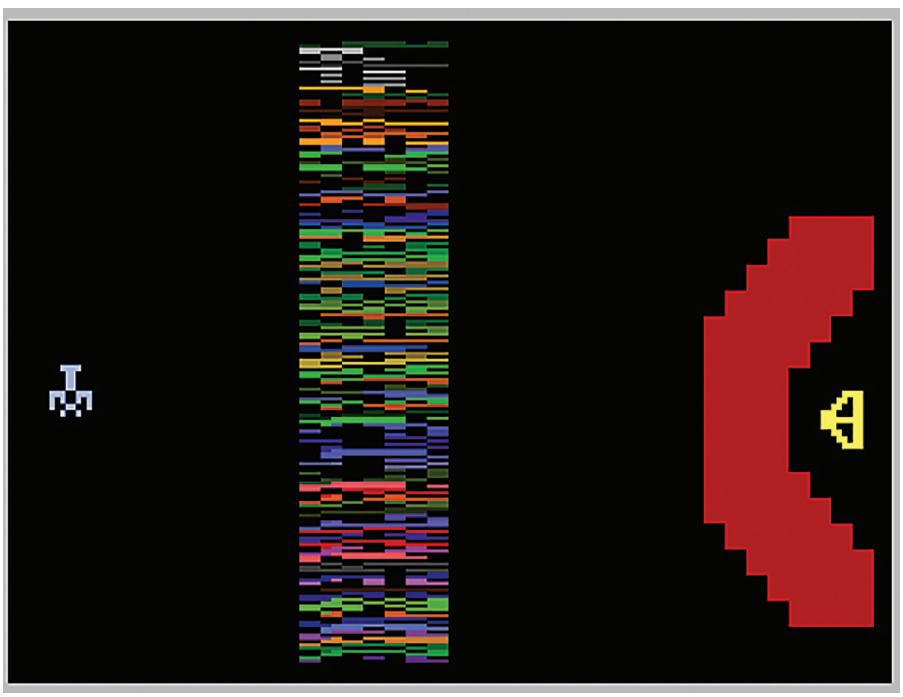
I also use movie economics. Sound is cheaper than visuals, especially when the sound effects are cheap. I don't want the sounds to be just about action, I want sound to dictate mood. Most games use sound simply as feedback for action, I want to create a soundscape that incites mood and increases tension. I'll start with a background theme (50's sci-fi lab electrodes & a faint buzzing) then build a layered hierarchical sound schema on top of that to accent game events and to foreshadow danger. You have only two sound channels on the 2600, I want to keep them both busy all the time.



Yars Revenge came to be known as Atari's biggest selling original game. Was it original? Clearly it was assigned as a coin-op conversion, which is the antithesis of original. This begs the question; At what point is any game (or any creative endeavor) original? If you look to copyrights and legal perspectives, it's not so much the ideas or concepts, it's all about the execution! Two versions of the same game can yield very different play experiences. So, what are we evaluating? Is it the game or the player's experience? What is the original question?

Yar's Revenge - Courtesy of TheCoverProject.Net

I wasn't sure exactly what this was going to be, but it wasn't going to be Star Castle. I knew I'd have to figure out a title and setting at some point, but there was plenty of time for that. My working title was Time Freeze, which was based on a plan I had for a huge payoff sequence when you finally destroyed the target. It was a very ambitious animation sequence that would never see the light of phosphor, but I assure you it was pretty spectacular in my head.



I had elaborate concepts for animating the shield and several other enhancements which would never come to be realized. There were other elements of the game that became clear to me as the development progressed, but they were totally unforeseen initially. One thing was absolutely clear to me from go... I needed this game to be really great!

This was the mindset from which I began, it was to evolve substantially. Next time I'll share with you how this unfolded as reality and I collided in the development system.

Howard Scott Warshaw is a Video Game pioneer, authoring several of Atari's most famous and infamous titles. Launching this new medium, seeing the industry mature and now as a psychotherapist, Howard brings unique perspective to our interactive world. Check out his documentary series "Once Upon Atari" at www.onceuponatari.com and look for his upcoming book this fall.

8 Bit Hall of Fame

By Ryan Burger

On the Florida Gulf Coast, just a couple islands down from Fort Myers where I vacation every once in a while (my parents have a place there), is a really cool store. Word appears to be getting around pretty quickly about this little gem. If you have been to that part of Florida in the last couple years, and have not been there, I'm a bit surprised, as the 8-Bit Hall of Fame is an amazing store. While it does great with locals, it also has a way of sticking out to those vacationing in the area, especially if they were born in the 70s or even the 80s. Jason Crosser grew up in Iowa, similar to myself, and started hoarding early pro-wrestling and gaming items.

JASON Crosser: So I actually did my first sale at a Toys-R-Us... Toys-R-Us in Waterloo, Iowa. They did a little flea market type thing outside in the driveway, in the parking lot, and my mom drove me. I was 14, she dropped me off, and then she went shopping at the mall. And so I was just selling -- I had a bunch of LJN and WWF figures and some video games. So I sold those outside. That was the first time I did a show, which is pretty neat.

After that he just kept on going, with buying games at garage sales on his bike, especially NES games, that were popular at the time. The collecting continued, and years later he moved to Florida to teach and get married. As a result the collecting slowed down and the two of them decided it was time to start selling some of the games.

JASON: A little over seven years ago, we started selling...and we started thinking about the store. And she (his wife) didn't know what the stuff was really. She thought it was trash. So she thought I was just like hoarding old trash stuff. But then she went to Super-Con with me and saw how crazy people were about it and how happy people were when they came and looked at it.

So then in the area he got to be known for buying old retro video game stuff and it started building, eventually he opened his first store in the same strip mall, all 900 feet of it. Now he has moved about a year and a half ago to 2600 square feet and what I saw back in February was really born. One room is just stacks upon stacks of games lining the walls from Atari 2600 on up. And the other room while games are there, records and other decorations has a great area for chilling out, playing tournaments and trying out games. The 8 bit Hall of Fame has a mini-museum going with old TI-99/4a computers, Famicom, Odyssey 2, and dozens of other gaming historical pieces. It reminds me of one of my favorite stores in Las Vegas (A Gamers Paradise) in that respect.

When the Nintendo Classic Edition came out, people started looking for the original hardware, for games, and Jason couldn't keep the Nintendos in stock and sold out of games often, especially those that weren't on the classic that they remembered more than those on it. When the Super Nintendo unit came out, it happened again but not as much on the Playstation Classic. According to Jason, the value on the original X-Box and Playstation games have started going up as more people are reliving that generation as well.

JASON: (To find us) Just 8-Bit Hall of Fame on Facebook. So it's Facebook.com\8bithalloffame. I don't sell anything online. That's one of the things. I used to -- when I lived in Iowa and I would go to any of the game stores, it seemed like once eBay and Amazon came around, everybody was selling all their good stuff online. So you'd go in there and it would just be a bunch of common stuff. So they weren't getting anything traded in because all their good stuff was getting sold online.

Two blocks from the beach in Bonita Springs, Florida, the 8 Bit Hall of Fame is perfect for Dad to drop off the wife and kids at the beach, then run back to "pick up a couple things" and disappear for an hour at the store.

4836 Bonita Beach Rd SW, Bonita Springs, FL 34134
facebook.com/8BitHallOfFame

Nickelworld

By Mike Mertes

Established in 1997, NickelWorld Arcade is one of the few arcades that has managed to go the distance in terms of surviving the dissemination of arcade closures during the turn of the century. While I had heard of NickelWorld in the past, I never had the opportunity to check it out for myself until recently. The '90s arcade nostalgia could be felt the moment I stepped through the front door of this arcade as the very familiar sounds of popular arcade titles from the 1990s reached my ears.

As the name of the arcade would suggest, almost every arcade machine in the building accepts nickels as its gateway to those precious arcade credits. '90s favorites like Tekken Tag, Target: Terror, X-Men, The House of the Dead and Silent Scope are featured along with classics like Pac-Man, Donkey Kong, and Donkey Kong Jr. Some of these great classics are even set to free play mode, so just paying the $2.25 admission fee can get you an ample amount of game time. I was impressed to find that NickelWorld has a few pinball machines in operation as well, featuring tables like F-14 Tomcat, The Getaway, X-Files and High Roller Casino.

For those who want to play some old school skee ball, shoot hoops or test their skills on claw machines to win some tickets and redeem them for prizes, NickelWorld features a variety in that genre as well. After spending two hours in the arcade and discovering I only paid $12.50 total for myself and a friend to play some games, I was pretty satisfied with my experience overall. The variety of games and the aesthetic of the arcade will certainly revive any memories of the '90s arcade experience you may have forgotten. I highly recommend visiting NickelWorld Arcade if you're in the area!

3321 N Main St, Rockford, IL 61103
nickelworld.com

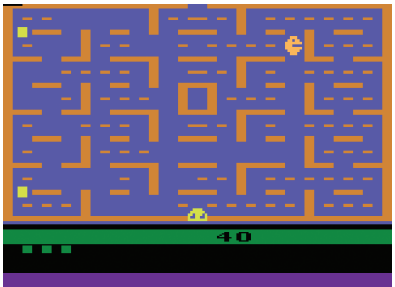
Then and Now, Arcade Ports in Retro Consoles – Pac-Man

By Eugenio Angueira

Who doesn't know the history of Pac-Man for the Atari 2600? The game looked and sounded nothing like the arcade. Many of us were disappointed with what Atari had created for their console, though we still played it plenty. Back then, resources for developing games were limited and sometimes time was an issue. Memory for making cartridges was not cheap, so the effort had to be made to keep games small. Today, though, thanks to homebrew developers who have taken advantage of newer programming techniques and resources, we can enjoy new and improved versions of several of these arcade ports on our retro systems. This article will look at the original Pac-Man from Atari as well as newer versions that have been developed since then.

ATARI 2600

If there is a game that has been much maligned through the years, it's Pac-Man for the 2600. Atari had hyped the game so much, and the fact they were the only ones with the license for home console release, expectations were quite high. Sadly, the game they released was more of a clone of Pac-Man than a true port of the game. The maze looked nothing like the arcade: the colors were wrong, the ghosts were now a flickerfest that lacked the colors and behavior of their arcade counterparts, the sound effects were awful, the bonus prizes had turned into a rectangular "vitamin pill," the scoring was one tenth that of the arcade, and Pac-Man had an eye (while not looking up or down when moving vertically). Only the most basic elements of the game were retained.



Pac-Man by Tod Frye for Atari

Through the years, various homebrew programmers decided to right what Atari had wronged. There are at least five different homebrew ports of Pac-Man that shame Atari's release. Interestingly, the progression of these homebrews also shows how new tricks have been developed to improve upon the subsequent ports created by homebrew programmers. So, let's look at these...

Pac-Man by Ebivision

Written by Eric Bacher and Igor Barzilai, this was the first new version of Pac-Man created for the 2600. Released in 1999, Ebivision's port is better than Atari's in various ways. The maze and background are the correct colors, the ghosts are better designed and come in four colors, the "dots" are white, and the bonus items are all there. Sound effects are also better, though not complete. That said, at least we have a siren sound, a softer waca-waca, and an energizer sound. There's no title screen and no intermissions, but considering this was done using 4K of ROM (the same size as Atari's port), one can't be too hard on it. It certainly beats Atari's effort. This port was never released in cart form, however, and was instead changed into a Pac-Man clone called Pesco.

Pac-Man Arcade by Rob Kudla

Also in 1999, programmer Rob Kudla decided he would create a better port of Pac-Man by hacking Atari's Ms. Pac-Man, which gives the game a similar look to that title. There is, of course, only one maze, but it more closely resembles that of the arcade. There is a title screen, Pac-Man has no eye, and the ghosts have their four colors. The bonus items are all here and they appear underneath the ghost's pen. The "dots" in this version are the same color as the maze. We also get more proper start up music and a siren sound as Pac-Man moves around the maze. The intermissions are still missing, however.

This version was further enhanced in 2011 by programmer Kurt Howe to take advantage of various programming techniques learned from other ports released beyond 1999. Not only does this version have "dots" that are light yellow, but the difficulty switches can be used for a speed cheat or changing how quickly the ghosts leave their pen, and a pause function was added. The ghosts themselves were also modified to look more similar to their arcade counterparts.

Pac-Man 8K by Kurt Howe

In 2004 programmer Kurt Howe decided he would take a different approach to bringing a better Pac-Man to the 2600. He would, instead, take Atari's Pac-Man and improve it. By increasing the game's size to 8K, Kurt was able to make a variety of changes that make this version night and day different from Atari's version while still being an Atari port. The maze remains exactly the same as Atari's version, but now the background is black, the maze walls are blue and the "dots" are white (the energizers are yellow to match the arcade). Pac-Man's shape has been modified to make him look rounder, he has no eye and he does look up or down when moving vertically. The

ghosts have four colors and their behavior has been altered to be more similar to the arcade. They also exit their pen from the top. The bonus items are all here and look great. A title screen has been added as well as all the intermissions! Though pretty much all the original sound effects remain, a siren-like sound has been added. I suppose this version could be called Atari's Pac-Man Enhanced. I think reception would have been better had Atari released this in the early 1980s. While it may not look exactly like the arcade, it has enough of the arcade elements to make it feel like a proper port.

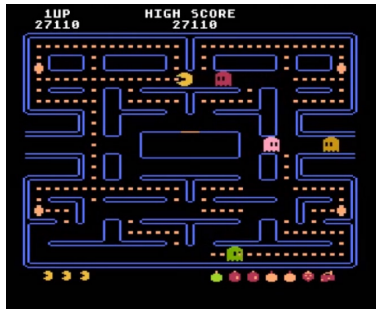
Pac-Man by Dennis Debro

In 2007, programmer Dennis Debro had a surprise in store for us. He decided to challenge himself into making a new and more arcade accurate version of Pac-Man for the 2600 while staying within the 4K size limit of Atari's version. Using the Ebivision version as inspiration and undocumented opcodes to reduce ROM and to help in kernel timing, Dennis created what had to be the ultimate version of Pac-Man for the system. The maze is like the arcade - blue with black background, the "dots" are white, the ghosts have their four colors and have an arcade-like shape. All the bonus items are present and accounted for as well. In the sound department, we now get the siren, which even changes pitch like in the arcade when Blinky goes into "Cruise Elroy" mode. Other sounds like the intro music, the energizer effect, eating the bonus items, and Pac-Man's death are nicely reproduced and reminiscent of the arcade. Though some sacrifices were made (i.e., there are no intermissions) due to the memory limitation, this is an excellent port of the Arcade.

Pac-Man 4K/8K by Daniel Goncalves

In 2014, Daniel Goncalves surprised us when he posted his version of Pac-Man for the 2600 on AtariAge. As good as Dennis Debro's version is, this one takes things up a level. While the game looks as good as Dennis', this version's sound surpasses it! I'm not sure how Daniel pulled it off, but the sound effects and music on his version of Pac-Man are so close to their arcade counterparts that it is very difficult to believe they are coming from an Atari 2600! The opening musical tune, the sound made by the ghost's eyes when they travel back to the pen, the siren, and the energizers are remarkably reproduced here. While the 4K version of the game does not have the intermissions, the 8K version does and the music during these interludes are far closer to the arcade music than ever before. As if all this wasn't enough, Daniel was also able to add something that was missing in all other 2600 ports - Pac-Man's cornering ability! I can honestly say that, for the 2600, this is the Ultimate Pac-Man version. This port is not yet available as a cartridge but I can tell you I eagerly await it!

ATARI 5200



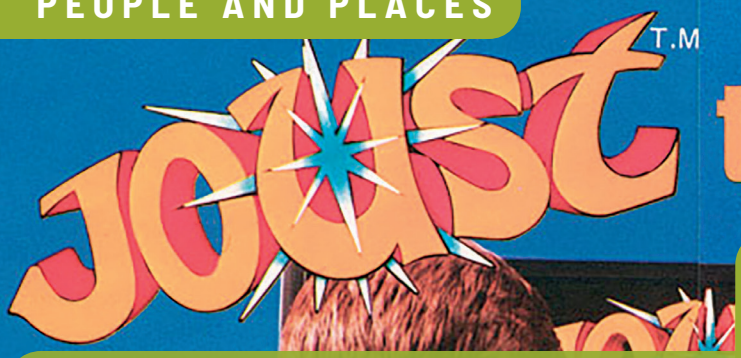
Pac-Man by Atari

Released in 1982, Atari's port of Pac-Man for the 5200 was the company's redemption after the 2600 debacle. The graphics for this game were developed by Alan Murphy and they are much closer to the arcade original. Atari chose to stretch the maze horizontally to fit the TV screen, but the overall maze is just like that of the arcade. Interestingly, because of the stretched maze, this port has more dots for Pac-Man to eat than the arcade! Overall, the game captures the action of the arcade very well but it does speed things up rather early. The intermissions, bonus items and arcade sounds are all good approximations here as well. The ghost's colors are all correct, but they are a bit simple in design with holes for eyes. That is something I would not have expected for a 5200 game. Despite this, the eye holes do look in the direction that ghosts are moving, which is nice to see. Though the ghosts behave similarly to how they do in the arcade, their behavior is not arcade-perfect. The only issue playing this game is the 5200 controllers, which lack a self-centering feature. Nowadays there are other options we can use that don't have that issue, though, so enjoying this game is much easier.

Pac-Man Arcade by Perry Thuente

Despite the good job Atari's programmer did with Pac-Man on the 5200, there are still elements of the arcade that could be improved upon. This is exactly what Perry Thuente decided to do when he created Pac-Man Arcade for the system. The first thing you'll notice is that there is a nice title screen that prompts to "press fire." Once you do, you'll be taken to an animated introduction screen similar to that of the arcade where the ghosts and Pac-Man appear with names and scores. The maze is more of a square shape to more accurately resemble the arcade release. All the bonus items and intermissions are included and the sound effects and music are almost a perfect match to their arcade counterparts. But looks and sounds are not the only things that make this an arcade-perfect port. The ghosts behave exactly like in the arcade and the vertical passages above and below their pen don't let the ghosts move up. Even the number of dots Pac-Man eats is exactly like that of the arcade. When you compare this to Atari's version, it is far superior and earns the "Arcade" badge in its title.

Time has been good to Pac-Man on the Atari 2600 and 5200. More resources, time, and new programming techniques have made it possible for homebrew developers to create versions of the game that surpass what was done during the systems' commercial life. If you've never tried these homebrew games, I suggest you give them a try. You will be glad you did! Waca-Waca!



the one game...

Joust and Lonnie McDonald

COINS DETECTED IN POCKET

By Steve DeLuca

Welcome to another installment of a column dedicated exclusively to Old School Gamers and Old School Games from the Golden Age of gaming. These gamers, back in the day, had to physically use a coin or token to start a video game. The earning of these coins was mostly accomplished after some form of work, usually the hard or difficult variety. After earnings were paid to the gamer, there was the trip to the ARCADE. ARCADE is written in ALL CAPS because it is the Old School Gamer's origin and sanctuary. It was, and shall always be remembered, as a hallowed place. Respect your origins.

Qui One man, one machine, and an entire globe to conquer; Lonnie McDonald "walks the earth". What do I mean "walks the earth"? "Like Caine in "KUNG FU" he just walks from town to town, meeting people, getting in adventures." Those adventures primarily focused on riding flying ostriches, slaying enemy alien knights aboard the backs of carnivorous buzzards in the game of JOUST. He is... the Joust Master.

Over the last few years, the ARCADE classic Joust has made its way back onto store shelves by way of nostalgic throwbacks. Companies like Arcade1Up and Arcade Classics have helped restore the love of Joust by featuring the title in their unique stylized arcade lines. While most of us retro gamers realized how out of touch we were with our midair bout attacks, Lonnie "Joust Master" McDonald's fine-tuned skills had already lanced multiple World Records along with the victory of rolling over the max scores (past 9,999,999) on 100 different Joust machines within 100 days, accomplished May 23rd, 2013.

THE GAME

In the future, far beyond conception, surviving Hyperspace requires the medieval skill of joust. Where dueling knights square off in a battle of wits, strength, patience, and precision. Whether on horseback or on the backs of evolved space ostriches, during the trials of joust, you must outposition your opponent as you charge one another. The victor levels their lance perfectly, unhorsing their foe leaving them vulnerable for a quick mêlée death. In this far off future, the dangers of Hyperspace are on another level compared to the harshest environments seen during the Medieval Ages. The darkness of perpetual night is defeated by the floods of lava, which illuminates the sparse land masses throughout this world. The aliens fight to control all the land, pushing their victims into the reach of the grasping Lava Trolls. If you can survive long enough, stalking pterodactyls will eventually smell your flesh and come swooping in for the kill. In Hyperspace, you don't fight for fame and glory, you are fight for survival. Avoid the lava and strike down the aliens before they out maneuver you. Farewell brave knight, may your lance hold steady and your fowl stay swift.

Released by Williams Electronics' in 1982, Joust offered a coop-ready battle with a fresh gameplay dynamic set over an exciting landscape. With a simple control scheme (left / right) joystick and single(flap)button, the player becomes quickly attuned to their character, making it apparent that the skill of flight and control is this whole game. As you take your first flight in this desolate world, you are quickly dive bombed by alien lances. You must gain altitude on your opponent and as your lances collided, you must strike them higher than they are to you. As you advance through waves of attacks, the land platforms become smaller and the enemies become swifter and more aggressive.

Joust's unique "flapping" gameplay dynamic inspired other notable titles such as Balloon Fight, Flappy Bird, along with the recent ARCADE sensation Killer Queen by BumbleBear Games. A single button tap flaps the ostrich's wings, pushing the character up for a moment before slowing floating down. Rapid button taps will have your feathered steed soaring to the top of the screen. Flight can become fast and chaotic if flapping is overused. The skill of flight and control is everything.

Two player mode allows for a coop buzzard beat down, but beware...in Joust, real world rules apply; players can be gorged by the other player. That being said, you could ignore the enemies and go straight for the throat of the other player, forcing a deathmatch. Joust deathmatches are great fun with a group of friends. The short match times and chaotic energy offers a party everyone can get in on.

THE PLAYER

Upon meeting Mr. McDonald, you would not suspect this Kansas City raised Entrepreneur to be Hyperspace's deadliest duelist. As if he was created to save Hyperspace from the waves of menacing aliens, Lonnie "Joust Master" McDonald dominated as soon as Joust hit his local ARCADE. Crowds would gather to watch the Joust Master slay wave after wave. Now having discovered his calling, Lonnie began traveling from ARCADE to ARCADE, placing himself at the top of every score screen. The same year of release on a single quarter, Lonnie played Joust for 24 hours straight, racking up over 37 million points. In celebration, Williams Electronics awarded this feat with a t-shirt, declaring the Joust Master their World Champion.

As ARCADEs grew and games developed, the Joust Master got swept away in the everyday challenges of life. Twenty-eight years passed before an older/wiser man stepped up to the yellow joystick and button, his skills rusty but the instinct to kill was still there. Now back on the saddle, Lonnie sought to regain his crown as the Joust World Champion, leading him to cross paths with Donkey Kong legend Steve Sanders, whom had recently broken a Joust World Record with his son. Content with his own crown of Kong, Sanders befriended Lonnie and encouraged his journey to becoming the Joust Master.

Lonnie quickly sharpened his skills and within that same year of his return, the Joust Master aimed his sights on the Twin Galaxies' World Records board. In June 2011, Lonnie traveled to New York City, taking down video game legend

Donald Hayes' top scores at Brooklyn's own Barcade and then again at High Scored in Burlington, NJ. From then on, Lonnie has continued to "walk the Earth" rolling over any and every Joust machine he comes across. With six Twin Galaxies World Records and over 200 machine rollovers, Lonnie has been inducted into the International Video Game Hall of Fame, recruited as a U.S National Videogame Team Member, and presented with over 10 Walter Day / Twin Galaxies Trading Cards. Lonnie's accomplishments also include playing Joust to 9,999,999 in all 50 states along with setting a Guinness World Record playing Joust doubles in a marathon with friend Steve Sanders.

A warrior's epic journey would be less heroic if there wasn't an undefeatable nemesis reminding you time and time again of your weaknesses. For the Joust Master, this foe is TIME, the ultimate devastator. The Single-Man Arcade Joust Marathon Top Score World Record has been the quest that has humbled Lonnie McDonald a number of times. The current record of 107,301,150 points is held by John McAllister, which took him about 54.5 hours, finishing October 22, 2010.

Recently Lonnie attempted the Marathon World Record again, dedicating his efforts to the memory of Hall of Fame Player and originator of this OSGM series, Coins Detected in Pocket, the late Joel West. Unfortunately, TIME showed no signs of letting up and once crossing the 44 hour mark hitting a short of 89,650,000, TIME had swollen the Joust Master's face, limiting his swallowing, sight and hearing. The towel had fallen and this valiant attempt was over.

In May at Walter Day's 70th Birthday Party held at the Museum of Pinball in Banning CA, I got the chance to meet and talk Joust with Lonnie. He was in from out of town as a special guest of the party, being presented with a Walter Day Superstars of 2019 Video Game & Pinball Trading Card for conquering his 200th Joust machine. While in Southern California he didn't miss the opportunity to rollover nine West Coast Joust cabs and cocktails, #211 - #219. Even though this game has physically broken him several times, his love of Joust shines through in the tips he has shared with us. Game on:

Joust is a cross between chess and physics. A great player must out position one of the three main types of enemies and then defeat the enemies as they commit to an angle.

The first and most crucial skill I teach players is hovering in place. On the first few waves under the middle lower ledge on the right side - practice hovering in place just under it.

Second is to understand the flight dynamics of each enemy and that they are always moving towards you to kill. This can be used against them.

Third is in understanding the dynamic of the Pterodactyl. They are designed to generate fear. They can only be beaten by hitting them in the mouth. The mouth is two pixels closed and four pixels when opened.

Red enemies are the first to be removed from generation in play, followed by Grey enemies, eventually leaving only the Blue enemies named Shadow Lords.

Cardinal Rule of Joust - Flying is dying. By that I mean there are 10 enemies seeking to kill you. They are bouncing off ledges and each other to get to you. It's mentally impossible to keep track of each enemy. Most players like to fly all over thinking they are playing great when in reality they are incredibly exposed and will never achieve a marathon status.

Defending the Fort - Use the bottom middle ledge as a fort wall. This keeps enemies from attacking above or below, leaving the only vulnerable areas on the left and right. Now you can easily defend from under the center ledge. Let the enemies come to you be killed or if the coast is clear jump out and kill one.

High Level Playing Strategies

Starting at wave 8, every fifth wave is a Pterodactyl Wave. 8s is on the lower middle ledge. Stand on that ledge toward the right side. The Pterodactyl will come up to you. Ensure you are facing it. It will impale itself on your lance.

Starting on 13. all 3 waves. play the lower left at the 100,000 to 1 million mark. The same as the 8s, face the Pterodactyls.

Note: each time an enemy or Pterodactyl hit you they move you and change the direction you are facing

Streaming Shadow Lords out of the bottom middle pad.

Starting in the high 30s, you will have Shadow Lords on the pads. Eventually, by wave 60 everything is a Shadow Lord. This creates a need to play faster and eliminate as many enemies as efficiently possible. Starting in the 30s waves, center yourself on the lower middle pad and hover up to a spot even with the bottom part of the right and left ledges. This will allow to Shadow Lords to stream quickly out of the bottom pad directly to you. Remember you'll have to compensate each time one hits you.

- Lonnie McDonald

www.twitch.tv/LMcDonald111

www.joustmaster.com

A SPECIAL THANK YOU FROM THE AUTHOR:

I started writing this article two months ago in a hospital room, during some down time beside my sleeping Dad. My dad, Steve Senior, had recently taken a break from his salsa dancing nights, rock/reggae shows, and bowling league due to dizziness and asthma flare-ups. Never showing signs of slowing down, my role-model and best friend suddenly passed on. Taken by surprise, my world became gloomy, puzzling, and daunting. Think the Dark World transition in The Legend of Zelda: A Link to the Past. Unfinished and having missed the deadline of the previous issue of Old School Gamer Magazine, this article was a project I couldn't see myself having the strength to revisit. Fortunately, through the love and inspiration of my friends and family, I have worked through my Dark World powering myself up enough to carry on doing rad things. A very special thank you to all that showed compassion for my loss, including John Lester with the Game On Expo along with Vince Clemente and the Classic Tetris World Championship for getting my sad butt out to the desert for a much needed dose of amazing and unforgettable times. The positivity that comes out of the retro gaming community is a beautiful thing. Thank you all for your patience and compassion. As this project wraps, I feel a sense of closure and a relief of grief. I didn't want to lose the opportunity of sharing about Lonnie and his love of Joust.

-S DeLuca Jr.

R.I.P. Steve Sam DeLuca Sr. 1949-2019

Steve DeLuca - Best known as the madman and creator of the NES Goofy Foot controller. A father, drummer, electronic engineer and a right-handed old school gamer, Steve still finds time to run his website TotalRadNES.com and recently kicked off a nonprofit called Radically Achieving Dreams (501(c)(3)). Also a big part of the Classic Tetris World Championship (theCTWC.com), Steve hosts the CTWC Qualifiers held at Retro City Festival (Los Angeles), Let's Play Gaming Expo (Dallas), and at Game On Expo (Phoenix).

3 Arcade Cabinets (and 1 Handheld) in Very Different Sizes

By Brad Feingold, Frank Schwartztrauber and Ryan Burger

TINY ARCADES

Series three of these super cool, very inexpensive key chain-sized retro video game mini arcades are now available at Wal-Mart, Target, Amazon and many other retailers. This set of releases includes Tetris, Pole Position (with a little steering wheel), Rally X, and Q*Bert.

In case you haven't seen these in person, they are in a tiny cabinet measuring 3.75 x 1.5 x 1.5 inches and house a 1.5-inch screen. These units feature full color, hi-res screens, game sounds, joystick/wheel, two buttons and, from everything we at Old School Gamer can tell, they are running the original arcade ROMS. They are amazing, but I can't imagine Billy Mitchell taking last year's release of Pac-Man to the 256th level kill screen.

superimpulse.com/tiny-arcade/

NUMSKULL QUARTER ARCADES: PACMAN

It's interesting how companies are trying to make different sized versions of arcade games for home use. From the keychain to the Arcade 1Ups, the choices are seemingly endless. And now there is another entry that has the potential of being the definition of a desktop arcade.

Numskull has released their first in a series of seven Quarter Arcades with a limited edition run of Pac-Man. This ¼ scale machine is so far one of the better versions that I have seen.

Opening up the box, we see a limited-edition coin and certificate showing the special number of the unit, which really shows how much pride they put into their product. Taking the machine out of the box, I was overly impressed with the quality of the cabinet itself and the artwork on the side of the cabinet. Then I saw the screen and the controller. I was shocked at how small the joystick was, and I was afraid that I was going to break it. Then, realizing that it was truly ¼ scale in every respect, this was understandable and turned the machine on. The marquee is low lit, just like you see when you walk into the arcade. The only thing that was missing was Dragon's Lair next to it.

The cabinet contains the licensed ROM from Namco so everything that should be in the arcade classic is all present and ready to play on the 5 inch TFT screen. The graphics were a spot on duplication. The joystick was very responsive with about one hour of constant play. Again, it was a little too small for my large hands, but still workable.

On the back of the unit, you can charge the battery through a Micro USB input port. Once the unit is fully charged, you can use it for approximately four hours, depending on how you use the game with the volume and time played.

Bottom line with the Pac-Man unit, I love it! However, it is a little sad that there is only a limited run of these available. Also, at $189, it might be a little steep for some people. That said, it is a great looking collectible. And there are more are on the way! In addition to Pac-Man, there will be Galaga, Ms Pac-Man, and Galaxian. Coming early next year are titles such as Track & Field, Dig Dug and Space Invaders!

numskull.com/quarter-arcades

MICRO ARCADES

From the same people who brought you the Tiny Arcades (Super Impulse), newly released are a series of micro arcades that fit in the palm of your hand and are the same primary dimensions of a credit card (but thicker at 3/8"). The first three releases in this series are Tetris, Pac-Man and a combo unit of Missile Command and Centipede.

These units have a full color screen, sound, directional buttons (sorry no trackball for Missile Command and Centipede but would you really expect one?), and charge via micro USB. The size of the screen is amazingly small but amazingly bright and the gameplay is quite fun!

Selling at around $20, they are available in many locations including Amazon, Barnes and Noble, GameStop and more. To find out more about these cool pieces, if you don't just pick up one upon instantly upon seeing them, check out our friends at ArcadeUSA on YouTube for reviews of these pieces.

superimpulse.com/micro-arcade/

SNK NEO*GEO MINI

The SNK NEO•GEO Mini Samurai Shodown is a beautiful looking plug and play package with 40 games, a functioning mini-arcade, two controllers, an anti-slip mat, stickers for the arcade and all the cables you need minus the wall plug.

If you're an SNK, or 2-D fighter fan, this is a pretty good value considering the original system was $650, with games averaging $200-$300+. It's mostly fighter games, 3 Metal Slugs and several extra gems included. The game line-up includes all six Samurai Shodown games, three of which were not included in any of the other previous releases.

Seeing all the games with their original box art is pretty eye catching, and you can get the entire experience in the native Japanese language through the settings if that's something that interests you. It really makes you feel like you've bellied up to a Japanese arcade cabinet in a 1990s flashback. Personally, I really enjoyed Soccer Brawl and Top Player's Golf, which brought me back to my classic Nintendo days.

The games look absolutely great on the arcade itself, however, the picture leaves a little to be desired when plugging into a modern TV, even with the included HDMI cable. The colors seem to be generally acceptable, however, the outlines are a bit blurry and washed out even for games that are this old. I tinkered around with the settings, and nothing could really fix this issue. Everything is completely playable, but the picture quality could be just a bit better. All the games seem to run and play just fine with the provided controllers, which appear to be very high quality.

The mini arcade itself isn't super practical, as it doesn't use batteries or charge, and only works when plugged into a wall. However, for nostalgia purposes, it does look great on your desk, shelf or table.

Overall, this is a great collection and probably the best way to have all these classic SNK games in one package to quickly plug in and play whenever, and (almost) wherever you want.

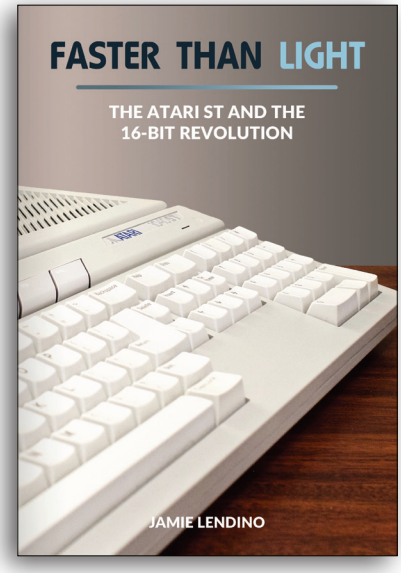
www.snk-corp.co.jp/us/neogeomini/ / Amazon.Com

Faster Than Light by Jaime Lendino

By Old School Gamer

The third installment in Jamie Lendino's series of retro computer and gaming books was just handed to me by the author himself at the recent "Too Many Games" event in Philadelphia, PA. Just like the others in the series, I knew I wanted to read more about Atari back in it's glory days as well as it's later, with such offerings as the ST. Atari's roller coaster in the gaming industry did peak early in the late 1970s and early 1980s, but they continued to coast into the 1990s with it's ST line of computers, and this is the story being told here, in his latest publication, Faster Than Light: The Atari ST and the 16-Bit revolution.

In the beginning of this book he does a bit of a rewind to Atari's early days that he also covered in the books Breakout: How Atari 8-Bit Computers Defined a Generation; and Adventure: The Atari 2600 at the Dawn of Console Gaming. The story picks up with the exit of Jack Tramiel from Atari competitor Commodore, and the creation of Atari Corporation, where he continued his mission of an inexpensive computer with a high end graphical interface he jokingly called the "Jackintosh". This computer, with it's GEM interface, was out to set the standard in home computing, and has a legacy that goes way beyond its first couple of models which most Atarians are familiar.



Being an Apple II person throughout the 80s, I wasn't exposed to the Atari Computer line other than it being another section in the Babbage's store I worked at in my local mall. I was more familiar with the 2600 and Atari's console legacy stretching through the 5200 and 7800 releases. Lendino's detail in this book is fantastic, with detail regarding all models (released and unreleased), peripherals, services and more. It also includes the history and explanation behind some of the Atari Computer decision making as well as other things happening in the industry at that time, and more. While I found myself skimming some of the extensive detail in certain sections a bit, it's amazing all the information that he's been able to amass in one reference book, with all of his references being cited.

If you were into home computing in the 1980s, this is an absolute must read. Check it out, and if you want to hear about the 8 bit computer lines or consoles from that era, I recommend you order his other books, Breakout and Adventure!

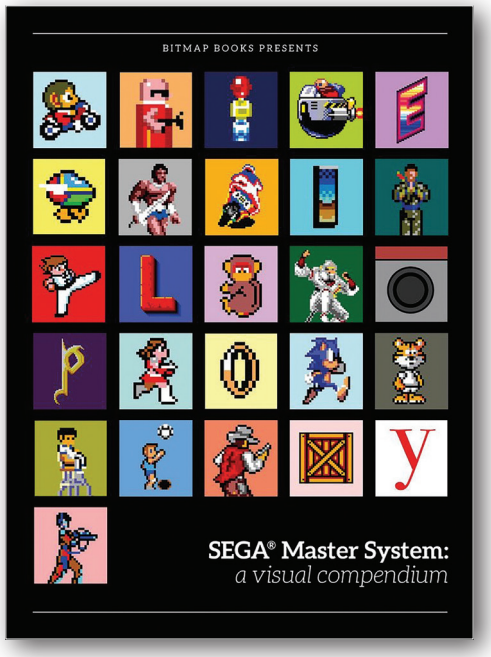
Lendino.com / Amazon.com

SEGA Master System: A Visual Compendium

By Old School Gamer

SEGA Master System: A Visual Compendium is part of a series of (now) six books published by Bitmap Books of the UK. The others in the series are Commodore 64 and Amiga, Sinclair ZX Spectrum, and the NES and SNES visual companions. While the Nintendo market has been saturated with books because of its extreme popularity, Sinclair, Commodore and Sega haven't been served quite as well in the past.

Bitmap Books has published several other books in my collection, so checking this one out was a treat for me. All of their books are hardback with lithographic level printing, with many of them coming in board slipcases and some other amazing finishing touches. But that's before you even get to the content, which is highly graphical with images filling practically every page, including product shots, screen captures, and more! Each game they profile has a couple of nice paragraphs (up to a couple of pages) written by one of their staff or an outside writer who submitted their expert contributions for the game. Some of them extend to multipage pieces with extra foldouts.



The portion that I enjoyed the most while reminiscing about these Sega games from the mid to late 1980s were the Sega celebrities/staff/programmers and artists such as Mark Cerney, Rieko Kodama and John Sauer (8 such interviews). These really told the story of Sega from the perspective of people on the inside. The detailed pieces on the Sega 3-D glasses, arcade conversions and more were fantastic. While it's not normally a book I would read from cover to cover, there was detail on every work like most compendiums, and I found myself reading about games that I hadn't heard of because of some of the interesting imagery that pulled me into it.

The Sega story is a very interesting one. Here's hoping the Sega Genesis Mini becomes popular enough that they put out a Master System mini so that I get the chance to play some of the games to which this book introduced me.

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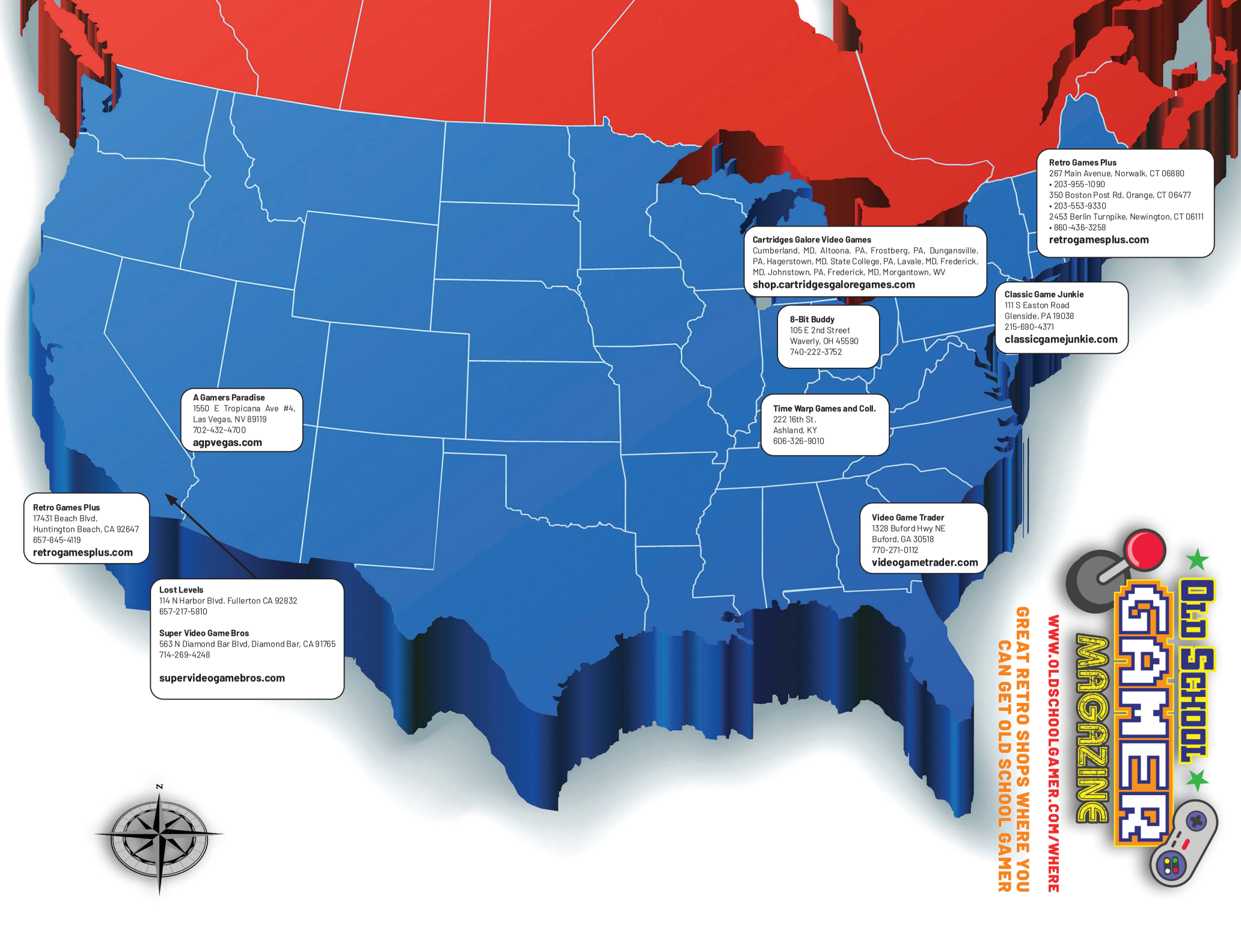
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