PHOENIX

THE FALL & RISE OF VIDEOGAMES

THIRD EDITION

LEONARD HERMAN

FOREWORD BY
RALPH H. BAER
FATHER OF VIDEOGAMES

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This book is dedicated to my shining stars
Ron & Greg & of course Tamar

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FOREWORD
BY RALPH H. BAER FATHER OF VIDEOGAMES

There is a sign on one of the exterior walls of the Imagination Pavilion at Disney World in Orlando which reads:

"IMAGINATION IS LIFE'S PREVIEW OF COMING ATTRACTIONS"

This book chronicles the history of the video game revolution - the people, the companies, the hardware, the games that are described here certainly have one thing in common - they are either the sources - or they are the end result - of a great deal of imagination.

Allow me to speak for myself: The concept of using a plain-vanilla home TV set to play interactive games just simply didn't exist until I came along and it bubbled forth out of my imagination in the fifties; it was converted to actual hardware in the mid-sixties.

Friends and acquaintances who know about my involvement with the early history of video games sometimes introduce me to others by saying something like: "Meet the guy who invented video games".

When I hear that because I know what's coming: "Which game did you invent?"

It rarely seems to occur to anyone that before you can come up with a specific "Video Game" - say a sports game or a shoot 'em-up game - the concept, the whole idea of playing games on a TV set has to first bubble forth out of the primordial ooze deep in someone's mind. And that, furthermore, this "Eureka" isn't likely to happen in a technical vacuum.....it just had to be based on the insight that using a TV set for something other than broadcast signal reception was a practical idea - one that could be converted into an affordable piece of hardware....a video game "console", in this case.

The point is that imagination needs to be coupled with reality to make practical things happen! The future - that coming attraction - rarely rises full-blown from the ashes of history. Maybe there was a great "Eureka" at the beginning...but then here's bound to have been a lot of "real" work along the way.

In my case, being a television engineer provided the technical base that kick-started my imagination to ponder the following situation:

Back in the '50s and '60's, there were all those TV sets out there - some 60 million of them in the US homes alone. Wasn't there anything else you could do with these fancy displays (for that's what they are) other than tuning in Channel 4 or whatever, especially when there is nothing worth watching on the air?

Asking myself that question, imagination did the rest: Play games maybe?...Yes, of course! Is that practical..? You bet!

I understood how TV sets work; I had designed and built television studio and transmitting equipment as well as TV receivers. Technically, video games are close relatives to both. Their signals need to be able to get into the antenna terminals of your TV set just like the local broadcast or your cable signal.

Video game "consoles" are basically like TV "stations", transmitting on Channel 3 or 4, typically. Very specific signals such as horizontal and vertical synchronization pulses, certain types of color information signals, an amplitude-modulated picture (video) signal - they all have to be generated by the electronic circuitry of a video game "console" before they can show up as game pictorials on the screen of your TV set. It helps to know this stuff before you let your imagination run wild on a concept like playing video games on your TV set..

Getting back to imagination: Who knows in what order the elements of novel concepts bubble forth? Maybe the idea of playing “TV Games” was born first in my imagination....but no doubt the old cranial apparatus was already busy figuring out in the background just how to get there from here technically.

It wasn’t long before a couple of associates and I played ping-pong games, “fired” at the screen with light-sensitive “rifles” and “pistols”, bounced “balls” off “walls” to emulate handball, played a gold game using a real putter and so forth. As our hardware got smarter, the games improved. Conversely, as we thought of neat new games, the hardware changes to make them work followed quickly. Everything was then “hardwired”, using discrete electronic components... microprocessors were in their infancy and much too expensive for the job.

By 1967 the “Brown Box”, our plug-in-card programmable game system was ready...Magnavox’ became our licensee in 1970; their Odyssey game console, a production version of our Brown Box, was introduced to a world of unsuspecting passive TV viewers in early 1972.

And so a new industry was born. It has had its ups and downs but it has mostly kept on roaring ahead in step with technology. It has done its share of contributing to great technical advancements in the art of displaying complex graphics on a displays. Most importantly, it has put imaginative, interactive gaming within reach of everybody.

Talk about imagination! The tale of the video game industry as presented in this book is all about imagination at work.

Enjoy the book!

Ralph H. Baer
January 1, 2001

INTRODUCTION

With this third edition, *Phoenix* takes on new dimensions; literally. While most people welcomed the inclusion of photographs in the second edition, in many cases the photos were too small to be of any value. By making the book larger I was also able to make the photos larger. I had planned on including color photos throughout the entire book but in the end the costs to produce color photos proved prohibitive. Thanks to advances digital printing the cost to print color has fallen dramatically, but unfortunately not enough. Hopefully the fourth edition of Phoenix (due around 2005) will have color pictures.

Four new chapters have been included to bring the history of videogames up to the end of 2000. Two new appendices have also been included for this edition. Appendix D, Magazines, features the covers of most of the better-known American videogame magazines. The magazines that are no longer printed show the covers of the first editions and the last editions on a gray background. For magazines that are still in print, the covers of the first editions, and the May 2001 editions, are featured on a white background. Publisher information is also included for those magazines that are still in print. Appendix E displays the covers of the major videogame books from the past twenty years. Please note that I have not included any strategy guides, which number in the hundreds.

Also new for this edition are eight Focus-On sections. These sections focus on important people and places in videogame history and provide additional information on the topic which would be out of place with the rest of the text.

Errors that have been found in previous editions have been eliminated here. Most notable are the year that the Milton Bradley Microvision appeared and the definition of 'bank-switching'. The Errata section that appeared in the second and third printings of the second edition is gone. Hopefully a new one won't take its place in future printings of this edition.

Phoenix is the 'Dragnet' of videogame history. What you get are 'just the facts'.

The information here has been garnished from over twenty years worth of magazines, press kits, and personal encounters. If you are looking for interviews, please check out Steve Kent's excellent book *The First Quarter*. Many reviewers have pointed out that *The First Quarter* and *Phoenix* complement each other and who am I to disagree?

Many have questioned my use of the single word *videogames*. While most sources, including Webster's Dictionary, spell it as *video games*, and in some circumstances I have seen it presented as video-games, I prefer using one word. My argument is that *videogame* should be one word since *videotape* and *videodisc* are also. This is strictly a personal choice and no inference should be made from it.

I would like to thank the following people for the help that they have provided. Several probably don't even know that they helped in some manner, but they did. Dan Amich, Mark Androvich, Mitch Arias, Al Backiel, Dena & Ralph Baer, Chris Bieniek, Stephanie Block, Crispin Boyer, Van Burnham, Ray Caldwell, Chris Cavanaugh, Alan Davis, Renee Eclo, Mike Etler, Jay Fitzloff, James Ford, Karin Hansen, John Hardie, Keita Iida, Jerry Jessop, Sean Kelly, Steven L. Kent, Zoltan Kiraly, Jeff Kitts, Chris Koehler, Alex Kovalenko, David Newman, Russ Perry Jr, Warren Robinett, Tom Russo, Joe Santulli, Lee Seitz, Gary Steinman, Curt Vendel, and Zube. There are many more people who should be on this list and I apologize to anyone who I inadvertently left out.

Thanks to my mother Roz and my brother Paul for just being there to help out whenever I asked.

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May 10, 2001

CHAPTER ONE
COMPUTER HISTORY

The history of videogames is a tricky subject to document. The reason for that is because it is very difficult to pinpoint exactly where it began. We could say it began in 1972 when Ralph Baer released the first home videogame console but that ignores the fact that Nolan Bushnell released an arcade videogame in 1971. But then like a ball in *Pong*, we go right back to Ralph Baer who had applied for and received a patent for TV games in 1968 after dreaming up the idea two years early.

Both men now receive the major credit. Ralph Baer is generally known as *the father of videogames* while Nolan Bushnell has assumed the title of *the father of the videogame industry*. But there were other players. There was Steve Russell who wrote the first game program for a computer during the early 60's. And there was Willy Higinbotham who conceived a ball and paddle game that could be played on an oscilloscope during the 50's.

And if we remember that a videogame console is really a microcomputer, we can associate the beginnings of videogames with the birth of computers which occurred during the early 40s. And since data processing itself began in the 19th century, we can technically push the history of videogames back even further. And if we really push it we can say that the very first calculating machines, the forerunners of today's number crunching super computers, were created over 2600 years ago.

Before the birth of the first calculating machine, early men relied on their fingers to count. This was the beginning of the decimal system, a numbering system based on ten. Using fingers for counting worked fine for eons until men discovered that they needed to tally numbers higher than ten.

The original calculator, the *abacus*, had first been used in ancient China in 600 BC. It consisted of several rods, each rod having ten beads strung through it. The rods represented ones, tens, hundreds, and so on. By moving the different beads back and forth, men were able to add and subtract easily.

The abacus sufficed for 2200 years before inventors began dreaming up newer and better ways to calculate numbers. In 1614, John Napier of Scotland discovered logarithms, "exponents that show the power to which it is necessary to raise a fixed number (the base) to produce another given number". Napier also discovered that if the logarithm of one base number was added to the logarithm of another base number, the result would equal the logarithm of the two base numbers multiplied together. Napier proved that complex multiplication problems could be easily calculated by simply adding logarithms. To aid people who dealt with numbers every day, Napier published his complex logarithm tables. In the late 1620's, William Oughtred invented the slide rule which gave mathematicians easy access to logarithm tables and made large scale multiplication even easier.

In 1642, a French philosopher named Blaise Pascal, created the first automatic calculator. The son of a tax collector, Pascal grew up watching his father spending hours on calculations for his work. Since Pascal, who had aspirations of becoming a tax collector, didn't fancy spending so much time calculating figures, he sought to create a machine that would make his father's job much easier. The result was a device that could be deemed as a mechanical abacus with interlocking gears replacing the rods. Each gear, which had the numerals *0* through *9* painted on it, could be rotated any number of digits. Every time the 0 passed a given spot, the wheel to its left advanced one digit. Although the machine was accurate and time-saving, it could only be used for addition. However in 1673, a German named Gottfried Wilhelm Leibniz, invented a machine that could subtract, multiply, and divide, as well as add. Although Leibniz's calculator was similar to Pascal's, it also included a movable carriage and a hand crank. By cranking the handle, the carriage moved and turned multiplication and division problems into the series of repetitive addition and subtraction problems

that they actually were.

Leibniz also perfected binary arithmetic, something that would be more important to modern computers than his mechanical calculator.

Pascal's and Leibniz's devices were godsends for people who worked with numbers every day. However, these machines were more closely related to calculators than computers. One hundred and fifty years would pass before someone developed a machine that was the direct ancestor of the computer.

In 1822, Charles Babbage wrote a paper proposing a machine called the *Difference Engine*. According to Babbage, the machine would be able to compute limited functions and print scientific tables. The British government commissioned him £1500 in 1823 to make his idea a reality. At first Babbage estimated that it would take three years to create the *Difference Engine*, As those years passed he redesigned it continuously and made it more and more complex. After 10 years and £17,000 he only completed a portion of the machine. By that time Babbage had already planned an *Analytical Engine* that could compute any type of function. Like so many videogames a century and a half later, the *Difference Engine* was abandoned because it was obsolete before it was even completed.

Babbage designed the *Analytical Engine* to have a storage area that could hold up to 100 40-digit numbers. In addition, the machine would be completely programmable by feeding it punched cards that contained instructions. Despite the detailed notes that Babbage wrote on the *Analytical Engine*, it was never built because integral parts that were needed couldn't be manufactured accurately. Surprisingly, the *Difference Engine* was finally constructed without Babbage's help in 1854 by a Swede named Pehr Georg Scheutz who had read about it. The British government, which had spent so much money financing Babbage, was so impressed with Scheutz's Difference Engine that they purchased one.

Although the *Analytical Engine* never materialized, the idea of using punched cards to send information to a machine eventually saw the light of day over 35 years after Babbage proposed it.

Following the general census of 1880, the US Census Bureau discovered that there were so many people in the country that it took over seven years to compute the totals manually. By that time the figures were too inaccurate to be of any use because the population climbed at a very rapid rate. The Census Bureau sought a mechanical way to compute the population so it ran a competition to see who could supply the best machine. A Census employee named Herman Hollerith won the competition with a machine that used punched cards to input data quickly. Each card contained twelve rows consisting of twenty tiny circles. Each circle represented a possible response to a question on the census forms. When responding to the census a person would fill in a circle that corresponded to his answer. A census employee then punched out the filled circles and fed the card into the tabulating machine. Inside the machine, the card sat above 240 tiny mercury-filled vats that were connected to 40 counter dials. Above the card were 240 spring-loaded pins, Each of the springs and vats were lined with the 240 circles on the card. When the springs were lowered, those that were over the punched circles went into the vat of mercury. This completed an electrical circuit and caused a numerical indicator, which stood for ones, tens, hundreds, and so forth, to advance on the connected dial. The machine worked so rapidly that it only took six weeks to complete the 1890 census! The idea that began with the abacus had come full circle and this time human hands were no longer needed to move the beads.

Hollerith knew that he had created a revolutionary product. In 1911 he decided to start a company to manufacture and market the tabulating machines along with other types of business machines such as time clocks and scales. He called his business *The Computing Tabulating Recording Company* (CTR).

In 1920, sales of punch-card tabulating machines comprised only a small portion of CTR's

earnings but the number steadily climbed. Business spread overseas and in 1924 CTR changed its name to *International Business Machines* (IBM) to reflect its new international status. By 1933 the tabulating machines were the top earners for the company. In 1937 a Harvard graduate student named Howard Aiken developed the idea to use electromechanical devices to perform calculations. Tired by the large number of calculations that he needed for his mathematics doctoral dissertation, Aiken proposed the type of calculating machine that Charles Babbage had designed. After receiving a grant from IBM to build the machine, Aiken used Babbage's original description as a guide. In 1943 he finally displayed the *Mark I*, the first electromechanical calculator. The Mark I was able to perform basic arithmetic quickly and it could be reprogrammed to perform other functions by loading new instructions into the machine from punched paper tape. The fifty-one foot monster was put to work calculating ballistic tables for the US Navy.

The Mark I utilized simple electromechanical relays that served as on-off switches. Unfortunately, because they were always moving, the switches constantly broke down. Because of this, the Mark I, like the Difference Engine that it was based on, was already obsolete at its completion. In the late 30's IBM began awarding grants for the development of programmable electromechanical calculators. At this time Dr. John V. Atanasoff, a mathematics professor at Iowa State College, began dreaming about calculators that were completely electronic. Atanasoff wanted a calculator that could perform math problems for his twenty master and doctoral candidates. After discovering that the available calculators didn't fit his needs, he realized he would have to design one himself. With the assistance of Clifford Berry, Atanasoff built the first electronic computer which he called the *Atanasoff-Berry-Computer*.

The ABC differed from the Mark I because it used non-moving vacuum tubes instead of mechanical relays for on-off switches. Invented in 1906 by Lee De Forest, vacuum tubes were able to control the flow of electrons within them making them perfect for this task. A tube was on when it was charged with electrons. If there wasn't any current running through it, then it was off.

In 1940, John Mauchly of the University of Pennsylvania Moore's School of Engineering learned about Atanasoff's work and quickly became interested in it. He spent five days at Atanasoff's home in June 1941 where he received a crash course on the ABC. Atanasoff gave him a manuscript that described the principles of the computer and showed him a 500 tube prototype of the ABC.

When World War II broke out, the United States needed to calculate ballistic tables to produce trajectories for artillery and bombing. A painstakingly slow process, each of the more than 2000 trajectories per table required over 750 multiplications. After the government installed "differential analyzers" like the Mark I, the time needed to calculate a sixty second trajectory dropped to fifteen minutes. Unfortunately even that wasn't fast enough to keep up with the demand for the tables.

In April 1943, Mauchly and his associate J. Presper Eckert, submitted a memo to the government describing an electronic computer that could calculate each ballistic table in thirty seconds! The Army quickly funded Mauchly and Eckert for their all electronic calculator that they called ENIAC (*Electronic Numerical Integrator and Calculator*). Because ENIAC used non-moving vacuum tubes to control the flow of electricity, it was able to process information one thousand times faster than the Mark I which relied upon mechanical relays. Unfortunately, a price had to be paid for this speed. Mauchly had designed ENIAC to work with decimal numbers instead of binary because he wanted a system that was already familiar to people. In order to process in decimal, the machine needed over 17,000 fragile vacuum tubes that constantly malfunctioned. Not only did this large amount make ENIAC twice the size as the Mark I it also caused a section of Philadelphia to dim because it used so much power whenever it operated. The tubes generated so much heat that it wasn't unusual for the temperature in the room to reach 120 degrees. Because ENIAC hadn't been designed with internal storage, hundreds of wires had to be unplugged and plugged every time its users wanted to

reprogram it. Because of these problems, Mauchly and Eckert came to the conclusion that their machine, like its predecessors, was obsolete before it was even completed. So when the ENIAC was unveiled to the public in 1945, Mauchly and Eckert were already at work designing its replacement.

EDVAC (*Electronic Discrete Variable Computer*) avoided many of ENIAC's problems. Because it processed binary numbers, it used fewer tubes and therefore wasn't as big and required less power. It also utilized internal storage so it would be easier to alter programs without the tedious chore of rewiring. The two inventors were soon visited by John von Neumann, a mathematician who was well-known and respected by the scientific community. Von Neumann quickly saw the potential for scientific computers and published an article entitled *First Draft On A Report On EDVAC*. The article was well received by scientists who, after reading it, changed their thinking and began viewing the computers as scientific aids. Mauchly and Eckert were outraged by the article because everyone who read the article believed that EDVAC had been von Neumann's invention. In 1946, they abruptly quit the Moore School to form their own business. Afterwards, von Neumann began teaching classes on computer design and internal storage. One of his students was Maurice V. Wilkes who was from Cambridge University. When Wilkes returned to England he began designing a computer that utilized the concepts that von Neumann taught about.

In 1949, he completed EDSAC (*Electronic Delay Storage Automatic Calculator*) which wound up being the first computer to use internal storage. Von Neumann finally completed EDVAC in 1951.

While von Neumann looked into the scientific possibilities for computers, Mauchly and Eckert thought about its commercial prospects. They began work on the first all-purpose computer, which they called UNIVAC (*Universal Automatic Computer*) , shortly after they founded the Eckert-Mauchly Corporation. When they ran out of money in 1950 they tried to get backing from IBM. After IBM refused because it didn't see any money to be made in computers, the Eckert-Mauchly Corporation was sold to Remington-Rand. The UNIVAC, the first commercial computer, was released a year later.

The computer race began and never stopped. In 1947, William Shockley, John Bardeen, and Walter Brattain of Bell Labs developed the transistor, which at only 1/100th the size of a vacuum tube, could control large currents of electricity without overheating.

Because of an anti-trust exemption, Bell Labs had to freely license the transistor to any American company that wanted it. Surprisingly very few jumped at this opportunity. Foreign companies, on the other hand, had to pay a licensing fee. One of the very first companies that applied for a license was a small Japanese firm called Tokyo Telecommunications Laboratory. The company was so small that it had trouble raising the $25,000 licensing fee. Fortunately it did and a few years later it changed its name to Sony.

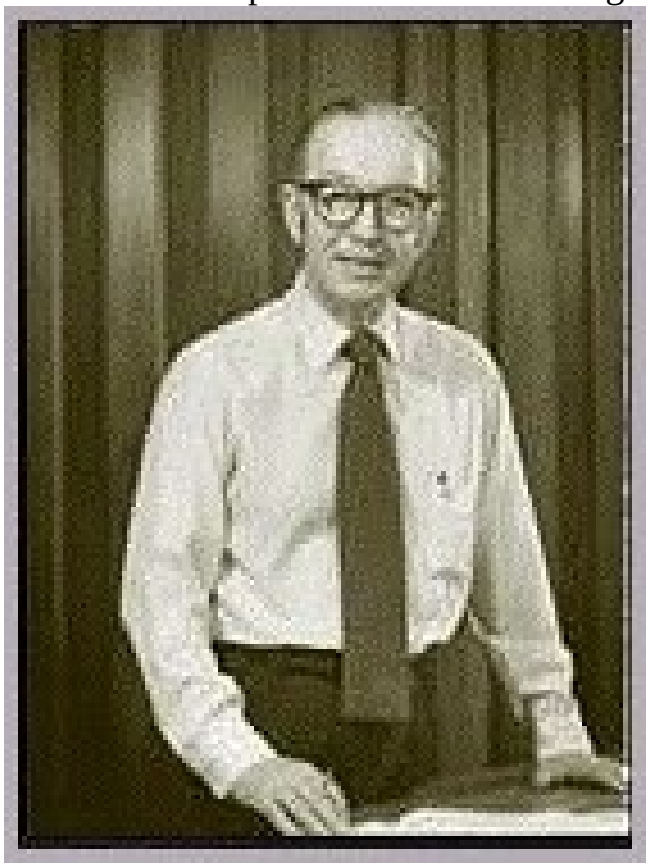
In 1954, Bell Labs built TRADIC (*TRAnsistor DIgital Computer*), the first transistorized computer. After two years of rigorous testing, only eight of its 700 transistors failed, making it a major success when compared to the high failure rate of vacuum tubes. However it was outdone the following year when Remington-Rand released UNIVAC II with only 500 transistors.

After receiving the Nobel Prize in 1954, Shockley moved to Palo Alto California with the intention of forming a company to sell his invention. With backing from Beckman Instruments, Shockley founded Shockley Semiconductor. He then recruited the dozen top physicists and chemists in the country into his company. They tried to develop a three-layer diode that Shockley felt would be much better than the transistor. Unfortunately it wasn't and his company failed. Shockley's highly prized researchers quickly defected to Fairchild Camera & Instrument where they set-up Fairchild Semiconductor in 1957.

Fairchild Semiconductor was far more successful than Shockley Semiconductor because its researchers were able to develop a smaller transistor. Transistors and costs continued to shrink and the benefactor of this was the computer manufacturers whose products became cheaper, smaller, and

more reliable. Computers were no longer the giant monsters that needed entire rooms to house them. As they became affordable, more and more companies and laboratories were able to acquire them.

In 1958, the US Government's Brookhaven National Laboratory for nuclear research held open houses so the public could visit and learn about the research that was conducted there. One Brookhaven physicist, Willy Higinbotham, was unhappy with the boring exhibits that were on display. He wanted something that people could interact with and appreciate what they saw. One thing that interested Higinbotham was the idea of graphing the path of bouncing balls on an oscilloscope screen. He studied the instruction book that came with the laboratory's computer and learned how to plot trajectories in a few hours. From that information Higinbotham designed a game that he figured would hold the public's attention. The game was ready to play in October 1958.



Willy Higinbotham

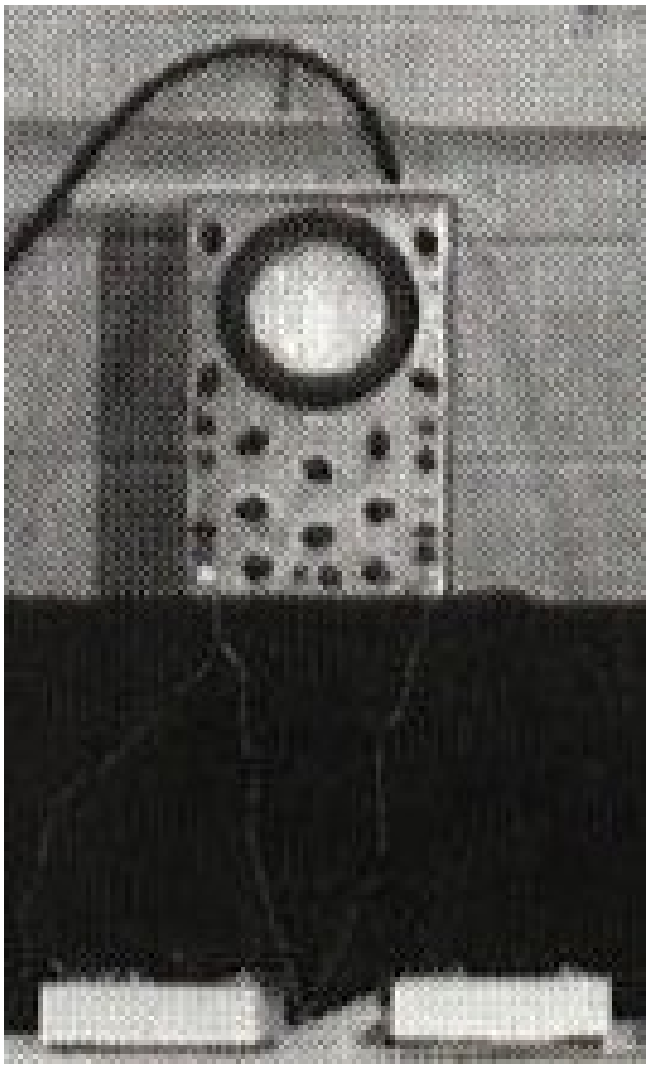
The game was tennis. The oscilloscope displayed a horizontal line along the bottom and a small vertical line that represented a net in the center. A 'ball' moved across the screen and bounced whenever it hit the horizontal line. There were two small boxes attached to the oscilloscope and each had a button and a knob. These were the rudimentary controllers for two 'players'. A player pressed the button when the ball was on his side of the net and this caused the ball to return to the opposite side. The knob controlled the angle of the return. The game couldn't keep score and players could compete as long as they wanted. Everybody who visited the lab loved it and Higinbotham improved the game the following year by displaying it on a 15 inch screen.

Higinbotham never had any plans to market his tennis simulation and it never left the Brookhaven Labs. He never even bothered to patent his game because he never felt like he had invented anything. If he had foreseen the game's commercial possibilities the history of videogames might have taken a different path altogether. And even if he had applied for a patent, then the rightful owner of that patent would have been Higinbotham's employer, the United States government.

In 1962, Steve Russell, a graduate engineering student at MIT, thought that it would be fun to write a game on the school's PDP-1 computer. He decided on a science fiction theme because in those days most people still considered computers to be straight out of science fiction stories. His game, *Spacewar*, was a basic shoot-out in which two players controlled spaceships that fired missiles at each other. To make things more difficult, Russell even included a sun that pulled the spaceships with its heavy gravity. Not only did the player have to avoid his opponent, he also had to navigate around the sun to avoid hitting it.

Spacewar became an underground hit. Other students not only played the game; they also tinkered with its code. One student added stars that represented actual constellations. Another added an option that instantly transported a ship from one part of the screen to another random spot at the touch of a button. Before long, *Spacewar* began appearing on mainframe computers around the country.

One school that had *Spacewar* on its computer was the University of Utah. By 1965 many of its students spent their nights endlessly playing the game. One of these students was a 22 year old



Higinbotham's oscilloscope

Spacewar

engineering major named Nolan Bushnell. Like the thousands of other students around the country who played *Spacewar*, Bushnell never thought about any commercial possibilities for the game. This changed when he wound up working summers as manager of the arcade department at Lagoon Amusement Park in Salt Lake City. One day he got the idea that people on the midway might pay to play computer games like *Spacewar*. Unfortunately, since computers were still too large and too expensive to make such an idea plausible, Bushnell put the idea in the back of his mind and continued with his life.

While Bushnell was toying with the idea of coin-operated videogames, another man was thinking about videogames for the home. Ralph Baer was the manager of consumer product development for Sanders Associates, a military electronics company. In September 1966, he began thinking about alternate uses for a television besides merely turning it on and watching it. He quickly began working on making his idea a reality. By December 1966 he had spots moving around the TV screen. He went to Sanders' director of Research & Development who gave him the go ahead with corporate backing. Baer next brought in two engineers, Bill Harrison and Bill Rusch, and for the next year the three worked together in a room that was off limits to everybody else. By early 1967 they completed basic ball and paddle games. They finished up a video version of tennis shortly after but never stopped their development. By September 1967, one year after Baer thought up the idea, he and his assistants were completing complex versions of hockey.

FOCUS ON SANDERS ASSOCIATES

The importance of Sanders Associates role in the development of videogames is unquestionable. The real question is why did they get involved in the first place? The company had no experience in developing consumer based products, and even after they gave Ralph Baer the green light to develop his videogame, they had no idea what they were going to do with it.

Today Sanders is an operating company of the Lockheed Martin Corporation. Still based in Nashua, New Hampshire, the company is a major producer of aircraft self-protection systems and tactical surveillance and intelligence systems for all branches of the armed forces. Sanders is also involved in other major business areas which include microwave, mission and space electronics; infrared imaging; and automated mission planning systems.

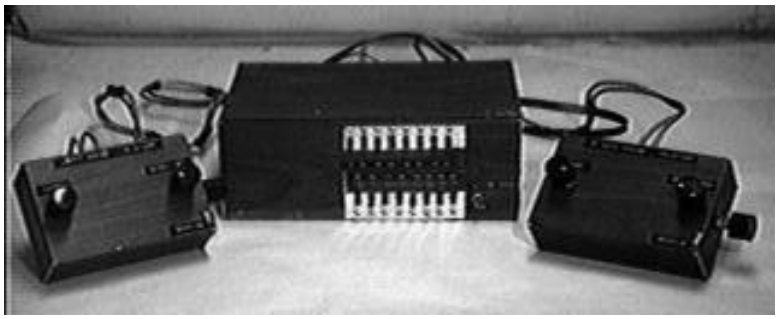
Baer applied for the first videogame patent on January 15, 1968. Afterwards, the group began to concentrate on marketing their game and here Baer faced one of the biggest obstacles yet in his creation of the videogame console.

Sanders, being a defense contract company, was not in the position to manufacture and distribute consumer products. Baer figured that it made more sense to license the game to a consumer electronics company that could manufacture it and sell it under its own brand name. Baer didn't have any specific manufacturers in mind when he began peddling his game; but he did think that the most logical company would be one that also manufactured television sets.

Baer quickly learned that it wasn't just a simple matter of calling up a television manufacturer and telling them that he had a great new product that would interest them. He first had to make people realize that games *could* be played via a television set and that nothing could go wrong with the television should the player do something wrong. Baer demonstrated his 'Brown Box' prototype to many television manufacturers like Sylvania, Philco, Admiral, General Electric, Zenith and Sears. All of them marveled at the new product but all were afraid to make a move on it figuring that the product would damage the television set.

The story seemed to change when he visited RCA and found people who were definitely interested. Ironically RCA had also been experimenting with videogames. For the twenty-fifth anniversary of RCA Labs in Princeton, engineers programmed a video version of pool on a $90,000 computer. Despite the money and knowledge that was put into it, the game was pretty primitive and RCA didn't see any commercial applications for it at all.

When Baer and company came calling RCA began to see commercial possibilities for



Ralph Baer's Brown Box

videogames after all. Sanders Associates began negotiating with RCA but it turned out that RCA's demands were just too great. They weren't content in merely purchasing the license to manufacture and market videogames; they wanted to own Sanders Associates and thus own the patent for the game. Sanders steadfastly refused to be gobbled up by the TV giant and when RCA finally realized that they weren't going to get what they wanted, they backed away from the negotiations.

FOCUS ON RALPH BAER

When Ralph Baer began working for Loral in 1949, his first assignment was to build a television set. He wanted to build some kind of interactive game in that set but his bosses were not interested. That idea for a TV game reappeared 17 years later and became the foundation for Odyssey , the first home videogame console.

After the Odyssey Baer had something to do with many of the early videogame systems from Coleco: Telstar, Tank, and Telstar Arcade.

Although he had a one of the first degrees in television engineering, Baer's inventions weren't limited to videogames. He produced several electronic games such as *Amazatron, Maniac,* and *Computer Perfection*. But his most famous invention was a round disc with four large colorful buttons: *Simon*.

Baer later went on to invent the first talking greeting card for Hallmark. He also made talking door mats and talking bicycle speedometers.

This list only cracks the surface of Baer's phenomenal output. All in all this modern day Thomas Edison boasts over 150 patents.

Baer realized that there was one problem with the system and that was the fact that the graphics were very bland. To keep the price of the unit reasonable, the system only had the power to create the most minimal of on-screen effects. The most complex graphics that it could generate was a boundary line, paddles which looked like tiny rectangles and a ball which was merely a circular blip.

Baer experimented with ways to make the graphics more exciting while still keeping the costs low and early on he figured out a way to include colorful backdrops for the games. The game hardware was modified so it could receive a video signal and then work cooperatively with the incoming video. Colorful wall charts were then created which displayed such scenes as a tennis court with lines. These charts were then photographed with a color video camera and the video signal was instantly sent to the game hardware which then merged the colorful backdrops with the electronic ball and paddle and gave the effect of a game with sophisticated colorful graphics.

At first, Baer figured that the cable industry would be the perfect vehicle to deliver the colorful backgrounds into homes that owned the game console. He invited Irving Kahn, the chairman of the board of Teleprompter, a New York City cable company, to Sanders' headquarters to sample it. Although Kahn was very impressed by what he saw, he had to reject the idea because the fledgling cable industry was in deep trouble and he had higher priorities than games to deal with.

The sixties gave way to the seventies and Baer and Sanders continued trying to sell their game. During this time, Bill Enders, who had been one of the main negotiators for RCA, left that company to work for Magnavox. He had been very impressed with Baer's invention and he convinced his new company that they would be too. They drew up a contract which awarded Magnavox the full exclusive rights to the invention and the *Odyssey* was born.

CHAPTER TWO
1970-1973

Between the time that Willy Higinbotham and Ralph Baer created their versions of video tennis, computers evolved at a remarkable rate. And as they became more powerful, they also kept getting smaller in both size and price. Thanks to the tiny transistor, computers no longer needed which in turn led the way for smaller machines. As transistors became smaller and more complex, computer designers dreamed up machines that utilized more and more of the tiny circuits. Unfortunately, as the transistors grew smaller, they also became more unreliable, due to the fact that they were soldered together. More transistors required more soldering. With the increase in soldering came a proportional increase in faulty wiring.

The solution to this came in the form of chips. Microchips, also known as integrated circuits, are collections of tiny transistors connected together. They're more reliable than separate transistors because they require less soldiering. A microchip with 1000 transistors may only need 12 soldered connections while the same number of separate transistors would need 3000.

Several manufacturers, such as Fairchild Semiconductor and Texas Instruments, quickly excelled in improving the microchips. The first microchips were composed of five electronic components that could produce an alternating current after being connected to a battery. By the time Ralph Baer sign his deal with Magnavox in 1970, one microchip contained enough microscopic components to program a small computer.

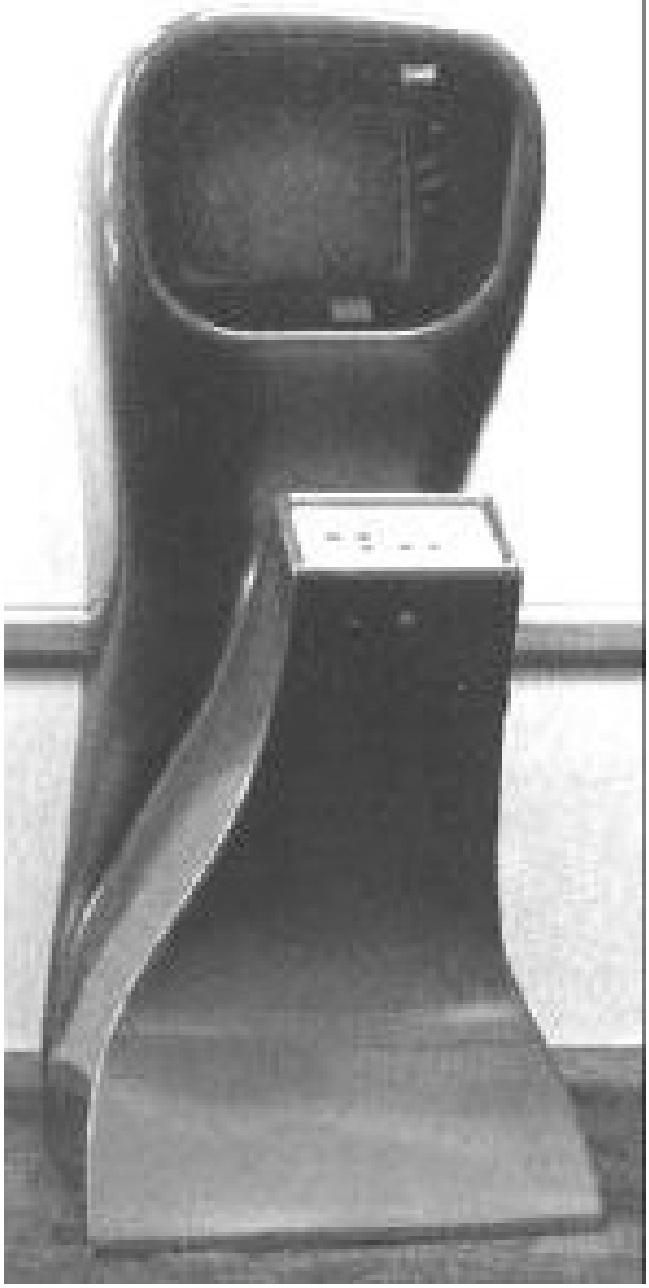
At this same time, Nolan Bushnell, the Utah student who had envisioned people paying to play computer games, graduated from college. He moved his wife and daughter to California to began his new job as a researcher with Ampex, the Sunnyvale company that invented videotape. Bushnell's $12,000 salary, a decent amount at the time, wasn't enough to support him in the style that he wanted to live.

Microcomputers were beginning to come out and Bushnell realized that it was finally economically possible to bring *Spacewar* into penny arcades. He discussed his idea with a fellow Ampex researcher named Ted Dabney who instantly fell in love with it. They soon allocated their weekends to work on their project. It quickly became so involved that Bushnell relocated his infant daughter from her bedroom to the living-room so he could use the bedroom as a workshop.

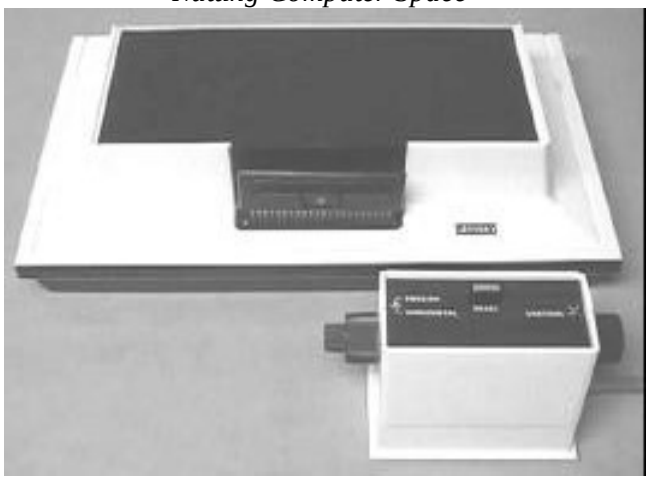
Bushnell originally intended to connect several terminals up to one minicomputer that would act as the brains of the game. But as he kept adding more and more components without obtaining satisfactory results, he eventually realized that thanks to microchips he no longer needed a minicomputer. Each terminal could have its own tiny brain.

Bushnell quit Ampex in March 1971 so he could devote all of his time to his *Spacewar* project. After he completed it, he sold it to Nutting Associates, a manufacturer of coin-operated games run by Bill Nutting. Bushnell joined Nutting Associates in August as chief engineer just so he could refine the game as it went into production. Nutting Associates built 1500 units and released them as *Computer Space*. While it was the very first coin-operated videogame, *Computer Space* was also the first videogame failure.

During the development of *Computer Space,* Bushnell's engineering friends were so excited about the game that they camped out in his back yard just to play it. Unfortunately the rest of the world didn't show any interest in the game at all. Bushnell later realized that the game was just too complicated for the general public. People raised on pinball weren't willing to spend time reading instructions to learn what the variety of buttons labeled "thrust", "fire", and "rotate" did. Bushnell concluded that the only way he could have a successful videogame would be by marketing one that



Nutting Computer Space



Magnavox Odyssey

people could play immediately without having to read any instructions.

Ironically, shortly after Nutting Associated released *Computer Space*, Bill Pitts, a scientist at Stanford, also produced a commercial version of *Spacewar* which he dubbed *Galaxy Game*. His game was just as complex as *Computer Space* and never went beyond the prototype stage.

Magnavox began production of the Odyssey, the world's first home videogame console, on January 27, 1972, and released it in May. Shortly before its release, engineers and executives from Magnavox and Sanders toured the country to demonstrate and promote the new product. The Odyssey debuted at a demonstration in Phoenix Arizona on May 3, 1972. Bill Nutting learned that there would be another demonstration in Burlingame California on May 24. Because he thought that Nutting Associates was only company in the videogame business, he sent Bushnell to the Burlingame demonstration to investigate. Bushnell sampled Odyssey Ping-Pong and handball for a half hour and later reported to Nutting that the Odyssey had been designed for the home and was not very interesting to play.

Microchips were still very expensive when the Odyssey was created. To make the price of the unit affordable, Ralph Baer and his team used only 40 transistors and diodes but this gave the Odyssey the power to generate only the most minimal of on-screen effects. Like its prototype, the unit could not display scores or complex graphics. Baer had toyed with the idea of using incoming color video to simulate background graphics but Magnavox nixed it. Instead, they packaged the Odyssey variety of plastic overlays that had to be placed over the TV screen to simulate sophisticated graphics.

Magnavox Odyssey Light Rifle

The Odyssey had several dedicated programs built into it that instructed the ball how to behave. This, in effect, created different types of games. In later years there would be many dedicated videogame consoles and different game programs could be switched by pressing a button, rotating a knob, or flicking a toggle switch. This was not the case with the Odyssey. The console was packaged with six plug-in circuit boards, which, when inserted, acted like keys and told the console which program to run. Magnavox released several additional circuit boards that retailed

for $5.95 each. Magnavox also offered a $25 shooting gallery package that came with four additional circuit boards, overlays, and a light rifle.

Magnavox pushed the Odyssey through print and television ads and sold a modest 100,000 units in 1972. Other manufacturers viewed the machine as a passing fad and didn't see any future in home videogames. Arcade games were a different story.

After *Computer Space* failed, Bushnell realized that a relatively simple game that didn't need any explanation, would probably succeed. He told the people at Nutting Associates about this and they supported him. Before he began designing the new game, Bushnell demanded that he should get a bigger share of the profits since he was the brains behind the game. He wanted one third of the company. Bill Nutting countered with five percent as long as Bushnell agreed to stay as an engineer. At that point Bushnell quit Nutting Associates with the intent on forming his own company.

Bushnell and Ted Dabney each kicked in $250 from their *Computer Space* royalties to set up their own company. After looking through the dictionary, they decided to name their company *Syzygy*, which means the straight-line configuration of three celestial bodies. When they attempted to incorporate the company they were surprised to learn that a roofing company had already registered as Syzygy. Desperate for a new name, Bushnell turned to *Go*, his favorite board game. He wrote down his three favorite Japanese terms from the game. *HANNE* meant that a player was about to lose a piece. *SENTE* was similar in meaning to the chess term "checkmate". Finally there was *ATARI* which was similar to the chess term of "check". Bushnell took his list to the office of California's Secretary of State where someone liked the name ATARI the best. Atari it was.

Atari was officially incorporated on June 27, 1972. Once Atari was established, Bushnell decided to release an easy-to-learn driving game. Although the game would be simple, he needed an engineer to put together the complicated circuitry. While at Ampex Bushnell had been friendly with a young college student named Al Alcorn who was there under a work-study program. When Bushnell sought an engineer he remembered that Al Alcorn had recently graduated from the University of California at Berkley and was looking for work. Bushnell contacted him and hired him as Atari's first engineer.

Because Alcorn was inexperienced with putting videogames together, Bushnell felt that Alcorn wasn't ready to design the driving game. He figured that it would be better to start the new recruit with a simple video Ping-Pong game. Although Alcorn designed the game according to Bushnell's specifications, he added one extra feature. The game made a sound every time the ball bounced off a wall. Bushnell liked it so much that he named the game after the sound: *Pong*.

Al Alcorn (2000)

Bushnell decided to follow Sanders' lead and stay away from manufacturing because he wasn't prepared to hire more employees and look for a larger building for a factory and warehouse. He wanted Atari to strictly design and program videogames that other companies would license and manufacture. With this idea in mind, he put together a *Pong* prototype and went to Chicago to talk with executives at Bally, the leading manufacturer of pinball machines. Bally wasn't interested in *Pong* at all. To the narrow-minded executives, nothing could ever replace pinball.

Atari Pong Prototype

Dejected, Bushnell returned to California and set the *Pong* prototype up in a Sunnyvale bar called Andy Capps. The regulars at the bar curiously looked at what appeared to be a coin-operated television. On the screen appeared a simple message that beckoned people to: "**AVOID MISSING BALL FOR HIGH SCORE**". One brave soul inserted a quarter and watched with confusion as a ball whisked across the screen and an on-screen counter changed from zero to one. After the counter advanced several more times someone realized that the knobs on the console controlled 'paddles' that moved vertically along the sides of the screen. There was no stopping them after that. Everybody in the bar tried the game before the night was over.

News of the game spread rapidly and when Andy Capps opened at ten the following morning there was a long line outside of people waiting to get in to play. Alcorn received a phone call from Bill Geddes, the bar's manager, two weeks later. Geddes informed Alcorn that the machine stopped working and could he please fix it because it had become very popular. Alcorn quickly drove to the bar and examined the machine. After he unlocked the front of it, he pressed a switch that allowed him to play without paying. The game performed flawlessly. After he was satisfied that there wasn't anything wrong with the circuitry, he farther examined the machine. He smiled when he found the problem.

FOCUS ON NOLAN BUSHNELL

Although he is best known as the "father of the videogame industry", Nolan Bushnell made a hobby out of starting up businesses the way others have collected stamps. Besides the companies that are featured in this book, Atari, Pizza Time Theater, Sente, and Androbot, Bushnell founded over 20 technological and interactive companies including Catalyst Technologies, Etak, Axlon, Irata, AAPPS and ByVideo. He has also served as a consultant for many major companies including, Commodore, IBM, Cisco Systems and US Digital

Communications.

Bushnell's current venture is uWink.com, a corporation that has been set-up to provide arcade games via the Internet.

The reason the machine broke down was because the milk carton that he had used to catch the quarters had filled up. The quarters had overflowed and jammed the machine!

Thanks to the enthusiastic reception that *Pong* received, Bushnell changed his mind and decided to go ahead and manufacture the game himself. He established arcades to raise money and leased pinball machines from distributors that he had contacted when he tried peddling *Pong*. He also leased an old Santa Clara roller rink that he converted into Atari's first factory. Finally, he hired hippies to work the production line. The system worked well and Atari shipped its first videogame in November 1972.

Upon *Pong's* release Magnavox quickly sued Atari for copyright infringement; a procedure that would become all too familiar in the years to follow. Although Bushnell insisted that he didn't copy *Pong* from Odyssey, a US District Judge didn't see it that way. District Judge John F. Grady stated that Bushnell couldn't persuade him that he dreamed up the video tennis idea before he witnessed the Odyssey demonstration. As far as the judge was concerned, the founder of Atari plainly copied the Odyssey game. The result of this was that Atari had to pay Magnavox a small licensing fee to market its games. Atari had gotten off easy. Following this ruling all other companies that released videogames had to pay Magnavox a stiff royalty.

Pong was a major hit throughout 1973. Atari manufactured 10,000 units, an astounding number considering that pinball makers only churned out 3000 of their popular machines. However, things weren't really very rosy for Atari. The company that started the entire arcade videogame industry was in danger of dying from a disease that would plague and nearly cause the extinction of the industry ten years later.

The name of the disease was competition. Even though Atari had applied for a patent and trademark for *Pong*, the company didn't receive them in time to stop a gush of copy-cat games that had been released on the wave of *Pong*'s success. By the end of 1973, more than twenty-five competing companies released 90,000 units of their own versions of video tennis. Atari only claimed 10% of a market that it should have dominated. At this time Ted Dabney panicked and figured that Atari would never survive against the competition. Bushnell, who had faith in Atari and its product, bought Dabney's half of the company.

Despite Atari's problems, 1973 was a great year for coin-operated videogames even though the only game was video Ping-Pong. The same couldn't be said for home videogaming and the sole player in that field, the Odyssey. After a healthy first year on the market, sales for the machine crumbled in 1973, mainly due to mistakes made by Magnavox.

Upon the Odyssey's initial release, Magnavox went all out with heavy promotion and approximately 100,000 very curious people went out and bought the machine. Unfortunately thousands more shied away from the device because they simply didn't understand it. Somehow, people misunderstood the advertising and were under the impression that the Odyssey would only play on Magnavox television sets. To make matters even worse, Magnavox only sold the game only through its own network of stores. There, overly zealous salesmen probably added to the myth that the game was incompatible with most TV sets just so they could sell a Magnavox television along with an Odyssey. The additional circuit boards and the light rifle wound up beneath the retailers'

counters where they were eventually forgotten. Additionally, by limiting the game to its own stores, Magnavox lost all of the impulse buyers who were shopping elsewhere.

Because Magnavox didn't sell as many Odysseys as it had manufactured, the company halted all production and advertising. By the end of 1973, the company that pioneered the home videogaming industry looked at it as a dead issue. Fortunately, the company that started the coin-operated videogame industry didn't agree.

Atari Pong

CHAPTER THREE
1974-1976

Dozens of companies marketed their own versions of video Ping-Pong, yet very few of them spent any money developing new games. Atari was one of the few that did, but it had trouble producing another monster hit of the same caliber as *Pong*. During the first half of 1974, Atari released several new videogames including its first driving game, *Gran Track 10*, and first football game, *World Cup Football*. Neither was a smashing success. In June 1974 Atari released a game that was a bold departure from the direction that the company was heading. *Touch Me* was neither a videogame nor a pinball machine. The machine consisted of four giant buttons and each button had a light next to it. The computer randomly light turned the lights on and off and the player had to recreate the sequence from memory by pressing the companion buttons in the same sequence that the lights flashed.. *Touch Me* was a failure; at least in the arcades.

Although Atari seemed to be the only company that was releasing innovative games, Bushnell realized that another company would eventually develop a successful game and grab a major share of the market. He wanted to penetrate as much of the arcade market as possible before that happened. To accomplish this, Bushnell signed exclusive contracts with as many distributors as possible. The distributors under contract were required to purchase games only from Atari. Atari, in turn, was required to sell games only to those distributors that it had contracts with. Many major geographical areas had more than one distributor, and under the terms of its own exclusive contract, Atari could only sign on with one of them. This left the second distributor in the area free to buy videogames from any manufacturer other than Atari. This presented a problem to Bushnell who wanted a virtual monopoly on the market He realized that the only way he could accomplish this was by selling Atari games to both distributors in an area. However he couldn't do that under the terms of his exclusive contracts. So Bushnell figured out a simple way where he could legally sell games to all the distributors in one area. He formed a new company, Kee Games, to take care of the distributors who couldn't buy from Atari.

Kee Games was named after and headed by Joe Keenan, a close friend of Bushnell's. Atari and Kee Games were completely autonomous to the point where they each had their own separate research departments. However any game that was released by one company would eventually be released by the other with a unique name and some cosmetic differences. For a year the only products that either company released were *Pong* variations like *Super Pong*, *Quadrapong*, and *Pong Doubles*.

When it got to the point where the public was getting *Pong*-sick, Kee Games released *Tank*, its first non-*Pong*, game in 1974. Learning from past mistakes, Kee Games copyrighted *Tank* early so there wasn't any danger of another company coming out with it. This was a good thing because *Tank* was an immediate success.

In a departure from the ball and paddle *Pong* games, *Tank* featured two tanks that had to navigate through a maze and avoid land mines in an effort to shoot at one another. The graphics were more detailed than in prior games because *Tank* utilized ROM chips to store graphics memory.

Tank was so successful that the distributors who had signed with Atari wanted to change their contracts just so they could purchase the game from Kee Games. Atari eventually "merged" with Kee Games so it could produce *Tank* under its own name. The exclusive Atari contracts were soon discarded and the distributors could once again purchase game from any manufacturer. By this time Bushnell no longer worried about the competition. Atari had become the dominant force in the arcades.

The cost of microchips decreased dramatically in 1974 and one designer at Atari, Bob Brown, had aspirations of bringing *Pong* to the home. Most of the top management was against Atari entering the consumer market. Their fears were justified because they knew nothing at all about distributing consumer goods. They also felt that the Atari's cash flow would be tied up in inventory that would sell primarily at Christmas. Bushnell thought that *Pong* for the home was a good idea and he gave Brown the go ahead. By doing this, Atari became the first company to be in both the arcade and consumer videogame businesses.

Brown began work on *Pong* in the fall of 1974 and completed it shortly afterwards. He was aware of the problems that Magnavox had with the Odyssey and he was careful not to make the same mistakes. Although *Pong* could only play one game against the Odyssey's twelve, *Pong's* resolution was superior; its controls were more responsive; and it displayed color graphics on color televisions. The best part was the price. Thanks to the declining cost of microchips, *Pong* cost less than the Odyssey.

In January 1975, Bushnell and his team tried selling *Home Pong* on their own but were not successful. They believed that the product should be sold in a toy store but they couldn't find any that were interested. They then decided to try major department stores starting with Sears. The toy buyer wasn't interested so then they tried sporting goods, with the belief that a computer version of tennis would sell along-side the real thing. The sporting goods buyer, Tom Quinn, was interested.

Atari Pong

Quinn offered to buy all the *Pongs* that the company could put together. After being told that Atari could only manufacture 75,000 units, Quinn told Bushnell to double the production and Sears would finance it. In return, Sears wanted the exclusive selling rights of the game throughout 1975.

Bushnell jumped at the offer. Since Sears promised to pay for all of the advertising and to assume complete control of the Atari had little to risk. Bushnell also realized that if Quinn had gone to Magnavox with the same offer, Atari probably would have gone bankrupt. However, because Atari had exposure in over 900 stores across the country, it gained a reputation in home games as well as arcade. Thanks to the Sears deal, Atari sold $40 million worth of *Pongs* in 1975, netting $3 million.

The Atari *Pongs* were the hottest games during the 1975 Christmas season. Naturally, along with the success came the copycats as everyone wanted to jump on the bandwagon. Magnavox released a new *Odyssey 100* that only resembled the original Odyssey in its name. The new model could play tennis and hockey and didn't require the plastic overlays.

In early 1976, General Instruments introduced a new microchip that cost $5 and had four paddle and two shooting games programmed into it. Drawn by potentially high profit margins, no fewer than 75 companies scrambled for a spot in the marketplace. The first to order the new chip from General Instruments was a Hartford Connecticut company that already had been marketing home pinball machines and felt home videogames to be a logical extension of that business.

The Connecticut Leather Company began its corporate life in the early '30s by distributing leather products to shoemakers. By the early '50s it marketed its own leather products and made heavy use of licensed properties like Mickey Mouse and Howdy Doody. In 1956, the company purchased a small vacuum forming machine so it could produce plastic toys. The plastics line evolved into outdoor sporting equipment such as sandboxes and sleds. When it shed most of its name favoring an acronym,

Coleco was the leading manufacturer of above ground swimming pools.

In 1968, Coleco bought Eagle Toys, a manufacturer of tabletop hockey games. This led to the manufacturing of other types of arcade and sports games for the home such as *Electric Football* and pinball machines. Home videogames were a natural progression.

Coleco Telstar

Coleco released *Telstar* in 1976. Like *Pong*, Telstar could only play video tennis, but since it retailed for only $50, it was attractive to families that were on a budget. Coleco sold over 1,000,000 units that year.

One reason for the excellent sales can be traced to a severe chip shortage. Because of the onslaught of manufacturers who wanted to produce videogames, General Instruments under-estimated by 60% the number of chips that it needed to fulfill the demand. Because Coleco had been the first company to place an order with General Instruments, it received its entire order of chips just in time for Father's Day 1976. No other company received an entire order and many only received 20% of what they ordered!

Despite its wonderful Father's Day, Coleco's success was short-lived. Two products were released in August 1976 that revolutionized the home videogame market.

One was a game from the toy company Mattel, which had formed a new division called Mattel Electronics. *Missile Attack* was a self contained hand-held console that was roughly the size of a paperback book. The object of the game was to shoot missiles up from your city and destroy the enemy missiles that were firing down upon you. If you missed them they would destroy the city and end the game. Points were scored according to the distance the missiles were from the city when shot down. Missiles were worth less as they descended towards the city.

As a videogame *Missile Attack* had the sparsest of graphics. The missiles were merely tiny red blips created by light-emitting diodes (LED). But it marked the first time that an electronic game escaped from the dependency of a television screen.

Mattel Electronics sold *Missile Attack* through the Sears catalog but very few people actually noticed the game. Commercials were produced to promote the game but NBC refused to air them. Because the game's city resembled New York City, NBC feared that children would believe that they actually destroyed New York if they lost the game. *Missile Attack* was removed from distribution and reemerged in 1978 as *Battlestar Galactica Space Alert*. The game then received a fair level of success because of its TV tie-in.

The other new product was the *Video Entertainment System (VES)*, from Fairchild Camera & Instrument. The VES was a standard videogame console that hooked up to a television. However it had two new features that made it stand apart from the consoles that preceded it.

One innovative feature of the VES was its controllers. Prior to Fairchild's entry, videogame controllers were usually dials that were either attached to the console or connected by a wire. Some consoles included primitive light guns that were aimed at the TV screen. The controllers on the VES resembled plungers on bomb detonators. Atop each was a triangular piece that could be pushed forward, backward, left, or right. It could also rotate like a dial controller or press down into the base of the stick.

The console itself featured an array of controls. A player could control the speed of his ball and the length of a game. He could also pause the game at the press of a button.

What really made the VES different from the other consoles on the market was the number of

Mattel Electronics Missile Attack

Fairchild Video Entertainment System

games that could play on it competitors, the VES could play hockey and tennis as soon as it was hooked up to the television. In addition, it included a slot that a gamer could insert a cartridge into. On the outside, the *Videocart* cartridge looked like an 8- track tape cartridge. However the inside contained a microchip that had a unique videogame encoded onto it. By changing cartridges, gamers could play unlimited varieties of games on the VES . he first cartridge that Fairchild released featured four games: tic-tac-toe, a shooting game, and two games that allowed the player to "doodle" pictures onto the television screen.

Actually the VES wasn't really as innovative as it appeared. The original Odyssey could also play several games by inserting different circuit boards into the console and placing different overlays onto the screen. However the difference here is that the Odyssey actually had all of its games built-in and the circuit boards merely unlocked each game. With the VES, the games were "built-in" each cartridge.

The VES quickly made all of the other home videogame consoles obsolete. Why would anybody buy a dedicated game console that they would tire of after a month when they could get one console that could play every new game available?

The home videogame manufacturers quickly saw the writing on the wall. In order to compete, they had to market programmable consoles similar to the VES. RCA, which had always wanted to enter the home videogame market ever since Ralph Baer first demonstrated his prototype to them, announced in September 1976 that it was developing a programmable game system. Several of Atari's designers, Joe Decuir, Steve Mayer, Ron Milner, and Jay Minor, had already built a prototype of a machine that they called *Stella* (named after Decuir's bicycle). Unfortunately, Atari didn't have the money to perfect and manufacture it.

Bushnell knew that Atari couldn't remain a major force in the home videogaming field if it couldn't develop the new home videogame system adequately. In order to do that the company needed a sufficient supply of money which it didn't have. After dwelling on the problem, Bushnell finally figured out two drastic ways that the company could raise money.

The first was by going public. However the economy was very bad at the time and stock prices were continuously falling. Bushnell seriously doubted that Atari could make enough money to save themselves by taking this route.

The other choice was one that Bushnell really didn't want to go with but one he felt was absolutely necessary; sell the company. When he finally settled on this route, he asked his top executives to make a list of entertainment companies that they thought might be interested in purchasing Atari. The company that wound up buying Atari didn't even make their list.

Warner Communications was a huge entertainment conglomerate that was already involved in movies, publishing, and music. By the mid-seventies the sales from Warner's most profitable division, its music division, began to fall. Warner's executives realized that the music business had reached its peak and that the huge profits that they had been receiving weren't going to continue for long. They felt that Warner should branch into a hot new field and videogames and Atari seemed to be just what they were looking for.

In October 1976, Warner Communications bought Atari for $28 million and a new era in home videogaming began.

CHAPTER FOUR
1977

Warner pumped nearly $100 million into Atari so the company could dominate the videogame industry. Bushnell stayed on as Chairman of the Board and Joe Keenan remained as the company's president. With this new infusion of money, Atari opened the first Pizza Time Theater.

Pizza Time Theater had been an idea that Bushnell dreamed up in a pizza parlor in 1974. While waiting for his order, he looked around and noticed other customers quietly waiting for their pies also. He then realized that if there had been videogames in the pizza parlor the customers would have had something to keep them busy until their orders were ready. He suddenly envisioned a pizza parlor filled with arcade games. He realized that such a pizza parlor might attract many kids who didn't normally go to arcades.

As Bushnell developed the concept, he felt that it would be a nice touch for the restaurant to have Disneyland-like robotic animals that could play music and give the impression of a fun amusement park. He told his engineers at Atari to design these robots. One of the first that they came up with was a huge rat that they named Chuck E. Cheese.

When one company is bought by another, there is usually a short period of time where conditions remain unchanged while executives at the parent company plan what they want to do with their new acquisition. It was during this time that Atari opened Pizza Time Theater. Despite Bushnell's optimism and conception of an entire chain, no one at Warner shared this excitement and the restaurant was never expanded.

What the Warner people were excited about was the programmable unit that Atari planned to release in time for Christmas 1977. What had been code-named *Stella* during its development was officially named the *Atari Video Computer System* (VCS), a moniker that was very similar to Fairchild's Video Entertainment System. Fairchild quickly turned around and renamed its programmable system Channel F.

The VCS was to retail for $200, a steep price that returned very little in the way of profit. However the executives at Warner knew that the secret to success would be in the software. Every cartridge that Atari planned to sell for $30 cost less than $10 to manufacture. Warner looked forward to a great Christmas season but so did everybody else.

In January 1977, RCA released the *Studio II*; its long awaited entry into the home videogame field. Like the Channel F and forthcoming VCS, the console was programmable by inserting different game cartridges. Unlike the other models, the Studio II played in black and white on color sets; a serious flaw in design that the technological conscious buying public would not stand for.

RCA Studio II

At the end of January, General Instruments announced a new chip that included racing and war games. Magnavox was the first company to purchase the chip and develop a new console around it. The *Odyssey*^{2} was to be a four-player console that would include twenty-four games and retail for under $100. Although it wasn't a programmable machine like those that were being released by the other companies, Magnavox executives felt that the games would be diverse enough to keep players from getting bored. Of course being priced at $70 less than the Channel F didn't hurt its chances either.

Coleco also jumped onto the programmable console bandwagon by releasing the *Telstar Arcade*.

Coleco Telstar Arcade

This bizarre looking console, which had been designed by Sanders Associates, was shaped like a triangle with different types of games on each side. On one side was the standard paddle controller for *Pong* type games. The second side included a pistol for shooting games and the third side featured, for the first time, a steering wheel and shift for driving games. A triangular program cartridge plugged into the center of the unit.

Atari Ultra Pong Doubles

Coleco Combat

Companies continued to sell their dedicated machines however they were forced to make them more innovative to compete against the programmable machines. Atari continued to cash in on the *Pong* name by releasing home variations such as *Ultra Pong Doubles*. In addition, the company released dedicated machines like *Tank* and *Video Pinball* that were attractive to consumers because they gave the impression of the real thing. For instance, *Stunt Cycle* was a game where you had to drive a motorcycle over a number of buses. The controls were similar to motorcycle handlebars that had to be gripped and turned to give gas to the on-screen bike. In a similar vein Coleco marketed its *Combat* console that featured tank-like controls.

Atari Video Pinball & Stunt Cycle

At the annual Toy Fair in New York in February 1977, Milton Bradley, one of the world's largest game companies, announced a new electronics division to create and market electronic toys. In 1977 electronic toys only meant one thing: videogames. Milton Bradley Electronics fooled everybody when it unveiled its new electronic game that didn't have to be hooked up to a TV set. *Comp IV* was an electronic version of the game *Mastermind*. The object was to cleverly deduce, with the least guesses, a three, four, or five digit number that the computer randomly picked. After the player entered his guess, a series of red lights would flash to inform the player about how many of entered digits were correct and how many were in the proper position.

Comp IV was an immediate success for Milton Bradley

and its new division. At a retail price that was considerably less than Coleco's best selling Telstar, Comp IV had the added benefit of not having to be hooked up to a television to play it. Before long, other game and toy companies, which had avoided entering the new videogame industry, scrambled to purchase integrated chips so they could get electronic hand-held games onto the market. Mattel, the world's largest toy company, was the first to release a set of electronic sports games beginning with *Football* and *Auto Racing*. Although the games only featured a series of red blips that symbolized players, the games sold out quickly. The games were so successful that Mattel began a new division, Mattel Electronics, on the strength of these games.

Milton Bradley Comp IV

Mattel Football (reissued 2000)

Coleco saw the potential in the hand-held games and quickly hired Michael Katz, a marketing director for Mattel who had been responsible for the hand-held games. Under Katz' direction, Coleco released a series of sports games under the generic brand name of *Head To Head*. Head To Head games differed from Mattel's games because they allowed two players to compete against each other.


Atari Video Computer System (VCS)

Meanwhile, Atari went ahead and released the VCS and nine game cartridges in October 1977. The VCS had several switches which made it technologically better than the Channel F. One switch allowed the console to display the output in either color or black and white, thus guaranteeing the best picture quality for any TV set. Another innovative switch was the *game select switch*. By pressing this switch players had access to a number of variations of games that were included on the cartridge. *Combat*, the cartridge that came with the VCS, offered 27 variations. Of course many of these variations weren't as varied as Atari made them appear to be. There were fourteen versions of "Tank". While one variation had a tank that fired straight missiles, another variation had one that fired guided missiles. Variations also included three different playfields that could be set up (Open Field, Easy Maze, and Complex Maze). There were also versions that featured invisible tanks.

Tank games weren't the only games that came on the *Combat* cartridge. Also featured were airplane games where the player had to shoot down the opponent's plane while avoiding being shot down himself. The variations included Bi-planes or Jets, guided or straight missiles, and open skies or clouds.

The VCS also had two *handicap switches*. When engaged, an experienced player wouldn't have an edge over a novice player. In the case of "Tank", a handicapped player's shots wouldn't fire as far as those of a novice.

To play these games, the VCS was packed with a set of controllers that Atari nicknamed *Joystick* controllers. The joystick was a narrow stick that sat on a square plastic base and could move in any of eight directions. When the stick was released, it returned to its central neutral position.

Of the nine initial cartridges that Atari offered, five used the joystick controllers. Three of the remaining cartridges featured *Pong*-type games and driving games, which the joystick wasn't practical for. For this reason, Atari also included a pair of paddle controllers, which were simply palm-sized bases with round dials on them. The controllers plugged into ports in the front of the console and could be removed easily. This was especially useful if a controller broke. A person could merely replace just the broken controller instead of an entire console.

The VCS also addressed a problem that plagued many videogame owners since Odyssey. It turned out that if a videogame console remained turned on too long without being used, it could damage the TV's picture tube. The image on the screen would eventually "burn" onto the picture tube and would always be visible even after the TV had been turned off. To avoid this problem the Atari engineers designed the machine so it would rotate through a series of colors if the console went unused for several minutes. The rotating series of random colors prevented any image from getting "etched" into the picture tube.

Another superiority that the VCS had over the Channel F was something that the public had never been informed about. This was the amount of code that the machine could access.

All computers have two types of memory; ROM and RAM. ROM (Read Only Memory) is the set of instructions that tell the computer how to work. These instructions will always reside in ROM and the user can never alter or erase them. In the case of the early dedicated machines, the programming for the games themselves resided in ROM. The operating systems of programmable machines such as the VCS and personal computers reside in ROM. When a computer reads a program from a tape or disc drive, that program is then loaded into the computer's RAM (Random Access Memory). The instructions from the ROM then tell the computer how to access it and what to do with it. When the power supply is removed, the instructions that are in the RAM disappear until power is restored and another program is loaded.

On cartridge based systems such as the VCS, the concept is a little different. Here, the program resides on a ROM chip that sits inside a cartridge. When the cartridge is inserted into the console, the machine is able to access the ROM chip just as if it was part of its own memory.

When the VCS was designed, game programs weren't longer than 2K (2048 bytes), so in all practicality, the VCS didn't have to access more than 2K of addressable memory in the ROM chip. The engineers at Atari had designed the VCS to play only two types of games; paddle and tank battles. They were only going to allow the VCS to address 2K of code from the ROM chip because they never anticipated programs to be larger than that. However, they cautiously reasoned that someday games might need 4K of code. Because of this foresight they decided to give the VCS 4K addressability even though they never expected this extra code to be used. This proved to be excellent foresight on their part.

Atari went all out on the cartridges that it initially released with the VCS. Due to its successful coin-op division, the company was able to offer popular games that were already familiar to the

public.

Although it had the word *computer* in its name, the VCS was not a computer in the fullest sense. The only thing the console could do was play games with the insertion of a cartridge. It had no other practical purposes.

In 1977 a company called Videobrain decided to bridge the gap between standalone videogame consoles and full functional computer consoles. The Videobrain featured a sculptured keyboard, 1K RAM and 4K ROM. Programs could be loaded into the console via cartridges and two joystick controllers were included with the machine. The unit cost $300.

While it sounded like a good idea in theory, there were problems with the machine that caused it to fail immediately. First of all, the machine came with four built-in programs: text editor, clock, alarm, and color bar generator. The first three were completely useless since any data that was entered into the machine would disappear when the unit was turned off! The Videobrain didn't come with a printer so any messages that were written using the text editor could only be viewed on the screen. The bottom line was that the Videobrain was really a dressed up game machine that its developers were hoping to sell as a computer. Even as a game machine it failed since few game cartridges were released for it. Still, this was the first time that a videogame company attempted to address the bigger computer market and it would be far from the last.

Bally Arcade

Around the same time that Atari was releasing the VCS, another arcade company began shipping its entry into the home videogame market. Ironically, if events had been a little different, there wouldn't have been an Atari to compete against. The company that was making a foray into the home market was Bally; the same company that Nolan Bushnell had unsuccessfully tried to sell *Pong* to five years earlier. In the years that followed, videogames competed against and took over the arcade throne that pinball once sat on. Once this happened, Bally quickly jumped onto the videogame bandwagon by setting up a video division called *Midway*. Its first release was a non-*Pong* game called *Gunfight*. In *Gunfight,* two players assumed the roles of old west cowboys who had to shoot bullets at each other while avoiding the other by hiding behind large objects.

With the success of Midway, Bally decided to enter the home market with the *Bally Professional Arcade*, a console that had been co-designed by David Nutting, brother of Nutting Associates' Bill Nutting. Like the Channel F, the Arcade featured four dedicated games and a slot for more games. The console also looked like a tape deck, but its cartridges looked like audio cassettes instead of 8-track cartridges. The controllers that came with the console resembled pistol grips with a tiny dial on top. The grip had a built-in trigger that was used for shooting contests.

Unlike both the Channel F and VCS, the Arcade utilized a Z-80 microprocessor, the same one that David Nutting used in arcade games. Although the console had a calculator style keyboard built in, Bally announced that they would offer an add-on alphanumeric keyboard at a later date to give the Arcade full computer capability. Even without the potential to be upgraded to a computer, the Arcade still outshone the VCS and the Channel F with its dazzling graphics and sound. However there was a price that went with these luxuries. The Arcade was $100 over the price of the VCS, which itself was $100 more than the dedicated games.

Although Bally had promised that the Arcade would be on store shelves by September 1977, the unit wasn't actually delivered until February 1978, causing the company to miss the Christmas buying season. As it turned out, Bally probably didn't miss much.

Milton Bradley Simon

Christmas 1977 turned out to be a very bad one for the videogame industry. One problem was the large number of inexpensive electronic hand-held games that they were competing against. Following the success of their *Comp IV*, Milton Bradley released a second electronic game, which had been invented by Ralph Baer, the man who had invented the Odyssey. *Simon*, which was named after the children's game of 'Simon Says', was basically a home version of Atari's arcade failure *Touch Me*. Shaped like a disc, *Simon* featured four large colored buttons on its top that would randomly blink. The player then had repeat the order. *Simon* became so successful that it spawned a host of similar type games from other manufacturers.

Coleco was the only manufacturer of videogames to have the foresight to enter the portable electronic market and this saved the company from certain bankruptcy. Because of problems on the assembly line and a dock strike, Coleco hadn't been able to ship its supply of Telstars to the stores in time for Christmas. When the units finally arrived in the stores in January 1978, Coleco had to liquidate them at bargain prices with a $27 million loss to the company. Following this fiasco, Coleco made a hasty exit from the videogame arena and concentrated on the portable games.

If the threat from the hand-held industry wasn't bad enough, the videogame companies were also being menaced from within. Because of the influx of programmable machines, the manufacturers of dedicated units began unloading their merchandise at bargain prices. Since these prices were well below what it cost to make the machines, the manufacturers took what they could get and quietly exited from the business. However the manufacturers of programmable machines suffered too because of the cheap dedicated units that were widely available. People weren't willing to spend over $170 for a programmable console that needed cartridges that cost more than the price of the dedicated units.

The sales slump caused many casualties. Although RCA's termination of its poorly received Studio II came as little surprise to most people, Fairchild was also forced to discontinue its Channel F because of the disappointing sales. Magnavox scrapped its plans for the 24 game Odyssey[2].

Atari's VCS, fueled with cash by its powerful mother company Warner Communications, was the only videogame console that managed to survive the stormy holiday season of 1977. Without any competition, Atari executives hoped for a change in home videogame sales in 1978. Unbeknownst to anybody, sales wouldn't be the only thing to change.

CHAPTER FIVE
1978

When a person works for his own business, he'd put everything he has into it. He'd be completely concerned with its day to day operation because everything that happened there would affect him directly. If that same person worked for an employer, he wouldn't be as interested in what went on there because the business wasn't his. He would collect his salary regardless.

This was Atari's condition in early 1978. Although Bushnell remained with the company as CEO, he was more interested in his own personal life. Since he had netted close to $15 million from the sale of Atari, he was able to live comfortably no matter what happened to the company. Joe Keenan, who stayed on as president and also became a millionaire many times over, really didn't care too much about Atari anymore either. If Atari lost money, it wasn't his money that was lost.

Manny Gerard, an executive president of Warner Communications, was concerned with what happened at Atari, especially since he was the person who recommended that Warner buy the videogame company. Now that Atari had $40 million worth of inventory tied up because of horrible Christmas sales, he was the one who had the most to lose if the company lost money.

Atari found itself in deep trouble. The only thing that the company had going for it was its Research & Development department. Atari didn't have any sales, advertising, or marketing and a CEO and president who really didn't care about what was going on. Gerard knew that he had to hire someone who really knew how to run a company to take charge of Atari.

After careful consideration, Gerard hired Ray Kassar, a marketing vice-president from Burlington Industries, to be the new president of Atari's consumer division. Unfortunately, Kassar's personality clashed with Bushnell's and caused conflicts within the company. Kassar had come from a business background, which dictated that the only way to achieve good results, was from hard work. Bushnell, on the other hand, didn't have any business experience and believed that fun should be part of the formula also. Kassar came to work every morning in a three-piece suit while Bushnell would arrive when he felt like it wearing tennis shorts.

Eventually Bushnell began to disagree with the direction that Warner was steering Atari. The parent company wanted to add a home computer division. Bushnell did not agree with this venture. He publicly claimed that he was against it because he estimated that the company would lose $50 million just to set it up. He may have been against it for personal reasons also. When Atari had been in the deep financial trouble that eventually forced the sale of the company, he received a request from one of his designers. The young man who had created Atari's arcade hit *Breakout* was on to something new that he figured Atari could benefit from. He had built an inexpensive microcomputer in his garage and told Bushnell that it would be a good product for Atari to market. With money so tight, the last thing that Atari could do was start a home computer division. Bushnell refused but he advised the designer to start his own company to manufacture home computers. Bushnell even gave the man the name of an investor who might be interested in such a venture. The designer, whose name was Steve Jobs, followed Bushnell's advice and started his own company, which he called *Apple Computers*. Now the executives at Warner Communications wanted Atari to start a division to compete against Apple.

Eventually every board meeting at Warner's home office turned into a shouting match between Bushnell and Gerard. Bushnell finally got fed up and arranged to be fired. By the end of 1978, the man who started the arcade videogame industry from scratch was no longer associated with the company that he founded. On top of this, Bushnell couldn't even associate himself with any other videogame company until October 1, 1983 because of a non-competition clause in his contract with

Atari.

When Bushnell and Keenan left Atari, they asked if they could buy the sole Pizza-Time Theater that Atari had opened in 1977. The Warner executives who had never been interested in the restaurant in the first place, happily complied and sold it to them for $500,000.

Ray Kassar assumed the role of CEO and quickly worked on a marketing strategy for Atari. First he axed the R&D division and then brought in salesmen and marketing people to develop a plan so Atari could reduce its inventory.

Other changes directly involved the employees. They no longer could go to work when they felt like it; they had to be there by 8:00. They also had to adhere to dress codes and time cards. The free spirit of Atari was gone. Now it was just a cold and impersonal company. Eventually, all of the people who had been involved with Atari from the beginning, were no longer with the company.

Another change in the company was in how familiar the managers were with their products. When Bushnell ran Atari, everybody had been involved with the games; from design to playing. This all changed when Kassar took over. His major concern was the bottom line in the accounting ledger. As long as a product was profitable, the product didn't matter to Kassar. Although Atari was a company that created videogames, Kassar and the other top brass at Atari never bothered to play them.

While Atari was going through its growing pains, Bally also had difficulties as it shipped its Professional Arcade to stores in January 1978. Unfortunately, the majority of machines were defective and had to be returned, something that Bally wasn't prepared to handle. Whenever they shipped out a defective arcade game, they immediately sent someone out to repair the problem; they never dealt with returns before, especially on such a large scale. In April the company shipped what they claimed were perfect units but many of these consoles were still defective.

The difficulties that Bally had with manufacturing weren't the only problems that Bally had to contend with. Since the company had never dealt with a consumer product before, they didn't know marketing strategies. Inexperienced with retail distribution, they concentrated on computer stores instead of the department and electronic stores where it would have received the most attention. The stores that did carry it knew very little about its capabilities so they displayed it along with the VCS that cost much less.

As Bally's consumer division experienced major problems, its arcade division, Midway, was about to strike gold.

In Japan, for ages the arcade game of choice was Pachinko, which was sort of a cross between a pinball machine and a slot machine. Videogames like *Pong* were imported from the United States but never made much of an impact into the Pachinko phenomenon. Eventually, several Pachinko manufacturers such as Taito and Nintendo began manufacturing arcade videogames as a sideline; not as something that could ever challenge their Pachinko divisions.

In 1978, Taito released an arcade videogame called *Space Invaders*. The screen displayed 48 space creatures that were arranged in six horizontal rows, each containing eight creatures. In unison, all 48 creatures moved across the screen. When they reached one side of the screen they all dropped down one row and then began "marching" towards the opposite. As they marched, several of the creatures in the lowest row fired laser bullets towards the bottom of the screen where the player controlled a cannon that moved horizontally. While dodging the space invaders' bullets, the player had to fire laser bullets from the cannon up to the invaders. Every time an invader was hit, it would disappear from the screen and the remaining creatures would continue advancing, sometimes at a slightly faster speed. When all of the 48 creatures were destroyed, a new troupe of 48 invaders appeared.

A player began the game with three cannons and lost one when it was hit with an invader's bullet. The game ended when the player lost all three cannons or when the lowest row of the creatures

reached the bottom of the screen.

Within six months *Space Invaders* took over the domination that Pachinko held in the Japanese arcades. It became so popular that eventually there was a shortage of the coin needed to play the game.

Space Invaders was revolutionary because it was the first target game to feature animated characters. This made the invaders seem like they were real and gave players the impression that they were actually saving the earth by destroying these creatures. An added appeal was the fact that the game could conceivably last forever. Prior to *Space Invaders*, games were either timed or ended when a certain score was attained. *Breakout* was another game that could have lasted indefinitely but after a player destroyed all of the bricks, the game repeated itself with the same wall of bricks. It didn't get any harder. *Space Invaders* was more challenging because each new screen was more difficult than the one before it. Besides, killing aliens who were trying to destroy you was more fun than merely breaking a hole through a wall.

Taito also added a new feature to the endless game and that was the conception of the HIGH SCORE! The screen displayed the highest score at all times, which gave players something to strive for. Everybody who played wanted to beat the high score. Before long, players were trying to set records in high scores and in time spent playing the game.

Naturally, something as big as *Space Invaders* couldn't miss the attention of American manufacturers who were eager for a monster hit themselves. Rather than attempt to conceive a game that could be as popular as *Space Invaders*, Midway went straight to the source and licensed *Space Invaders* from Taito for the United States. The game took off in the United States just as it had in Japan.

In October 1978, at around the same time that Midway released the game that took the arcades by storm, Atari released *Football*, another innovative arcade game. Although *Football* was neither the first sports game to hit the arcades nor the first football game by Atari, it stood out from the other games because of its unique controllers. They were radically different from anything that came before them. Instead of paddles, sticks, or buttons, a ball controlled the action in *Football*. *Le Trak Ball* gave players faster action as they controlled the speed of their on-screen players by how fast they were able to spin the ball. Speed was very important in this game because 25¢ only bought a minute and a half of play time. At the end of this time the players were given the option to continue for another 90 seconds for an additional 25¢. At that rate gamers could play a regulation one hour game without overtime for ten dollars. The players didn't seem to mind and *Football* was a mild success. During its first three months it earned as much as *Space Invaders* had. However that revenue finally came to a halt when the pro football season ended. Meanwhile, the appeal for *Space Invaders* continued.

Magnavox Odyssey^2

The resurgence in videogame popularity spread to the home and Magnavox again reentered the arena with its Odyssey^2. A programmable console, it shared only its name with the dedicated 24 game console that Magnavox had previously abandoned. The Odyssey^2 had been designed to compete directly against the Atari VCS. Both machines were roughly the same size and completely programmable by inserting game cartridges into slots. Like the VCS, the Odyssey^2 came with two joystick controllers and a cartridge. To capture the attention of computer conscious consumers the

console of the Odyssey^2 also had an actual 49 character alphanumeric keyboard built in. The keys themselves were pressure-sensitive, which made the machine perfect for families with young children since there weren't any buttons on the unit that could break off. Although Magnavox never purported that the Odyssey^2 could be upgraded to a computer, the appearance of the keyboard gave many people the impression that it could.

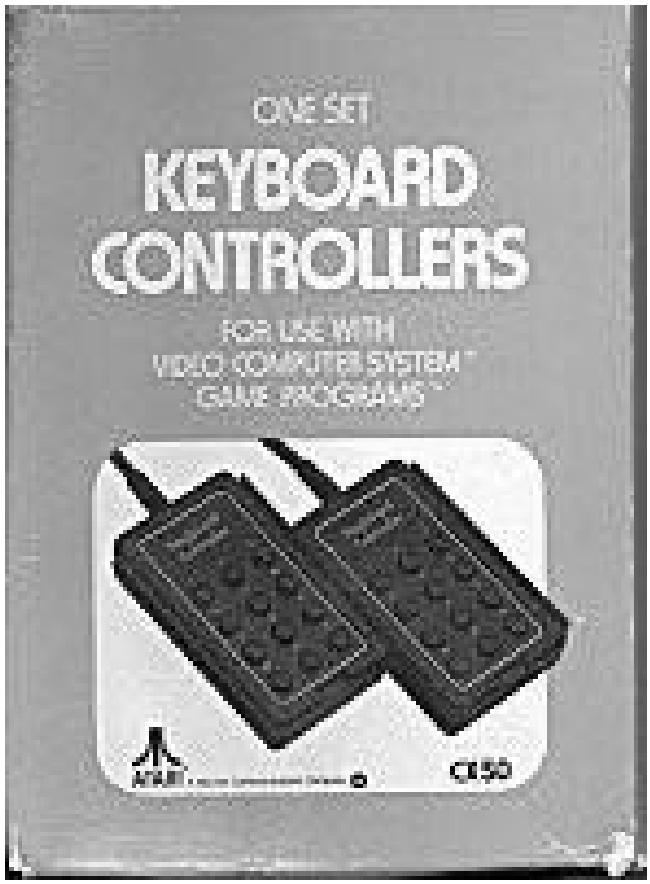
Although the graphics and suggested retail price on the Odyssey^2 and VCS were similar, the keyboard gave Magnavox an edge. Like Atari, Magnavox released multigame cartridges but the player didn't have to cycle through a large number of variations to get to the game that he wanted to play. All he had to do was type in the game number and it loaded instantly.

Parents who wanted educational games for their kids also saw the benefits of the keyboard. One of the initial releases for the VCS, *Basic Math*, displayed math problems on the screen. The child could only get the correct answer on the screen by cycling through all of the numbers via the joystick. In "Math-A-Matic", the Odyssey^2 version of the game, the child simply had to press the correct numbers on the keyboard.

The Odyssey^2 was also able to offer games that were impractical on the VCS. "Echo", which had been included on the same cartridge as "Math-A-Matic", was a video version of the popular electronic game, *Simon*. Other games were "Matchmaker", which was video *Concentration*, and "Logix", which was video *Mastermind*.

The Odyssey^2's educational and logic games were impressive but not everybody wanted to buy a videogame console for these types of games. For these people, Magnavox also released a number of sports games like football and basketball. Aside from the 50 variations of *Pong* games that were on Atari's *Video Olympics* cartridge, sports for the VCS were simply not available.

Shortly following the debut of the Magnavox Odyssey^2 with it's 'the keyboard is the key' advertising campaign, Atari released its own keyboard for the VCS. Actually the keyboard came in the form of two connectable controllers that plugged into the controller ports. Each controller resembled a telephone keyboard, thus limiting it to numerals only. While it appeared like Atari had released the keyboard controllers as its answer to the Odyssey^2, Atari had a legal reason for releasing the keyboard controller. The official name of the VCS was the 'Video Computer System'. Someone sued Atari because the game system was called a computer when it obviously wasn't one because it didn't have a keyboard to enter data. Atari took the lawsuit seriously and quickly designed and released the keyboard controller thus eliminating the reasoning behind the lawsuit.



Atari Keyboard Controllers

Atari also released a trio of cartridges to go with the controllers. *Hunt & Score* was Atari's version of *Concentration* (Atari would later rename the cartridge to *A Game of Concentration*). *Codebreaker* was *Mastermind*. The third cartridge consisted of a group of memory games and was simply called *Brain Games*. One of the variations on the cartridge, "Touch Me", was the video version of the arcade game that had been released in 1974. The marketing minds at Atari also decided to release a stand-alone portable version of *Touch Me* due to

Atari Touch Me Handheld

the remarkable success of Milton Bradley's *Simon*. Roughly the size of a hand-held calculator, Atari's first portable game played the same three games that were available on *Simon*.

To satisfy the sports fans, Atari released VCS renditions of baseball and basketball. The latter proved that there were still innovative wizards creating games for Atari. Instead of imitating the Odyssey[2] basketball game that displayed a horizontal court with a net on each side, Alan Miller designed it so the court had depth as well as width. Although primitive, *Basketball* was the first example of a videogame with a 3D perspective.


Atari VCS Breakout

Atari also didn't forget the arcade hits in its 1978 releases. *Outlaw* was a blocky version of Midway's *Gunfight*, and *Breakout* was a true rendition of Atari's own famous arcade game. In homage to the game that indirectly led to the founding of Atari, the company also released a VCS version of *Spacewar*.

Ironically, a form of *Spacewar* was once again released in the arcades. Cinematronics released the game under the name *Space Wars*. The mechanics of the game weren't much different than the earlier *Computer Space* but the audience was more sophisticated on how to play videogames. Although it wasn't an earth-shattering game in any way, *Space Wars* stood out from *Computer Space* and all other videogames in a major way. The graphics were unlike anything that had ever appeared before.

Most videogames used cathode-ray tubes (CRT) to display images. The wide end of the tube was coated with chemicals called phosphors. An electrode (electron gun) in the narrow end of the tube fired electrons that lit up the phosphors. Prior to *Space Wars*, all videogames employed *raster* graphics where the electron gun scanned the screen horizontally 30-60 times per second and created an image that consisted of two-dimensional pixels (picture elements). The graphics in *Space Wars* were *vector*, or XY. In this system the screen did not have to be divided into pixels and the electron gun moved to two points on the screen and then lit up the phosphors between the two points. The vector graphics contained less detail but they were much sharper and clearer than the raster graphics.

Space Wars was a mild success but Cinematronics' Vectorbeam technology was not perfected and the monitors went dead more often than not. Since a game with a dead monitor generated no revenue, arcade operators were unwilling to put up with this and most got rid of the machine. Fortunately other companies would improve on the vector technology and more impressive games employing vector graphics would be released in 1979.

By the end of 1978, people who wanted to buy home videogames had a choice. They could buy the Odyssey^2 and get good games with decent graphics and a keyboard. Magnavox also publicized that with the Odyssey^2 the player only needed one pair of joysticks to play every available game. There was no need to ever buy extra controllers. What they didn't say was that the controllers were hard wired into the console. If a controller broke, the owner had to send the entire console in for repairs. On the other hand, if a controller for the VCS wore out, inexpensive replacements were readily available. Buyers of the VCS had roughly the same number of cartridges to choose from as Odyssey^2 owners but each cartridge contained a wealth of variations.

For a hundred dollars more, they could buy the Bally Professional Arcade with graphics that blew the two other consoles completely away. While Magnavox was touting the Odyssey^2's keyboard, Bally released *Bally BASIC* for the Arcade, which allowed users to program their own games and save them on cassette tape via an optional interface. The release of *Bally BASIC* came as a welcome sight for Arcade owners. Since the introduction of the Professional Arcade nearly a year earlier, Bally had been proclaiming that a full sized keyboard would be available that would turn the console into a fully operational computer. In the interim, Bally released a number of game cassettes that were far superior to those put out by the competition. The release of *Bally BASIC* just reinforced Bally's commitment to make the Arcade a computer. Although the keyboard that they promised hadn't yet been delivered, the programming language cassette was a good start. Now Arcade owners were able to write, play and save their own games.

While Bally was selling videogame consoles that could be upgraded to personal computers, Atari went ahead and entered the personal computer industry with the release of the Atari 400 and 800 home computers. To prove to the world that Atari wasn't just a game company, it created an entire new division to keep the computers separate from the game consoles. It also became the first (and only) company to manufacture home videogames, arcade videogames, and computers.

The Atari 400 was a small computer that almost resembled the Odyssey^2. Like the game console, the 400 featured a membrane keyboard that made the computer perfect for small children since food and drinks couldn't get into the machine. For programmers the 400 was practically useless since it was almost impossible to enter anything that required extensive typing. The 800 on the other hand came with a real typewriter style keyboard. Another major difference between the two machines was the amount of memory that they had. The 400 had a maximum of 16K RAM while the 800 could be upgraded to 48K RAM.

Atari 400

Atari 800

To go with the computers, Atari released a slew of peripherals. Among them was a disk drive for the 800, a cassette drive for either machine, and a dot-matrix printer. On the software side, the

company released *BASIC*, a word processing program, an accounting program, and of course, games. Although the game titles were already familiar to VCS owners, their graphics were better than anything displayed on the videogame console. While the VCS version of *Breakout* only displayed six colorful stripes across the top of the screen, the computer version of the game showed the outline of each tiny brick within the stripes. In addition, the computer game had been called *Super Breakout*. Like the arcade game that it was named after, owners of *Super Breakout* had access to four very different forms of brick smashing games. *Basketball* was another early game for the Atari computers. Like its VCS cousin, *Basketball* featured a trapezoid court to give the 3D effect. However, where the VCS game only displayed two players without any features, the computer game displayed characters that looked like men.

Most of the games came out on cartridges that were much smaller than the ones that fit in the VCS. This meant that VCS owners who wanted to own one of the Atari computers, would have to buy the games all over again if they wanted to play them. Although the cartridges from different manufacturers were incompatible with one another, this was the first example of incompatibility within one company. However, since Atari was trying to establish two completely different product lines, this was overlooked.

Thanks to the popularity of *Space Invaders* the 1978 holiday season wound up being the best for the home videogame companies. Demand for the Atari VCS was so high that the company had to ration them out to retailers and eventually the 400,000 stockpiled VCS's had been sold. The VCS sold so well that the Atari management began thinking that maybe their little seasonal product wasn't so seasonal after all.

CHAPTER SIX
1979

When Atari first entered the consumer business with home videogames, they viewed it as a seasonal market. It was this type of thinking that caused Nolan Bushnell to sell Atari in 1976; all of the company's money was tied up in games that they thought could only sell at Christmas time. Eventually the entire industry viewed home videogames as products that only sold at Christmas and sat untouched on store shelves for the rest of the year.

Following the sensational 1978 Christmas buying season, the Atari management began wondering if the VCS could sell year round. After all, since arcade games were available for play all year long, why not home games? With this in mind, Atari began promoting the VCS on national television at the end of January 1979. The decision paid off and before long Atari was selling the VCS to people who had been exposed to it from the TV commercials. To capitalize on this major purchasing rush for the VCS, Atari began releasing cartridges for the unit en force. When the television blitz began, Atari introduced four new cartridges.

As VCS owners hit pay dirt with new game releases, owners of Bally's Professional Arcade discovered that their major supply of games wound up being the ones they wrote themselves with *Bally BASIC*. Executives at Bally realized that they really didn't want to be in the home videogame business, which was a completely different world from the arcade enterprise they were accustomed to. At the same time they were spending most of their time trying to start up a new casino division. They simply didn't have any time or energy to spend on the Arcade.

With only a trickle of titles now being released Arcade owners began writing their own games in earnest. Eventually user groups formed and people began trading their home-grown games for those written by others. The first established group began printing up a newsletter, *The Arcadian*, which included ads by people who wanted to trade or sell their games to others. The editors *of The Arcadian* even rated some of these games for the benefit of its readers. While the underground market for Arcade games boomed, Bally steadily decreased its number of new releases.

While Arcade owners were using their *Bally BASIC* cassette to turn their Arcade into a computer, Odyssey^2 owners were using their console to learn about computers. With the release of *Computer Intro*, Magnavox began doing its part to make the world computer literate. The cartridge, which was packaged with a spiral bound tutorial, went beyond pure computer basics. It also taught owners of the Odyssey^2 how to program in Assembler language and then allowed them to run their program on the console. *Computer Intro* was an important title in the Odyssey^2 catalog. The cartridge couldn't have been more timely as parents were becoming increasingly more conscientious about their children learning about computers. Thanks to this cartridge they didn't have to go out and buy an expensive personal computer.

Refusing to be outdone, Atari released its own programming cartridge for the VCS. *BASIC Programming* allowed VCS owners to write rudimentary programs via the keyboard controllers that simply weren't suitable for the task. Each button on the controller served three functions and several served four. The user had to keep pressing a shift button a number of times to make sure that the right button would yield the correct response.

While *Computer Intro* taught Odyssey^2 owners how to program in Assembler, Atari's *BASIC Programming*, despite the title, didn't even teach BASIC. The only thing that the instruction booklet did was describe which buttons to press in order to do certain things. It was a far cry from Magnavox's wonderful tutorial and only left its users completely confused.

The videogame companies seemed to sense that computers were the way to go. Atari, the number one game company, even opened its own computer division a year earlier. Ironically, one major computer company seemed to think that it needed to have a stake in the videogame business.

In the spring of 1979, Mike Markkula, the chairman of Apple Computers, called in Jef Raskin, who was then the manager of Apple's publications department. Markkula's intent was to have Raskin work on a project that had been code-named *Annie*. Markkula explained that he wanted the company to market a product that cost less than their popular Apple II, which retailed at $1000. Annie would be a $500 videogame console.

Although Raskin told Markkula that Annie sounded like a fine product, it wasn't something that he was especially interested in. Instead, he wanted to design a computer that would be easy to use from a human perspective. Within a month the Annie project was dead before it even began and Raskin was deep into developing his plans for his 'Person In The Street' computer. Before long the project would be renamed *Macintosh*.

1979 saw the end of the pinball line for Atari's arcade division. Atari first began manufacturing pinball machines in 1976. At that time there were many videogames in the arcades but the real money was still in pinball. As it would try to do with all of its products, Atari strived to be innovative with the six pinball machines that it released and wound up producing many firsts. At the time it was released, Atari's first pinball machine, *The Atarian*, was the most expensive pinball machine ever produced with a hefty price of $1295. *Middle Earth* was the first pinball machine to use two playing fields and *Hercules* was the largest pinball machine ever manufactured.

The death knell to pinball came in 1978 with the arrival of *Space Invaders*. Even with this intrusion, Atari's *Superman* pinball machine was very successful. Unfortunately, Atari had never been very skilled at manufacturing the machines efficiently. It took the company four months to build a machine that Bally could have produced in two weeks. When they retired the line, *Superman* wound up being the last pinball machine that Atari built.

Space Invaders not only weakened the pinball industry, it also caused Atari's loss of dominance in the arcades. Still, the company that began it all continued with new and innovative types of games. In August 1979, Atari released *Lunar Lander* in the arcades. *Lunar Lander* was simply a game where you had to land a space ship on the surface of the moon while fighting gravity. It was a game that had existed for years in text form on PDP and IBM mainframe computers. Atari's release was the first time the game had graphics. The game also marked Atari's first use of vector graphics, the system that Cinematronics introduced a year earlier with its *Space Wars* arcade game.

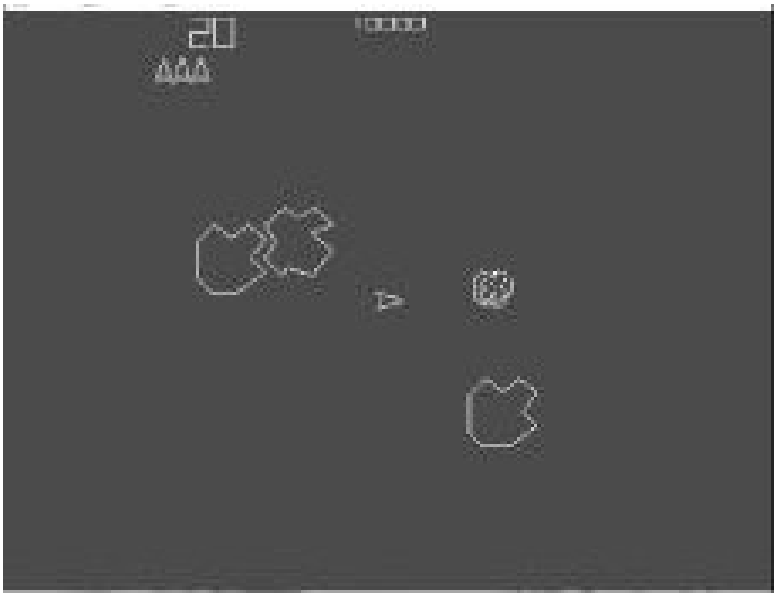
Atari had built 5000 units of *Lunar Lander* before stopping production in November 1979. This was done to make room for a new game that created such a sensation that the assembly line stopped just so the employees could play it. No other game had ever generated as much excitement. It had been rushed onto the market so fast that the first 200 units were shipped in *Lunar Lander* cabinets.

Asteroids had been the brainchild of an Atari engineer named Lyle Rains. Although Rains had been with Atari's coin-op division since 1973, through much of 1978 he had been working on a two-player outer space dogfight game for a holographic game system called *Cosmos*. The 3D screen for Rains' game displayed two moving spaceships and several planets and asteroids, which the players could destroy and had to avoid. Although the game was never produced, Rains was very fond of it and thought about it constantly. When *Space Invaders* caught on in the United States, Rains suddenly thought about what his game might be like if the asteroids moved. He mentioned this idea to an Atari programmer named Ed Logg and within two weeks Logg had a working prototype. The game was so much fun that Logg had to build a second prototype for his friends to play.

In *Asteroids*, the player controlled a tiny spaceship that first appeared in the center of the screen.

After a few seconds, the ship got bombarded with big asteroids from all directions. The player could shoot at the big asteroids and earn points but this caused the asteroid to break apart into several smaller asteroids. These medium-sized asteroids could also be fired at and they too would split into smaller pieces when they were hit. When all of the asteroids were finally destroyed, a new barrage appeared on the screen.

Asteroids was proof on how a basic idea could be recycled and appear in many different forms. If you take away the moving asteroids and add an opposing spaceship, you have *Spacewar*, the game that Nolan Bushnell tried to market in the arcades as *Computer Space*.



Atari Asteroids

Videogames had evolved and what had been complex to gamers in 1971 was something spectacular eight years later. *Pong* had been designed simply with dial controllers to move the paddles. When *Tank* came out, it used a joystick to simulate a real tank controller. *Space Invaders* used two buttons to control the horizontal movement of the cannon and a third button to fire missiles. By the time *Asteroids* came out, gamers had grown accustomed to several controllers and weren't scared off by the number of buttons that it used for thrust, firing, hyperspace, and a number of other options.

Like *Lunar Lander* that preceded it, *Asteroids* used vector type graphics that allowed the on-screen asteroids and spaceship to appear very detailed. *Asteroids* replaced *Space Invaders* as the king of the arcades. It also introduced something new to arcade games. One of the reasons that *Space Invaders* was so popular was because many players aimed for the high score. The designers at Atari felt that those who achieved a high game should be rewarded with more than their score displayed on the screen for all to see. With this in mind, they programmed a feature that allowed the player who achieved a new high to enter three initials by cycling through the alphabet via the controller buttons. People soon began playing the game like crazy so they could get their initials on the screen along with their high score.

Atari wound up selling 70,000 *Asteroids* units at $2700 each. For the first time in its history, the company was taking in serious money, giving it financial independence from Warner. Because Atari earned so much money, it also had a lot of cash to spend. Atari once again dominated the arcades in the industry that it created.

Lyle Rains had dreamed up *Asteroids* while he was working on *Cosmos*, a portable hand-held unit complete with its own holographic screen. Unlike the portables that were already flooding the market, Cosmos accepted different game cartridges making it the Channel F of portables. When the Cosmos prototype was brought to a trade show, it impressed the crowd so much that enough advance orders were written up to make the unit profitable.

Milton Bradley also introduced a hand-held programmable system, which it called *Microvision*. Designed by Jay Smith of Smith Engineering, the Microvision had a two inch square LCD screen and a dial controller. The graphics were small and blocky but they allowed more movement than the light emitting screens that were on the other portables. In a way, the graphics were similar to the early VCS graphics. They were crude but effective.

Since Microvision was programmable, Milton Bradley released a series of cartridges that were

Milton Bradley Microvision

challenging despite the small screen. With titles like *Bowling*, *Cosmic Hunter*, and *Connect Four*, the company proved that it could be diversified in the types of games that it developed. Unlike the programmable consoles that were on the market, the Microvision did not have its own CPU, the Central Processor that processed all data. Instead, each of the Microvision cartridges had their own 4-bit microprocessors that allowed the system to be easily upgradeable as new cartridges came with more powerful CPUs.

Atari Cosmos

With innovative products like Cosmos, Atari intended on controlling the industry that Magnavox had created. By the end of 1979 sales for the VCS and Odyssey^2 were just about running neck and neck. By using the money that it made from *Asteroids*, Atari intended to end the home videogaming race once and for all.

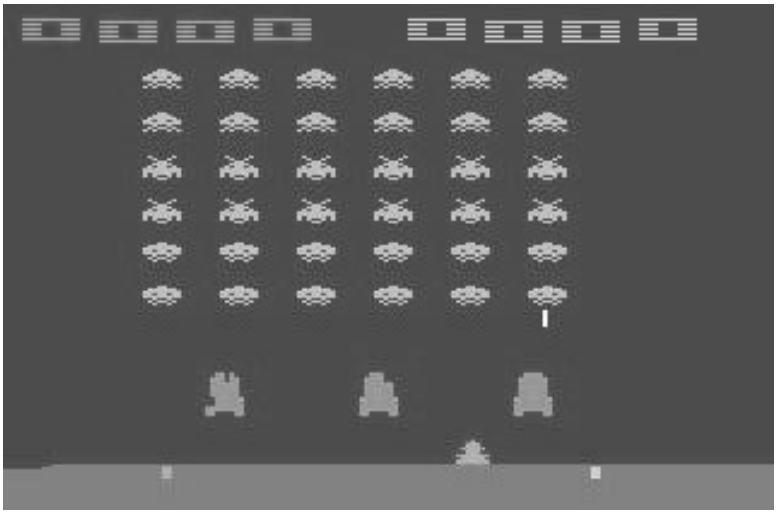
CHAPTER SEVEN
1980

By 1980, the popularity of videogames just continued to grow. *Video*, a magazine that dealt with all aspects of video, made videogames respectful by publishing a monthly column on the subject called “Arcade Alley”. The column had been written by Arnie Katz (writing as Frank Laney Jr.) and Bill Kunkel; two self-acclaimed veteran videogame addicts.

As videogames became more popular, the name Atari became synonymous with them. Fueled with enormous revenue from the coin-op division, particularly *Asteroids*, the company was able to invest heavily into the consumer division that had been running neck and neck against Magnavox’s Odyssey^2.

Atari had released twelve new cartridges for the VCS in 1979. It was an impressive number but people weren’t going to evaluate a system solely upon the number of games that were available. They had to be games that people wanted to play. Ray Kassar realized that if Atari offered the games that people wanted, they would rush out and buy a VCS. In order to do this, Atari went directly to Taito in Japan where it licensed *Space Invaders* for home play. This was the first time that an arcade game had been licensed for home use.

The home version of *Space Invaders* was released in January 1980 with so much publicity that the result was just as Kassar had predicted. Like its arcade predecessor it was a success. Many people bought the VCS just so they could play *Space Invaders* at home. Atari’s gross income in 1980, $415 million, was twice as much as it had been in 1979. The company’s operating income rocketed to $77 million; one third of all of Warner Communications’ operating income. This in turn caused the conglomerate’s stock to rise 35 percent. Atari had become the fastest growing company in history.



Atari VCS Space Invaders

Following *Space Invaders*, Atari released *Adventure*. Although this game didn’t get any of the attention that *Space Invaders* had received, it proved that Atari’s designers could still come out with new and interesting games. *Adventure* was the first quest game for home videogames (although they had been available for computers). In this game, the player assumed the role of an on-screen character (in this case a square cursor) who had to search for a golden chalice and return it safely to a gold castle. Unlike previous games, *Adventure* featured multiple screens where the chalice and castle keys were hidden. To complicate matters, there were also three hidden dragons who could end the game by eating the cursor. The player had to seek out hidden weapons that could kill the dragons. As a final obstacle, a player could only carry one object at a time.

With *Adventure*, the world also learned how Atari’s programmers were becoming dissatisfied with the company. Before the Warner buyout, everyone who worked for the company knew each other and was more or less aware of the projects others were working on. When a game was released, there weren’t any secrets about who conceived and programmed it. After Warner bought Atari, the programmers were treated just like any other employee who was paid to perform a job. The products that they created were the property of Atari and they couldn’t make any claims to them. Like the other

programmers, Warren Robinett was tired of not receiving any credit for the games that he designed. When he created *Adventure* he also included a secret room that caused his name to display on the screen when it was entered. Because he feared losing his job if this was ever revealed, Robinett didn't even tell his fellow programmers about what he had done. Eventually a twelve year old boy in Salt Lake City, Utah came upon the secret room and discovered Robinett's name. Atari received such favorable publicity for this that more and more designers began adding secret "Easter Eggs" to their programs.

FOCUS ON WARREN ROBINETT

Although Warren Robinett wanted to write a sequel to his popular *Adventure* game, he had already left Atari by the time his Easter Egg was discovered. However when he left he had the idea for another adventure game where the player had to combine objects in order to build machines to defeat monsters. This idea eventually turned into an educational game called *Rocky's Boots*, one of the initial games released by The Learning Company, an educational software company that Robinett co-founded in 1980. The program won Software of the Year awards from *Learning*, *Parent's Choice*, and *Infoworld* magazines, and received a Gold Award from the Software Publishers Association.

In the mid-1980's at Robinett developed the first software for a virtual reality system at NASA's Ames Research Center.

Today, Robinett is a Research Associate Professor at the University of North Carolina in Chapel Hill. Where he continues to design interactive computer graphics software. He also co-invented the *nanoManipulator*, a virtual-reality interface to a scanning-probe microscope, which gives scientists the impression that they are actually on the surface of a microscopic sample within the microscope.

The Learning Company, which began with a $130K grant from the National Science Foundation, was sold to Softkey in 1995 for $660M. Softkey retained The Learning Company name. In 1998, when The Learning Company was the second largest consumer software company in the world after Microsoft, the company was sold to Mattel for $4.3 billion. After under-performing to Mattel's expectations and causing Mattel's CEO to step down, The Learning Company was sold to Gores Technology Group in October 2000.

Atari was at the point where it could do no wrong. Every cartridge that the company released was eagerly purchased by gamers who couldn't get enough. Magnavox just couldn't keep up with the number of titles that Atari released Since Magnavox didn't have an arcade division to obtain games from it had to develop all of its games from scratch. Licensing games from coin-op manufacturers was unheard of until *Space Invaders* was released for the VCS.

Odyssey^2 owners at least were able to purchase new software, which was more than owners of Bally's Professional Arcade could do. While Magnavox struggled to keep up with Atari, Bally just fell farther and farther behind, mainly because Bally no longer released any new games. Nobody wanted to buy a programmable console that wasn't supported by the manufacturer because eventually there wouldn't be any new games to play on it. Most games had a life expectancy of two months before a player grew tired of it and sought new challenges. Bally hadn't offered a new title since *Bally BASIC* and the chance for any new releases looked very slim. Worst of all was the non-release of the much touted keyboard would have turned the Arcade into a personal computer. Instead of a computer, Arcade owners found themselves with a game machine that would only play a limited number of games.

At this time, personal computers were growing in popularity but they were still too expensive for most people to purchase. Even if they could afford one, most people didn't even know what they would use them for. Bally's approach had been a sound one. By introducing a game machine that could be upgraded to a computer, they were getting computers into the home. Unfortunately, because of the poor distribution that the Arcade received, very few people knew that the machine even existed.

To capitalize on the concept of a videogame console that could be upgraded to a personal computer, a company called APF Electronics released the *Imagination Machine* in early 1980. Like the VCS and Odyssey^2, the Imagination Machine accepted game cartridges but the two controllers that were supplied were different from what the two other companies packaged with their consoles. The controllers resembled handheld calculators that had twelve numeric buttons to input data. Near the top of the controller was a very short joystick with a large handle. The console itself could sit in the center of a larger base that included a keyboard and cassette recorder as well as 9K RAM. The entire package sold for under $500.

APF's goal was to provide videogame users with a practical microcomputer. As a computer, the Imagination Machine attracted first time buyers with its low price. It retailed for $50 less than the Atari 400 and featured a real sculptured keyboard and one thousand more bytes of memory. However APF failed at the videogame end. Those that were available didn't take advantage of all the power that the machine offered. They featured such poor graphics and low playability that they failed to attract the very market that they had been intended for; the game players who wanted to advance to computers.

Shortly after the Imagination Machine appeared on the market, Mattel Electronics debuted the *Intellivision* (Intelligent Television); a videogame console that could eventually be upgraded into a fully operational computer. This machine appealed to gamers because of its crisp realistic graphics

that seemed to be light years of anything that Atari and Magnavox put out. The Intellivision was the latest release from the new electronic division of the company that pioneered hand-held electronic games in 1977. Mattel, the world's largest toy company, had been determined to put its knowledge of successful toys into its videogame console.

Mattel Intellivision

Mattel began in 1946 by husband and wife Elliot and Ruth Handler. They had moved that year from Denver to southern California where they set up a company to design and manufacture doll houses and furniture. In 1955, they decided to take a risk and sponsor the highly rated Mickey Mouse Club on TV. Their gamble paid off and Mattel became the first toy company to advertise on national television.

By 1957 the company manufactured toys like Jack-In-The-Boxes and cap guns. One day Ruth discovered that her young daughter Barbara loved to dress her dolls up in all the latest fashions that she cut out of paper. In those days, all the dolls that were sold resembled babies and the clothes that they were sold with were the only clothing available for them. While watching her daughter changing the doll's clothes, Ruth realized that if optional clothing was available, other children might love to dress their dolls up also. With this in mind she designed a doll that she named after her daughter. Unlike the dolls that she followed onto the marketplace, *Barbie* was all grown up and a complete wardrobe was available for her so she could never be out of style.

During the sixties Mattel released so many various types of types of toys that it earned the title of being the world's largest toy manufacturer. In 1976, it was among the first companies to release electronic hand-held games. From 1976 to 1979, Mattel's earnings increased from $494 million to $805 million with most of the profits coming from the electronic games. They were so successful that Mattel began its Mattel Electronics division in 1979.

After the new division was set up, Mattel's designers took a serious look at the electronics industry and saw that the future was in videogames and computers. In 1980 they released the Intellivision Master Component, a console that could only play games. However a full keyboard and cassette tape deck were promised to be available by the end of the year. This keyboard would turn the Intellivision into a fully operational home computer.

Mattel Intellivision Computer

Even without the promised keyboard, the Master Component was a marvel. Unlike the consoles it competed against, Intellivision was shaped like a rectangle. Across the top center of the unit was a compartment where the two controllers that were hardwired into the console were stored when they weren't being used. Instead of joysticks, the Intellivision's two controllers were flat pads with two action buttons on each side. The buttons on the left served the exact same functions as the ones on the right and had been designed simply so right handed players wouldn't have any advantage over lefties. At the bottom of each controller was a disc that served the same function as a joystick; it moved the on-screen characters in the direction that it had been pressed.

Above the disc was a telephone style keypad that was

used to input data to the console. Two colorful overlays had been included with each cartridge that could be inserted into the controllers directly over the keypad. The overlays informed the player about which buttons to press during the course of a game.

The Intellivision's cartridge slot was located along its right edge. Once the console was turned on, players immediately saw that it was indeed different from the VCS and Odyssey^2. For one thing, each game began with a title screen that reminded players that the Intellivision had been manufactured by Mattel Electronics and told them the title of the game that they were playing.

The graphics were truly outstanding. The on-screen characters actually looked like real people instead of blocky computer generated characters. The baseball game displayed an entire diamond and all nine on-screen players could be individually controlled by the gamer by pressing different buttons on the keypad. In the case of *Major League Baseball*, the overlay that came with the cartridge also displayed a picture of the diamond and told which button controlled which on-screen player. To control a certain player, the gamer had to press the picture of the corresponding character on the keypad.

Intellivision games weren't designed to be played quickly. The sports games could only be played by two gamers (no solitaire games) and took immense concentration on both parts. *NFL Football* allowed players to choose from 160 offensive and 10 defensive plays.

Like Atari, Mattel saw the benefits of licensing but they went about it in a completely different fashion. Instead of licensing arcade games that players were familiar with, they licensed the names of organizations to give buyers the impression that the sports game was actually endorsed by the NFL, PBA, NBA, etc.

Intellivision specialized in sports games, something that the VCS lacked. The initial release of cartridges included football, baseball, basketball, hockey, and skiing. Although Mattel didn't offer an array of arcade games, nobody seemed to mind. The Intellivision quickly replaced the Odyssey^2 in the console race and it challenged the VCS. Atari still had an edge over Mattel since it was established and had a large catalog of available games. Unfortunately, many of those games were beginning to show their age. Mattel took every chance it could get to prove how superior its console was over the VCS. It compared its *Armor Battle* to Atari's *Combat* to show how primitive the VCS was. *Combat* was basically a maze game where two players used tanks to shoot at one another and the player with the most points at the end of the timed game won. In *Armor Battle*, each player was allotted fifty tanks but only two appeared on the screen at a time. The playfield consisted of water, highways and woods and each had a different effect on how a tank could move. A tank was destroyed when it was shot three times or when it ran into an invisible mine. When a player lost both tanks, a new battleground appeared (there were 240 different playfields altogether) with two more tanks for each player to contend with. The game continued like this until someone lost all fifty of his tanks. While Atari's tank game was simply one of duck and shoot, Mattel's offering involved strategy and patience.

Although only ten cartridges were available when the Intellivision came out, Mattel assured consumers that that number would double by the end of the year, and twenty new cartridges would then be released yearly. Mattel also gave Intellivision owners an alternate method to get games without having to buy any cartridges at all. In June 1980 the company began test marketing a service that it developed in conjunction with Jerrold, a manufacturer of cable television equipment. *Playcable* actually delivered games into homes through the cable TV network, just as Ralph Baer had first envisioned games to be distributed ten years earlier. Cable subscribers who signed up to Playcable had to purchase a $48 adapter, which plugged into the Intellivision console through the cartridge slot. Once they had this necessary equipment they had to pay six to ten dollars a month and this gave them access to a limited number of titles twenty-four hours a day. Mattel promised that if the tests proved successful in the four US cities that they were held, Playcable would go nationwide by the summer of

Jerrold Playcable

1981.

The Intellivision impressed the gaming public but it didn't come cheap. The console listed for $299; one hundred dollars more than the VCS. This price didn't even include the keyboard that was scheduled to sell for $700. Together the system would cost one thousand dollars, the same price that Atari was selling its 800 computer. Mattel marketed the Intellivision as a videogame console for people who weren't ready to jump into computers. The company hoped that after these people owned and sampled the machine for a few months they would then be ready to move up to a computer. The company was betting that once people spent the initial $299 for the console, they would be more compelled to later spend $700 to have a computer in their home.

Astrovision Professional Arcade

As Mattel Electronics was entering the videogame business, Bally was doing its best to get out. In August 1980, Bally sold the Professional Arcade to a company called Astrovision who first renamed the console *Astro Professional Arcade* but later renamed it to the *Astrocade*. Bally continued servicing the unit and gave Astrovision the home rights to several Bally/Midway arcade games. Astrovision promised that new games would be available soon along with the eagerly awaited computer keyboard. Arcade owners breathed a sign of relief and were glad that they stuck with their console through the lean times.

The threat from Intellivision didn't bother Atari too much even though Mattel's unit was clearly more powerful than the formidable VCS. After all, the VCS had an installed base of over two million units amounting to two thirds of all households with videogame consoles. Since most of the company's money had been made in the software, those two million homes would always be a ready market for any new software from Atari who was the sole supplier.

On April 25, 1980, Atari suddenly had reason to worry.

On that date an announcement had been made about the formation of a new company called Activision. Unlike the previous companies that had entered the videogame market, Activision intended to only sell software for the VCS.

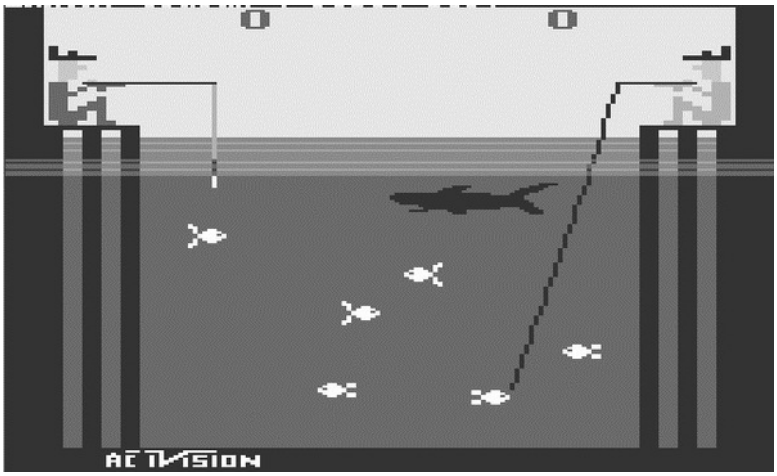
Actually, it was the working conditions at Atari that directly led to the birth of Activision. It had peeved the designers very much that the management didn't give them the credit that they thought they deserved. Warren Robinett vented his anger by secretly programming his name into *Adventure*. Four other designers simply made plans to leave Atari and start their own company.

The four were David Crane, Alan Miller, Bob Whitehead, and Larry Kaplan. In the summer of 1979 they formulated their plans and then discussed them with an attorney. The idea seemed like a good one except for one major hitch: none of them had any business experience. The lawyer quickly called his friend Jim Levy. Levy was a marketing professional who had worked for Hershey's, Time

Inc., and GRT Corp., a manufacturer of records and tapes. Although he didn't have any videogame experience, he recognized the opportunity for what it was worth. With his record company background, Levy quickly saw the parallels between the videogame and recording industries. During the fifties, RCA had broken new ground when it introduced a new record player that could only play records that RCA manufactured. The record player was a major success because it played LP records, which rotated at 33 RPMs and were able to play more music than the standard 78s. Since RCA was also the only company that made these new records, sales had been guaranteed by people who wanted to listen to the new records. Eventually, LPs outsold the 78s and other record manufacturers began manufacturing LP records until the music industry evolved into the present day system where some companies manufacture the players and others make the records. Levy envisioned the same system for videogames where companies like Atari would produce the hardware, and others would design and release the software.

Levy quickly met with the four renegade programmers and before long they announced the birth of Activision. The decision to release software strictly for the VCS came because the VCS was in more homes than all the other consoles combined. With the average VCS owner buying five cartridges a year, there was more of a market for VCS compatible software than any other. However, the company planned to watch the Intellivision and Odyssey^2 closely and if those machines sold in considerable numbers, Activision would also produce software for them.

By the time the first four Activision cartridges were released in the fall of 1980, the Intellivision was enjoying a huge following. All people had to do was look at the difference in graphics between the VCS and Intellivision and they were hooked on Mattel's machine despite its heftier price tag. Even households that already owned VCS's were relocating them to closets and replacing them with Intellivisions. Although Atari had machines in millions of households, the threat of Mattel surpassing this number seemed more evident every day.

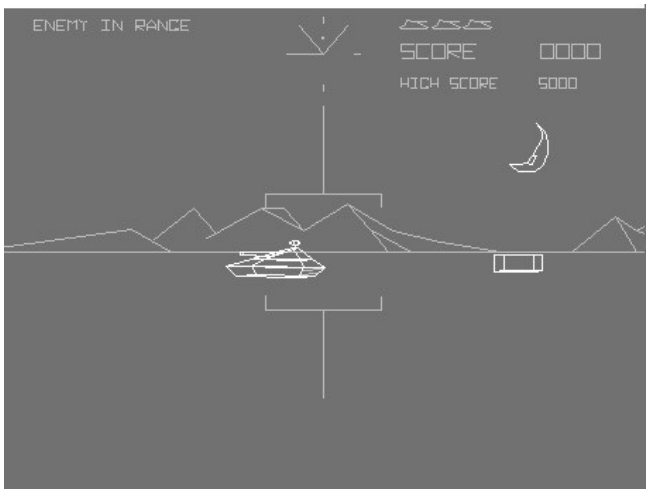


Activision Fishing Derby

The release of the four cartridges from Activision was a boost that Atari needed because they changed the public's attitude of the VCS. They showed the world that the versatile machine was more powerful than anybody had imagined. The four games: *Dragster*; *Fishing Derby*; *Checkers*; and *Boxing* all featured crisp graphics and were fun and challenging to play. Because the packaging of the cartridges was very similar to Atari's, many consumers didn't even realize that the new games hadn't been produced by the mammoth videogame company. However, there were ways to tell. For instance, gamers always knew that they were playing an Activision game because the Activision logo was constantly displayed somewhere on the screen. There were also physical differences in the cartridges themselves. While the Atari cartridges had hinged doors on them to protect the circuit board from being damaged, Activision's cartridges only had a sponge around their circuit boards. Finally, there were differences in the instruction booklets that accompanied the cartridges. The Atari instructions only told how to insert the cartridge into the console and how to play the game. Activision, on the other hand, always included a letter from the designer that offered hints and suggestions on how to play the games. The letters were accompanied by photos of the designers. Activision also offered challenges. If a player reached a certain score he could send a snapshot of the TV screen to Activision and receive a patch that proclaimed the feat. It wasn't much but it still allowed home players to strive for something.

Activision was innovative in its games and always sought to take full advantage of the capabilities of the VCS. *Dragster* was the first title that allowed players to restart a game after finishing one by merely pressing a joystick button.

Although Activision games actually helped sell VCS consoles, Atari naturally wasn't happy with the prospect of another company taking away some of its business. Atari quickly sued the fledgling company citing that the four renegade designers were using company secrets to create their games. In addition, Atari claimed that *Dragster* was really a home version of the arcade game *Drag Race* that they released in the summer of 1977. Although Atari sought an injunction to halt the sale of Activision cartridges, one was never granted and Activision was free to sell what consumers soon considered to be superior games. By the end of 1980, Activision sold $65.9 million worth of software; a profit of $12.9 million. Since many VCS owners rationed their money and only bought a limited number of cartridges, it was easy to see that Activision did indeed take a big slice out of Atari's pie.



Atari Battlezone

The arcade division of Atari had to worry about a different type of competition. In November 1980 they released their first first-person game. A first-person game is one where the player feels like he is part of the action. In previous games such as *Tank*, the player saw the action as if he was looking down from above. In *Battlezone* the screen depicted a view from a tank periscope and the player had to maneuver the tank and avoid enemy fire that could come from any direction, even from behind. Fortunately the tank could turn 180 degrees very quickly. With vector graphics, *Battlezone* was so realistic that the US Army ordered a modified version of the game for real combat tank training. The publicity that Atari received from this didn't hurt the company at all and eventually 75,000 units were sold.

In *Battlezone* the player had to worry about action that was taking place off-screen. However this wasn't the first time that this off-screen action ever appeared in a videogame. In fact, the first game to feature a virtual world where the action could appear in places other than what was on the screen, made its debut only a few months before *Battlezone*.

Defender was a game released by Williams, a Chicago based manufacturer of pinball machines. *Defender* was a horizontally scrolling game where the player had to pilot a spaceship while avoiding and shooting down the enemy ships. The player also had to save the inhabitants of the planet from being kidnapped by the enemies. However for the first time in any videogame, most of the action in the game took place off-screen. The playfield in *Defender* was so expansive that a radar scanner was provided at the top of the screen to show the entire perspective. A dot on the radar screen represented the player's ship while other dots stood for enemy aircraft. Sound effects alerted the player to when a citizen was being kidnapped off-screen and a quick peek at the radar showed where it was happening.


Williams Defender

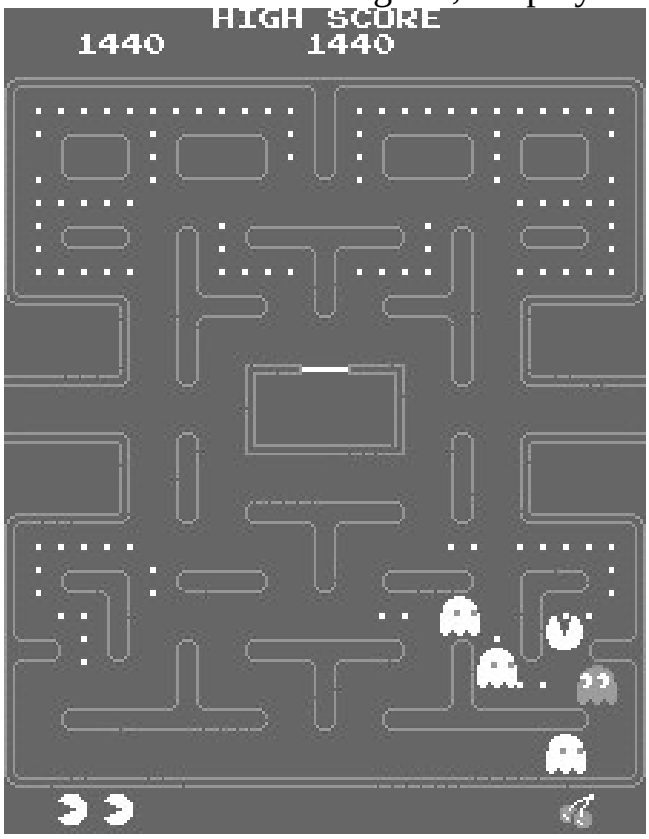
Despite the fact that *Defender* had a record seven control buttons that players had to contend with,

the game became an instant hit for Williams and put the pinball maker onto the videogame map.

Initially *Defender* had been practically ignored at it's first showing at the Amusement & Music Operators Association's (AMOA) annual expo in October. Another game that was practically ignored by the crowd was a simple, non-violent maze game that a Japanese arcade game manufacturer called Namco licensed to Midway.

Non-violent games were a novelty. Throughout its short history, the majority of arcade videogames were violent in nature. *Pong* was basically mild because of its simplicity, but once the technology improved there weren't any bars on how violent games could get. After all, games were an escape from reality and where else could you go out and destroy things without doing any real damage? Beginning with *Tank*, the games that appeared in arcades were mostly all violent and the majority of the players were males. Even *Breakout*, a *Pong* variant, was violent as its emphasis had been placed on "breaking through" a brick wall. Other games such as *Outlaw, Space Invaders, Asteroids*, and *Missile Command* were more obvious. One game, *Deathrace 2000* by Exidy, had been forced off the market because of its extreme violence. The object of that game was to drive around in a car and try to run down people. Every person who was killed was replaced by a cross.

The object of the new game was to control a round yellow object through a maze that was lined with dots. Every dot that the yellow object ran over disappeared and scored points for the player. When all the dots were gone, the player began with a new maze filled with dots.



Namco Pac-Man

Puck-Man Logo

Naturally the game wasn't that easy. Trying to thwart the player from getting to all the dots were four 'ghosts' that caused the player to lose a turn if they caught the yellow object. Scattered around the maze were four power pills. If the yellow object ran over any of them, it could then stand up to the ghosts for a few seconds and score bonus points by getting them.

Namco called the game *Puck-Man* since the round yellow object resembled a hockey puck. However Namco wisely feared that American vandals would change the '*P*' in *Puck-Man* to an '*F*' so they quickly changed the name of the game to *Pac-Man*. Before long *Pac-Man* replaced *Asteroids* as the most favorite arcade game and eventually it would become one of the top-selling arcade games of all time. Primarily because of its non-violent theme, girls lined up to play it and found that they could be just as good as the boys. *Pac-Man* became a national epidemic with songs written about it. When it was discovered that the ghosts moved in patterns, volumes of books were written on how to beat the game. It became even more popular as people paid money to try out the strategies that they read about. Record company executives complained about a significant drop in business because teenagers, who had comprised the largest group of record buyers, were spending their money elsewhere. Many towns passed ordinances that prohibited minors from entering arcades during school hours. It didn't matter. The kids just went to the arcades after school and spent their lunch money then.

The 1980 Christmas season was an interesting one for the manufacturers of electronic games. The producers of hand-held games fared very poorly because of a glut in the market that was similar to the one that put an end to the dedicated videogames in 1976. In early 1980 Mattel Electronics released a second generation of hand-held games that played better and had superior graphics than their predecessors. By the end of the year the company was heavily discounting them to get rid of them. Prices on the electronic games fell dramatically because of the large number of competing products that sat on the store shelves without selling. The hand-held market virtually died that Christmas and many of the companies that had sold only these types of games were forced out of business.

On the videogame console front Atari was still ahead of Mattel but the gap closed dramatically as Magnavox slowly fell behind. The Astro Arcade wasn't much of a contender and merely satisfied the needs of previous Arcade owners. As far as software was concerned, the companies still sold cartridges in proportion to the number of consoles in homes. Atari had a record year but it would have been better if not for the presence of Activision.

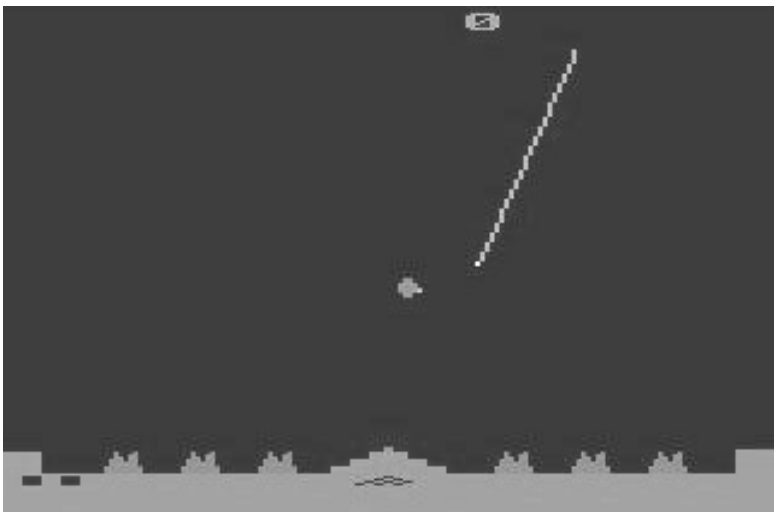
Unfortunately for Atari, Activision was just the beginning.

CHAPTER EIGHT
1981

In order to effectively market the VCS against its competitors, Atari had always taken advantage of its large catalog of arcade games that were available for the home machine. The catalog also contained non-arcade games that Atari figured people would buy once they owned a VCS. Although none of the games could be called bad, they weren't exactly what people would have bought if they had a large choice of titles to choose from. However, since it was a seller's market, Atari was able to release games like *3D Tic-Tac-Toe* and *Maze Craze* and be confident that they would sell out.

The arrival of Activision brought an end to this. Suddenly Atari had to deal with a competitor to vie for the buyer's dollars. Now the public had a choice and wasn't forced to buy only what Atari released.

This sudden competition made Atari realize that it had to produce games that people really wanted. In January 1981 the company released *Missile Command* without any advance fanfare. Although the game played very well, gamers were quick to point out the limitations of home videogames. While the arcade version of *Missile Command* used the track ball for pinpoint movement, the home edition utilized the joystick, which didn't react as quickly.



Atari VCS Missile Command

The VCS version of *Missile Command* featured 34 variations; among them a special game for children. In this slower and easier rendition children were able to adequately play a "grown-up" game that their older siblings and parents enjoyed. This was just one way of letting consumers knows that they were getting value when they bought Atari products; cartridges with enough variations to make everybody happy. Although Activision didn't bother with multiple variations of its games it was certain that the marketplace was large enough to sustain two companies. Nobody in either company imagined that there would be more. However the success of Activision and the dissension at Atari practically demanded it.

In January Bill Grubb resigned from his vice-president of marketing position at Atari. Like many other of the company's employees, Grubb had grown tired of the corporate life and wanted to get out and spend more time with his family. After leaving Atari, he saw that he could earn a lot of money as a manufacturer's representative so he quickly started his own company called New West Marketing. One of his first clients was Activision.

Grubb thought that the young software company did an excellent job. The outstanding profits that they posted at the end of their first year in business was proof of that. He also thought that there was room in the marketplace for another company to do the exact same thing that Activision was doing.

Coincidentally, at the same time that Grubb was having these thoughts, another Atari employee was having the same ideas. Dennis Koble had been with Atari for over five years and was at the point where he constantly dreamed about quitting Atari to form his own company and become rich. Koble was an engineer who had been responsible for several coin-op games for Atari. One of them was 1976's *Sprint 2*, Atari's first mass-produced microprocessor based game. Another Koble game was *Avalanche*, which had been released in early 1978. The object of *Avalanche* was to catch falling snow

and rocks with buckets that moved horizontally across the screen. The game wasn't a commercial success at all. Ironically, while Koble was having his dreams of escaping Atari to form his own company, Larry Kaplan was secretly working on *Kaboom!*; a game that Activision would release later that year. The object of *Kaboom!* was to catch falling bombs with a horizontally moving bucket of water. *Kaboom!*, which was based on Koble's *Avalanche*, became one of the first best-sellers for the fledgling Activision.

Only one thing prevented Koble from quitting his job to form his own company: he was an engineer and didn't have any marketing experience. After Grubb left Atari, Koble decided to call the former VP of marketing and discuss his ideas. He didn't know that Grubb was having the same ideas as him.

The success of Activision caused a lot of people to have similar ideas. One week after Grubb spoke to Koble he was hired to do some work at Mattel. While he was there he met with an Intellivision designer named Jim Goldberger. Goldberger told Grubb that he and his roommate, senior engineer Brian Dougherty, wanted to leave Mattel to form their own software company that would market Intellivision compatible games.

Grubb decided that there were enough people interested to start a new company and he quickly sought backing. After he raised $2 million from several private investors he recruited two game designers from Atari and three people who dealt with hardware. On July 17, 1981, the group of nine founded *IMAGIC*.

Like Activision, Imagic intended to strictly sell software. However, the team of former Atari and Mattel people planned to sell software for both the VCS and Intellivision. They betted that the Intellivision would eventually become a leader on the market.

Although Imagic was the second software company to form, it didn't deliver a cartridge until 1982. Another company began in October 1981 and had its first game in stores by December.

Games By Apollo was different from the other software companies. First of all, it wasn't located within Silicon Valley or even California for that matter. Games By Apollo was headquartered in Richardson, Texas; just north of Dallas. Instead of a design team that consisted of renegades from Atari and Mattel, the company had one that consisted of only one man.

Games by Apollo was the brainchild of Pat Roper, president of National Career Consultants, an eleven year old producer of educational films. On October 6, 1980, Roper was playing *NFL Football* on his Intellivision when he thought about the profits that had been made by the videogame companies. He wondered if there was anything that could stop him from manufacturing games. When he discovered that there wasn't, he went ahead with his project to make Richardson the new videogame capital of the world.

Although Roper was basically ignorant about the videogame industry, he did know enough to realize that he couldn't sell anything if he didn't have a product. Since he himself didn't know how to design a game he sought out a designer the only way he knew how; by placing an ad in the paper. The classified ad calling for a videogames programmer was published on October 17, 1981 in both the *Dallas Morning News* and the *San Francisco Chronicle*. A high-school student named Ed Salvo answered the ad and sent off a game that he had been working on at home.

The game was *Skeet Shoot*. Unlike the games that were being released by Atari and Activision, *Skeet Shoot* consisted of very simple graphics that were very reminiscent to the games that had been originally released with the VCS in 1977. Under ordinary circumstances a game like *Skeet Shoot* would never have been released but Roper knew very well that VCS owners were so desperate for new titles that they bought everything available. Because of this, he bought the game and quickly hired Salvo as a full-time programmer. Roper released *Skeet Shoot* to the stores on December 6, 1981 in boxes that looked just like the boxes that the Atari and Activision cartridges came in. The game sold

out and was a success. Naturally, most people bought the game sight unseen and thought that they had bought a cartridge from a major company that they were familiar with. The fact that most people had been disappointed with *Skeet Shoot* didn't deter Roper in the slightest. He already had Salvo programming a new game that would take the VCS to new technological heights.

Space Chase was similar to *Space Invaders* because the player again controlled a horizontally moving space ship at the bottom of the screen. In this game the computer controlled four haphazardly flying ships in the upper center of the screen. The player had to shoot at the quick moving ships while avoiding the missiles that they were firing. As a backdrop to the action, the ships appeared to be flying over the terrain of a planet. *Space Chase* was the first VCS game that featured a scrolling playfield even though the scrolling had no effect on the action. While *Skeet Shoot* had done nothing to promote the Games By Apollo name, *Space Chase* proved that the company was capable of producing games with astounding graphics.

Games by Apollo wasn't the only company that produced VCS games with good graphics. Activision had made a name for itself from its spectacular VCS graphics that some people claimed were as good as anything on the Intellivision. The Activision designers used every bit of memory available to the VCS to achieve the great graphics. When the VCS had first been conceived in 1977, it had been designed to access up to 4K of external ROM. At the time no one ever thought that any program would ever utilize that much memory. Four years later, the arcade games were more complicated and thus the home games had to be nearly as difficult to challenge those who frequented the arcades. The only way they could do this was by using the VCS' memory to the max. Unfortunately, the designers soon discovered that even 4K wasn't enough.

When Atari decided to translate its megahit *Asteroids* to the VCS, its designers quickly tangled with the limits of the machine. *Asteroids* was an important title for Atari since Activision began taking away some of its business. This was the top selling arcade game of all time and Atari hoped to match that feat with the VCS version. However the company wasn't willing to sacrifice any of the coin-op's action. This proved a problem for Tod Frye, its designer. The game couldn't be designed with only 4K of code.

Frye decided to use a technique called "*bank-switching*", which had been developed, but never used commercially, by an Atari programmer named Larry Wagner. The technique involved dividing memory into disjointed sections or banks. Although all banks were available to the program, only one could be accessed at a time. In the case of the VCS, an instruction within the first 4K bank branched to an address in a second 4K bank where processing continued from. The branch to the second bank of 4K was transparent to the CPU. In effect this allowed the VCS to process games that were larger than 4K. When it was finished, *Asteroids* contained 8K of code.

Asteroids was one of the most highly anticipated games for the VCS and many retailers sold out of them on the day that they went on sale. Although the home version used the joystick (the arcade game used buttons) and displayed raster graphics since home televisions were incapable of vectors, the game came very close to its arcade counterpart. Atari even included 66 variations.

1981 was a year when Atari announced new products that never saw the light of day. The first of these was *Cosmos*, the holography game system that Lyle Rains had been working on when he came up with the idea for *Asteroids*. In May Atari announced that the machine was ready to be released but it never stated an exact date when it would be available in stores. The console was to retail at $100 and the eight game cartridges, among them the ever popular *Asteroids* and *Space Invaders*, were to be sold for $10 each. Advance reviews of the console complained that the holograms really didn't enhance the game play and were merely used as backdrops. Atari conceded that this was true but defended it by saying that since Cosmos was the first of its kind, such trivialities could be over-

looked.

Cosmos was indeed an important breakthrough for Atari. For several years the company was very committed to the development of holograms. It even went out and bought every hologram related patent it could find without any idea on what it was even going to do with them. By the end of 1979, the engineers in Research & Development had learned how to mass-produce holograms and Cosmos was the result of this. Since Atari was a videogame company, it was only natural that its first hologram product was a videogame. While Cosmos was being readied for release, its inventors were also exploring how to tie holograms into 3D television and film.

Consumers anxiously awaited Cosmos but they waited in vain. By year's end Atari announced that it was redesigning the Cosmos holographic game system so that the holograms did more than just provide a nice background to the action. It is possible that the sagging stand-alone market had much to do with Atari's withdrawal. Following that announcement Cosmos, and the rest of Atari's holographic research, were never heard about again.

Atari announced a replacement to the best selling VCS in the summer of 1981. The new unit had a neat slanted appearance and all of the switches from the old console were replaced with pressure sensitive buttons. At the rear of the console was a hinged door that covered a compartment that housed the controllers.

It was the controllers that really set the new system apart from the old one. While the old VCS came with two sets of controllers: paddles and joysticks, the new one was sold with a controller that served as both a joystick and a paddle. The new controllers also featured game select and restart buttons built into them so gamers didn't have to get up every time they wanted to play a new game or variation. This was a pretty handy feature because the players didn't have to be anywhere near the console to play. Unlike any other console on the market, the controllers that came with the new VCS were wireless.

Atari displayed the remote control VCS at the Consumer Electronics Show (*CES*) in June. The CES is the largest trade show in the world where people in the trade from all around the world meet to display the latest electronic products that would be available during the forthcoming year. Retailers attend the show to place orders on these new products. Despite the number of orders that were written up for the remote control VCS, the product never made it to the stores and reasons for this were never cited.

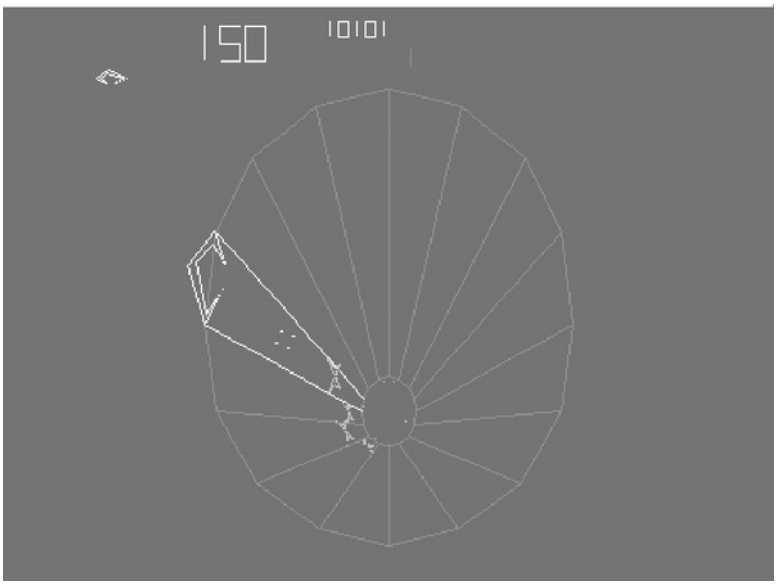
Atari wasn't the only company that announced new products that were never released. Mattel announced in April that the long awaited keyboard was finally going to reach the store shelves in May at the originally promised price of $700. May came and went and the keyboard wasn't found anywhere. Mattel announced in November that the keyboard would be test-marketed in several cities and would possibly be in the stores nationwide by July 1982.

Producers of arcade games didn't have to worry about promising the public something and not delivering. The only thing gamers waited for from the coin-op companies was the next potential hit and that could come from anywhere. Atari tried using the latest technology to create the new game that everybody would play. *Tempest*, which had originally been designed to be a first-person *Space Invaders* type game, was the first game to incorporate color vector graphics. Despite the fact that it was state-of-the-art and allowed up to 96 levels of fast, furious play, *Tempest* never became the hit game of 1981. Instead, that hit came from Japan.

After licensing hit games such as *Space Invaders* and *Pac-Man* to American companies, the Japanese arcade companies decided to release the games themselves and began opening up American divisions to operate out of. One such company was Nintendo. In Japan, the company had a few arcade hits but for some reason it couldn't score in the US market. Company president Hiroshi Yamauchi decided that he had to open an American division and he hired his son-in-law, Minoru Arakawa, to

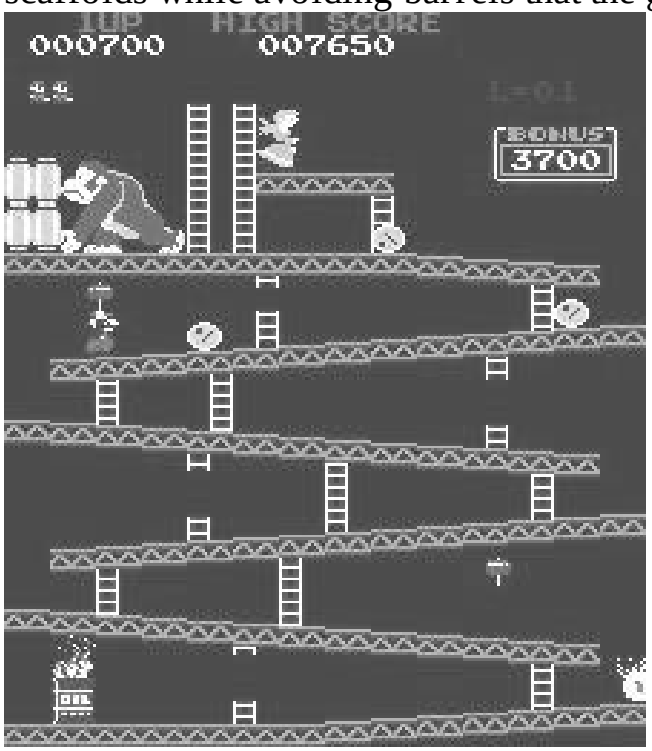
run it.

Arakawa initially set up Nintendo of America in New York, but quickly realized that it took games a long time to get to the east coast from Japan. He calculated that he could shave off two weeks if he relocated on the west coast. He moved the company to Redmond Washington but still couldn't get that hit game that he needed so badly.



Atari Tempest

Fortunately, in Japan a young designer named Shigeru Miyamoto was working on a project that Yamauchi believed would be the American hit that he yearned for. The game involved a carpenter named *Jumpman*, whose gorilla escapes and kidnaps his girlfriend. Jumpman must climb scaffolds while avoiding barrels that the gorilla is tossing at him.



Nintendo Donkey Kong

Miyamoto wanted to call the game the Japanese equivalent of "*Stubborn Gorilla*". However Yamauchi demanded that the game have an English title because of his desire its success in the United States,. Because Miyamoto spoke little English he had to consult a Japanese English dictionary to get the right words. The words he came up with were *donkey* for *stubborn* and *Kong* for *gorilla*. The game became *Donkey Kong*.

After being assured that the game would be a hit in the United States, Arakawa hired a local attorney named Howard Lincoln to trademark the game's title. He also settled with the landlord of his warehouse to whom he owed back rent. Arakawa renamed Jumpman to Mario in honor of his landlord. As Yamauchi had predicted, *Donkey Kong* became Nintendo's first US success.

Before 1981 ended there was a battle between the two top home videogame companies. It all began when the television networks aired a number of Intellivision commercials where George Plimpton compared the Mattel sports games to the comparable VCS games. Since Intellivision was known for its realistic sports games, the comparison didn't amount to much especially since sports were Atari's weakness. Atari responded to Mattel's ad campaign with a commercial that showed a nerdy looking kid who wanted to compare games like *Asteroids* and *Missile Command* with similar games from 'the other company'. When he discovered that the other company didn't offer similar games, the kid said "Nobody compares to Atari". Mattel retaliated with a commercial that began where Atari's left off, displaying a similar nerdy kid who made the same comment that nobody compared with Atari. However after he made the remark, George Plimpton materialized in front of him to inform him that there were new Intellivision games available that were better than the arcade titles that Atari offered. Atari complained about the ad to the networks and ABC and NBC yanked ads from both sponsors off the air. CBS continued to air Intellivision's ad.

The ads did uncover some truth about the two competing systems. While Intellivision was indeed the dominant force when it came to sports, it couldn't compete at all against Atari's arcade games.

The reason for this was because of limitations in the Intellivision. The fact of the matter was that in order for the console to generate such great graphics a lot of memory had been sacrificed from somewhere else. What the Intellivision gave up was speed, a crucial element in most arcade games but something not necessarily needed in sports games.

While 1981 ushered in a new era of videogames that brought in a multitude of female players, many video experts that year believed that a new video technology would change the way people played games.

Actually, the laserdisc had first appeared on store shelves in selected cities in 1979. Developed as a joint venture by MCA and Philips (by this time the parent company of Magnavox), the twelve inch discs had been designed as an alternative to the high price of videotapes. In the days before videotape rental outlets stood on practically every street in America, the only way to view videotapes was by buying them. Since the tapes averaged at around $90 each, this was a pretty expensive venture. With laserdiscs MCA and Philips promised high resolution; a medium that could never wear-out since a laser beam “read” the information that was encoded on the discs; special effects such as slow motion and instant access; and unlimited software that would retail between $5 and $20. Unfortunately for the marketers of this phenomenal device, most people bought video recorders just so they could tape TV programs when they weren’t home. Since the laserdisc couldn’t record, it was impractical for most people. The fact that the laserdisc player cost more than most video recorders didn’t help it too much either.

Although sales were low, the videodisc format had refused to die and was supported by video connoisseurs. In early 1981, RCA released its CED videodisc, which was phenomenally less expensive than the laser disc, but much more fragile. As with audio discs, a diamond stylus read marks that were recorded into the grooves of the CED disc. Because they were so sensitive, the discs were sold in plastic caddies that they had to remain in until they were safely inside the player. Because it cost less than most video recorders at the time, RCA was able to sell it to people who were interested in buying inexpensive pre-recorded video. RCA sold consumers on the idea that the VCR’s purpose was to tape programs from the TV while the CED videodisc existed so they could watch their favorite movies that didn’t appear on television.

Because the makers of the laserdiscs couldn’t compete against RCA in price, they had to begin advertising the reasons why their system cost more and was better. Naturally they mentioned that the CED discs would begin to wear-out after a few dozen plays while theirs would remain unscathed after thousands of plays. However, the main focus of their advertising campaign was the special effects that were available on the laser format.

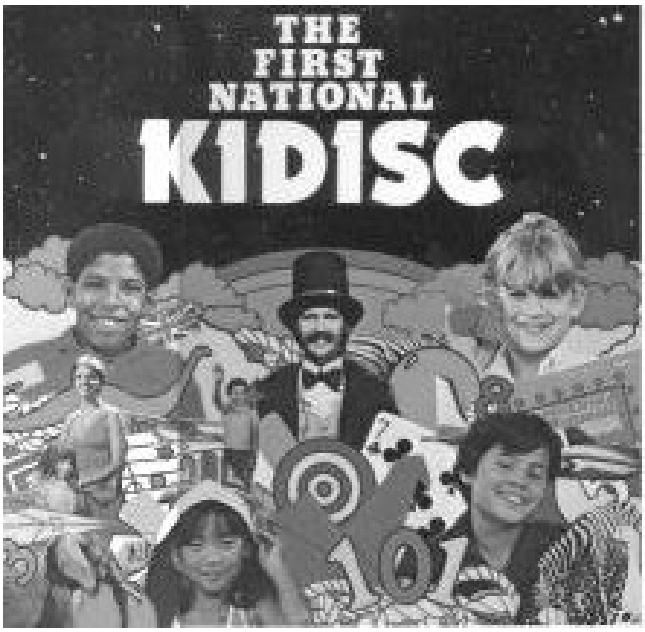
Every frame on a laser disc was digitally numbered and the player was able to randomly access each frame in a matter of seconds. The CED was incapable of this because it used a needle that traveled within an endless groove. The companies that produced laser disc players made the special features their major selling point. To back them up they developed software that took full advantage of these capabilities.

A joint venture called Optical Programming Associates (OPA) was set up by MCA, Magnavox, and Pioneer to create these new interactive discs. One of the first, *The First National Kidisc*, provided two dozen activities for kids. Although the running time of the disc was only 27 minutes long it could keep children entertained for nearly ten hours by utilizing the freeze frame and frame-by-frame capabilities of the laserdisc.

Another disc that OPA released was *How To Watch Pro Football*. It featured a game called *Freeze When* that showed a series of plays and asked the viewer whether a pass or a run would follow.

Although these new interactive discs couldn’t be considered videogames in the conventional

sense, they were still games that people played on their television sets. Even the Army used laserdiscs to train tank gunners. Although Magnavox marketed both the laserdisc and the Odyssey^2, the company didn't reveal any plans for any game discs under the Odyssey^2 name. Neither Atari nor Mattel expressed any interest in the new format either. However waiting in the wings was another company that planned to reenter the videogame industry in a major way. It followed the developments on the laserdisc front very carefully.



First National Kidisc

CHAPTER NINE
1982

1982 celebrated the tenth anniversary of home videogames and it brought mammoth changes to the industry. To document these changes, a new magazine hit the stands at the beginning of the year. Edited by Arnie Katz and Bill Kunkel, the two men responsible for *Video*'s "Arcade Alley", *Electronic Games* was the first magazine that was totally dedicated to electronic games. The magazine was so successful that several more game magazines were launched during the year. *Video Games* and *Videogaming Illustrated* began in August and the first issue of *Electronic Fun With Computers & Games* came out in November.

Electronic Games Winter 1982

The magazines weren't only concerned about the latest videogames; they also featured extensive coverage on computer, arcade, and portable games. Although sales for the portable games had lost momentum during the 1980 Christmas buying season, companies continued to manufacture and sell them, although not in the quantity that they had done previously.

Entex Adventurevision

One new programmable portable was released by a company called Entex. The *Adventurevision* used light-emitting graphics that made it more similar to the games that other companies were releasing. The only difference was that the players were able to change the games since it was programmable. Entex also released dedicated hand-helds that featured licensed games such as *Space Invaders* and *Defender*.

Coleco, which had abandoned the videogame field because it had felt that the portables were more lucrative, released standalone versions of *Pac-Man*, *Donkey Kong*, and *Galaxian*. All of them looked like miniature versions of the actual arcade games with authentic looking cabinets and banners that displayed the name of the games. Like the Entex games, the Coleco titles all had light-emitting screens.

Another company, Palmtex, released a line of pocket games that featured well-known Nintendo titles. The games, which were slim enough to fit in a pocket, had LCD displays and doubled as alarm clocks.

While on the subject of games that doubled as clocks, General Consumer Electronics (GCE) released a wrist-watch that doubled as a game. In fact, the watch contained four games. Among them was *Alien Assault*, a miniature *Space Invaders*, and *Blast Away*, which was GCE's version of *Breakout*.

Gametime was attractive among students because the games could be played with the sound turned off and allowed them to play the games during class without the teacher knowing.

GCE Vectrex

Coleco Pac-Man

Although Gametime was popular for this reason, it was with *Vectrex* that GCE found its mark. However, before the company even released its new programmable stand-alone, Milton Bradley bought GCE just on the strength of the Vectrex. The new Milton Bradley subsidiary went ahead and released the Vectrex in October 1982.

The Vectrex, which had been designed by Microvision designer Jay Smith, was a standalone console that came with a built-in nine-inch black & white monitor. Although the fact that it was black & white tends to sound like a drawback, it was really a selling point because the graphics that the Vectrex produced were vector, just like the arcade *Asteroids*. To make sure that people didn't even notice that the graphics were black & white, GCE borrowed from Magnavox's original Odyssey and included colorful overlays with every cartridge. The console also came with a controller that plugged into the monitor. The controller looked like a small rectangular box with a tiny metal joystick on its left side. Next to the joystick were four numbered buttons.

The games themselves were of arcade quality thanks to the 64K of RAM and 8- bit microprocessor in the Vectrex. Most of the games had been licensed and among them were Stern's *Berzerk* and *Scramble*. Although the Vectrex would have offered the most faithful translation of *Asteroids* thanks to the vector graphics, that game was not available. Instead, GCE produced a game called *Mine Storm* that was basically the same thing. Unlike the other games that were available on cartridges, *Mine Storm* was built into the machine.

Milton Bradley had a hit on its hands with the Vectrex at the expense of its other programmable portable, Microvision. Although the Microvision was much cheaper than the Vectrex, it couldn't compete in a market where graphics played an important role in what the consumers bought. Milton Bradley quietly allowed Microvision to die and concentrated solely on the Vectrex.

Although the portable gaming world was ablaze with new sophisticated consoles, the videogame

manufacturers weren't worried a bit as new consoles and software appeared in mass. Emerson, a manufacturer of lower priced radios and televisions, even capitalized on the portable market with its new videogame console.

Emerson Arcadia 2001

Emerson called its new console *Arcadia 2001*. With a retail price of only $100, the Arcadia 2001 had been designed to compete against Intellivision and the Astrocade. Unfortunately, as buyers of APF's Imagination Machine had discovered, a powerful machine was only as good as its software. None of the games that Emerson released for the Arcadia used more than 8K of memory. The games themselves weren't original and Emerson even compared them to the existing games from the other manufacturers that they were similar to. Although Emerson did license several games, they were obscure Japanese titles that very few people in the United States ever heard of.

The Arcadia 2001 did have several good points but a lack of advertising never disclosed them. Like the Intellivision, the Arcadia's controllers featured a keypad and a disc. In addition, a tiny handle that came with the unit could screw into the center of the disc and in effect turn it into a joystick.

The Arcadia 2001 was tiny in size and was the only console that featured a 12 volt DC power supply. This made it attractive to boaters and campers and other fans of portable games. Unfortunately, the console still had to be hooked up to a television, which meant that a portable TV had to accompany it to make this feature useful.


Coleco Colecovision

The Arcadia 2001 wasn't the only new console that debuted in 1982. Coleco, whose Telstar died in 1976 when the programmable machines became popular, announced in the spring that it would release a brand new senior videogame system called *Colecovision*. The company promised that its system would contain ten times the graphics RAM that Intellivision had while allowing up to 48 objects move on the screen at the same time. It could also play games that used up to 32K of code. The unit would come with Intellivision style controllers complete with keypads and a joystick. In addition, the controllers were to have a special dial that controlled the speed of objects moving on the screen.

Although Colecovision had been promised in the stores by July 1982, the first units weren't actually shipped until September, before the company even received FCC approval. Because of this, Coleco was fined $2000.

When it came out, the Colecovision was nearly everything that Coleco had promised. The only exception was that it didn't include the speed roller that was to have been built into the controller. Test players had found that the controller was easier to hold and handle without the roller. When the Colecovision was released, those who knew about the roller didn't miss it once they witnessed the astounding graphics that the new console had to offer. They surpassed the incredible graphics that Intellivision had built its reputation on and it didn't sacrifice memory anywhere else to achieve it. The Colecovision contained 48K of RAM, which was the same amount of memory that was available on most of the home computers at the time.

One of the main problems that manufacturers had when they launched a new system was releasing enough initial software to keep the customers happy. The people at Coleco knew that they could never

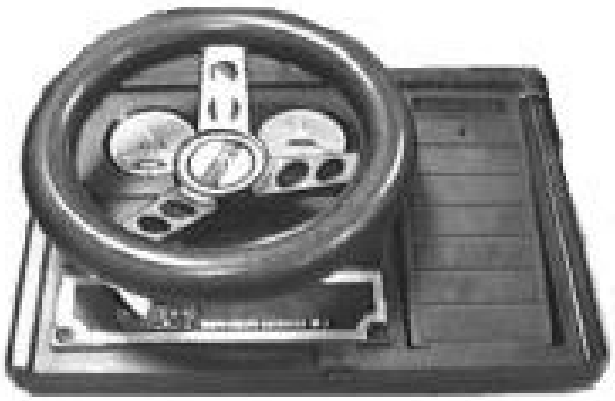
Coleco Expansion Module 1

hope to offer all of the games that were available for the VCS so they did the next best thing. They developed an expansion module that allowed the Colecovision to play all of the VCS cartridges. "Expansion Module #1" cost $60 and plugged into a slot in the front of the Colecovision that had been labeled "Expansion Module Interface". The module featured all of the switches that were on the VCS and accepted the VCS' joysticks. Coleco made it clear though that the games' graphics wouldn't be any better when played on the Colecovision. They were exactly the same as if they were played on a bonafide VCS. "Expansion Module #1" enticed VCS owners to buy the new system because they could do so without having to sacrifice any of their existing cartridges.

Sega Zaxxon

Coleco didn't depend on just VCS owners to buy the Colecovision and they made sure that a wealth of games was available for the new system. Like Atari, Coleco saw the benefits of licensing and they released a variety of game titles that were familiar to arcade goers. Among them were Sega's *Zaxxon* and Nintendo's *Donkey Kong*, two top money makers in the arcades. The graphics on the Colecovision were nearly identical to their arcade counterparts. This was truly amazing especially since *Zaxxon*, which Sega had just introduced to arcades the same year, brought a new perspective to videogame graphics. In *Zaxxon* the player piloted a spaceship over a landscape that scrolled from the top right of the screen to the bottom left. The player had to destroy everything in sight. However, what made *Zaxxon* different from its predecessors was the fact that the player had to avoid objects by turning left and right *and* up and down. For the first time, videogame images came very close to three-dimensional.

Coleco also decided to capitalize on VCS and Intellivision owners who didn't buy a Colecovision by releasing the same games for those individual systems. However these games didn't sport the same incredible graphics as the Colecovision because of the limitations of the two systems.



Coleco Expansion Module 2

The Atari interface wasn't the only expansion module that had been developed for the Colecovision. "Expansion Module #2" was a driving module that included a large steering wheel and allowed players of racing games feel like they were really driving a car. The Adaptor came with *Turbo*, a first-person driving game that Coleco licensed from Sega.

Everybody viewed Colecovision as a winner. It played authentic looking arcade games that made VCS owners envious and it had supreme graphics that Intellivision owners wished they had. Although no official statements were made, Coleco also hinted that a home computer interface would be available for the Colecovision in 1983.

Atari 5200

To compete against Colecovision, Atari released a brand new console that was code-named "Pam" and dubbed the *5200* after its model number. Actually the 5200 had originally been code-named "Sylvia" and had been set to go against the Intellivision. The original 5200 had been planned to be compatible with the VCS, which unfortunately limited its design. With the introduction of the Colecovision, Atari needed to get a new console onto the market quickly and they looked at their line of computers. Sylvia was quickly scrapped in favor of Pam, which was basically an Atari 400 computer without a keyboard. Although the 5200 wasn't compatible with the Atari computers, graphically the games were virtually identical to their computer counterparts. It also offered most of the arcade hits that were available for the VCS. However that name was about to go the way of Sylvia. In order to keep its product lines uniform, Atari began calling the VCS the *2600* after its model number: CX2600.

Although people basically loved the 5200, they also found many things to gripe about it. For one thing, the 5200 was incompatible with the 2600. However Atari, like Coleco, quickly released an adaptor that permitted the 5200 to play all of the 2600 games.

Another complaint was about the controllers. Like Coleco, Atari opted to go with controllers that featured a keypad and a joystick. However, these controllers were much smaller and fit comfortably in a player's hand. The keypad's buttons were small and made of rubber. Like Mattel, Atari included overlays with each cartridge. Unfortunately the stick on the 5200's controller was non-centering. This meant that if you pressed it forward and then let it go, the stick would remain in a forward position. Players found it very awkward.

Atari also made innovative strives with the 5200 that have since been overlooked. All previous consoles had been sold with an RF modulator switch box that attached to the back of a TV set and controlled the signal into the TV. If someone wanted to watch TV, the RF modulator had to be on the TV setting. Likewise, if someone wanted to play a game, he had to reach behind the TV and change the RF modulator setting to 'game'. The 5200 abandoned this practice by having an RF modulator built right into it. What this did was automatically allow TV signals to pass through if the game was off and sent game signals to the TV when the console was turned on. Atari also merged into one the power cable and video cable so that a household with the 5200 wouldn't be cluttered with wires.

Owners of the 2600 feared that Atari was making their console obsolete by releasing the new unit. To discourage their fears, Atari lowered the price of the 2600 to under a hundred dollars. This made it more inviting to people shopping for a game console. Of course, these people had a tougher time deciding what to choose with the 2600, Arcadia 2001, Odyssey^2, Astrocade, Intellivision, 5200, and Colecovision all competing for the same customers. To make matters worse another console appeared to entice buyers' spending whims.

Actually this wasn't the birth of a new console but a resurrection of an old one. Back on store shelves was the revolutionary Channel F, which had been laid to rest in 1977 leaving its owners without a supply of new software. These owners received welcome news in early 1982 when they learned that a company called Zircon International had purchased Fairchild's entire inventory. Among it was a new console called the *Channel F II* that had been designed by Fairchild before it decided to pull out of the market. Zircon decided to sell this new machine for under $100 and let Channel F owners upgrade their old system for $69.95. In addition to re-releasing the entire existing catalog of

Channel F games, Zircon also announced four games that Fairchild had developed but never released. The company also promised to develop new games.

Although there were three consoles that were priced under $100, the public really didn't have any troubles in deciding which one to buy. The Channel F didn't have many games available and those that were out were very primitive by 1982's standards. The Arcadia 2001 had the potential to display outstanding graphics because of its large amount of RAM but the software that had been released wasn't that spectacular. The 2600 looked even more attractive when a new company called Arcadia released a device that gave the console graphics that compared favorably with the higher priced consoles.

Starpath Supercharger

The *Supercharger* had been designed by Bob Brown, the man most responsible for bringing *Pong* home and who headed the team that created the 2600. The reason the 2600 was unable to produce breathtaking graphics was because it only contained 128 bytes of screen RAM; compared to the 7K screen RAM that the Intellivision had. While a television display is made up of 263 horizontal lines, the 2600 was only able to scan half of them to draw pictures. The Supercharger, which contained 2K of ROM, added 6K of screen RAM to the 2600 and it scanned every line on the TV screen, resulting in high resolution graphics.

For all the power that it contained, the Supercharger, which looked like a super long cartridge, was relatively cheap. It retailed for only $70 and plugged into the cartridge slot of the 2600. What made the Supercharger an even better buy was the fact that its software came on cassette tapes that retailed for $15 instead of the $25+ that the cartridges were commanding. To load a game, a cable that was attached to one end of the Supercharger merely had to be plugged into the earphone jack of a standard audio cassette player. The game could be loaded into the Supercharger in about fifteen seconds by playing the cassette. Once the game was loaded in the Supercharger, everything on the 2600 worked as usual. The game resided within the RAM of the Supercharger until the console's power was turned off.

The four games that were released with the Supercharger were similar to games that were already out; but of course their graphics made them outshine their predecessors. Arcadia also proved that it could be imaginative with its titles as its alien shooting game *Communist Mutants From Space* proved.

Another feature of the cassette tapes was that they contained previews of other Supercharger games. Although these games couldn't be played after they were loaded, they did show the player what the graphics were like and how the game played. In a time when people were buying games blindly and paying astronomical prices, these short previews were appreciated.

Roughly two months after the Supercharger's release, the company that produced it changed its name from Arcadia to Starpath. The reason for this was because consumers confused the company Arcadia with the Arcadia 2001 console that had been released by Emerson. Since Emerson had beaten Arcadia to the market, it was able to keep the name.

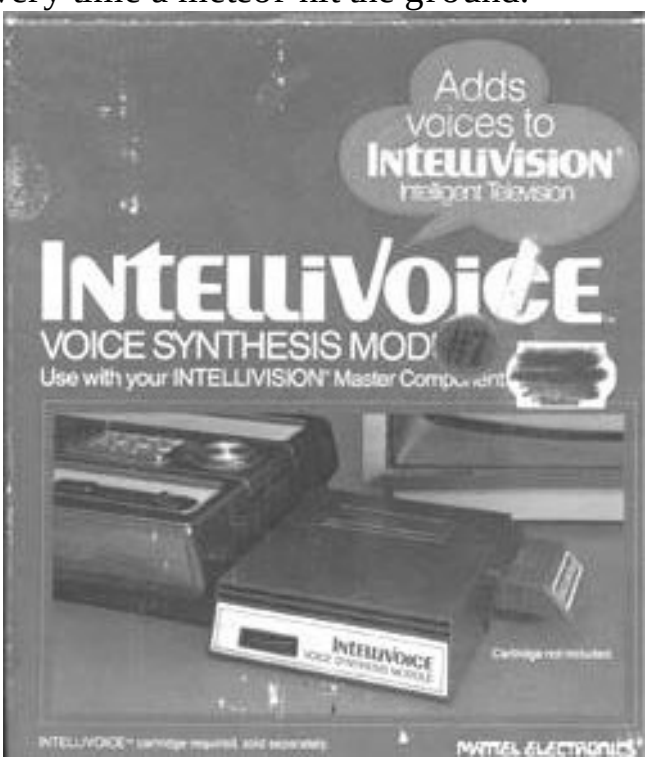
Meanwhile, Mattel did its best to compete. To prove that the Intellivision was capable of playing more than just sports games, Mattel released a number of arcade titles in early 1982. Instead of licensing actual arcade games, Mattel's designers wrote Intellivision versions of games that were

already available on other consoles. *Space Armada* was nothing more than *Space Invaders* with fancier colorful graphics. Unfortunately, as players quickly discovered, it was not as challenging as *Space Invaders* because it didn't play as fast due to the Intellivision's limitations. Curiously enough, another arcade-type game that Mattel offered didn't suffer at all.

Although Mattel's designers had borrowed heavily from *Asteroids* and *Space Invaders* to come up with *Astrosmash*, the new Intellivision game was a winner in its own right. As in *Space Invaders*, the player controlled a cannon that moved across the bottom of the screen. Descending from the top of the screen were a number of meteors. The player scored points by shooting missiles at them and destroying them. However, the meteors came in different sizes and only the smallest ones could be totally wiped out by a missile. The bigger ones broke apart into smaller pieces when they were hit and these smaller pieces then had to be destroyed. The player lost a cannon if it was hit by a falling meteor and the game ended when all of the allotted cannons were destroyed. What really set *Astrosmash* apart from other games was the fact that a player also lost points every time a meteor hit the ground.

Mattel scored big points when it released *Astrosmash* and other arcade-type games. However many customers were still disillusioned because Mattel merely copied popular titles rather than actually license them. Their dismay intensified from the reality that Mattel's long promised keyboard still wasn't available.

Mattel didn't make them any happier when it announced that it had finally abandoned the keyboard. Although specific reasons weren't given, it had been assumed that the costs involved made the keyboard too impractical. After Mattel made this announcement, the company astoundingly gave the news that it was developing a brand new smaller Intellivision component. Mattel also announced that it was developing a new smaller keyboard for the new Master component.



Mattel Intellivoice

In mid-1982 Mattel introduced *Intellivoice*, a peripheral that added voice synthesis to the Intellivision. Individual game cartridges plugged directly into the Intellivoice module that plugged into the Intellivision's cartridge slot. Although every game cartridge could be inserted into the Intellivoice module, only special games were capable of producing voices. Mattel released a trio of games that used the voice module to aid the player, rather than merely enhance the game. In *Bomb Squad*, the best of the three, the player had to disable a terrorist's bomb by using cutters, pliers, and a soldering iron. The Intellivoice acted as the player's partner who directed the player where to work.

Coincidentally, Odyssey (which had broken away from Magnavox and became an independent separate division of its parent company North American Philips) also designed a voice module for the Odyssey[2] and called it *The Voice*. "The Voice" sat atop the console and plugged into the cartridge slot and individual cartridges then plugged directly into it. Unlike Mattel, which had released action games for its voice module, Odyssey went with educational games to highlight the new peripheral. *Type and Tell* was the first cartridge that Odyssey shipped for "The Voice". Basically all it did was act as an electronic voice typewriter. "The Voice" would orally repeat anything that was typed into the console via the keyboard. Critics blasted the cartridge because it wasn't a game at all. Another complaint was that although the words were pronounced phonetically, they weren't necessarily pronounced correctly. Odyssey followed up with two more educational cartridges that at least

Odyssey^2 w/ The Voice

Magnavox Odyssey^3

resembled games so kids could have fun while they learned. *Nimble Number N.E.D.* included three talking math games and *S.I.D. The Spellbinder* used a talking *Space Invaders* type approach to teach spelling.

"The Voice" was the reassurance that Odyssey^2 owners needed from the company that the console wasn't being abandoned. However even as Odyssey spent a lot of money publicizing the voice module, it also announced a new console. The Odyssey^3, they promised, would feature a full-sized keyboard with real sculptured keys that was a far cry from the Odyssey^2's membrane keyboard. Odyssey also promised increased screen RAM that would produce more intricate graphics than what was possible on the Odyssey^2. However, the company didn't plan to make its older console obsolete with the release of the new one. All Odyssey^3 cartridges would play on the Odyssey^2 but without the improved graphics. Similarly, all Odyssey^2 cartridges would also play on the new Odyssey^3 but they too wouldn't offer enhanced graphics. The company mentioned that some of the already available titles would be reissued so they could play on the Odyssey^3 with the enhanced graphics.

One thing Odyssey was unsure about was whether to market the Odyssey^3 as a videogame console that people could use a computer or as a computer that could play games. Odyssey also planned to include a Teletext decoder and an interface that would connect the Odyssey^3 to a laserdisc player and give it the ability to play even more sophisticated games. Odyssey promised that the new console would be available by the middle of 1983.

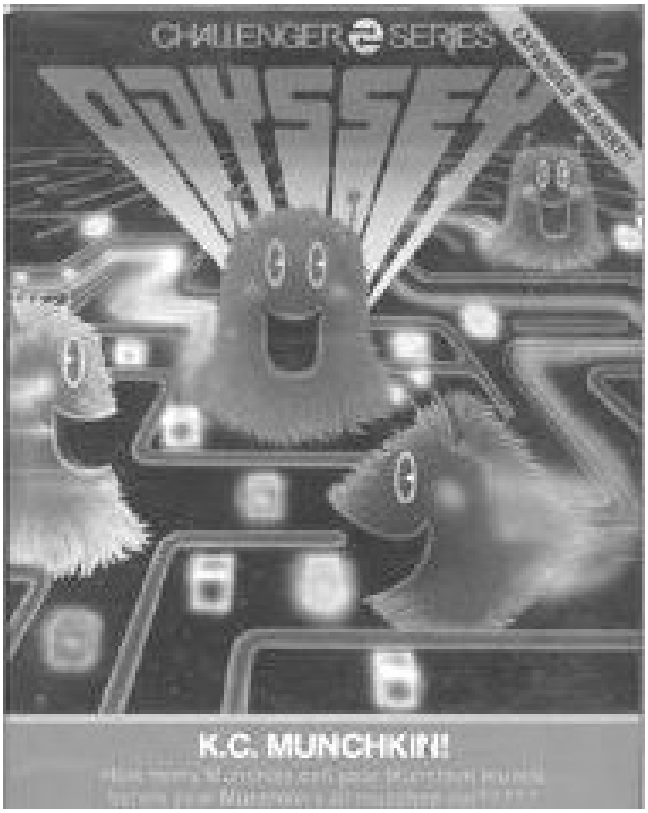
Before the company could get to 1983, it had to get through 1982. Odyssey's designers came to the conclusion that instead of buying games that were similar to Atari's releases, they would simply buy an Atari and get the real ones. The designers knew that in order to sell Odyssey^2's they had to come up with innovative games that could only be available on that console. They had always known that the Odyssey^2's keyboard gave it the potential to provide more sophisticated games than its competitors but they never utilized it to its fullest potential. In 1981, the company had released a space game called *UFO* that allowed players to type in their names next to their high scores. Still, this wasn't such a big deal that excited people enough to make them rush out and buy an Odyssey^2. Odyssey hoped that its new *Master Strategy Series* would cause the excitement that the earlier games lacked.

Odyssey launched the *Master Strategy Series* with *Quest For The Rings*. At its most basic level, *Quest For The Rings* was a *Dungeons & Dragons* type game where players had to go on a quest for something. This in itself was nothing new to home videogames. Atari had started it with *Adventure* and Mattel refined it with *Advanced Dungeons & Dragons*. What set *Quest For The Rings* apart from the other games was that it incorporated board games with videogames.

Packaged with *Quest For The Rings* was a game board, playing pieces, and an overlay that fit over

the keyboard. The game began on the game-board where the players had to search for ten mystical rings. Every time they reached a dungeon on the board, the action switched to the TV screen where the players battled with monsters in an effort to get the rings. The keyboard overlays allowed instructions to be inputted to the computer easily so the Odyssey^2 was always aware of the action that took place on the game-board.

The *Master Strategy Series* wasn't the only new software that was released for the Odyssey^2. At the end of 1981, Odyssey released a cartridge called *K.C. Munchkin*. The basic premise of the game involved a little yellow furry creature named K.C. Munchkin who ran around a maze eating energy dots while being pursued by ghosts. Many people rushed out and bought an Odyssey^2 just so they could play a *Pac-Man* type game at home. Although Odyssey maintained that they made enough changes in the game so that it wasn't a *Pac-Man* clone the public felt it was indeed a home version of *Pac-Man*. Atari felt the same thing and since they had licensed *Pac-Man* for the home, they weren't happy with Odyssey's release. They quickly sued Odyssey for copyright infringement. The trial several months. At the end two out of three circuit judges ruled that *K.C. Munchkin* did indeed infringe upon many of Atari's copyrights. They ordered Odyssey to stop selling any more cartridges; although stores could sell off whatever stock they had remaining. Thanks to this rendering, *K.C. Munchkin* became the first collectable videogame cartridge. The decision hurt Odyssey badly because *K.C. Munchkin* had made more money in two months than any other Odyssey^2 cartridge earned in a year. The lawsuit forced other companies to take notice. Astrovision was sued for a similar game that it was marketing for the Astrocade called *Munchie*.



Odyssey K.C. Munchkin

Atari was in the position of becoming one of the fastest growing companies in American history. It had the money to pursue whatever it wanted and anything that had the *Atari* named attached to it seemed to be as good as gold. It didn't matter whether the games were good or not. Everybody, including Atari itself, took the position that anything the company released would be an instant seller. Wall Street security analysts predicted that Atari would earn $200 million from *Pac-Man*. Atari wasn't willing to allow anyone else to share in that profit; even if another company's product might be vastly superior. With this in mind, Atari released the 2600 version of *Pac-Man* to an anxious public.

The public was quickly disappointed.

The *Pac-Man* that Atari released for the 2600 didn't resemble the game that was in the arcades at all. Atari claimed that this was due to the limitations of the 2600. However many industry watchers speculated that Atari merely put the game together quickly because it knew that it was going to make tons of money from it no matter what the finished product was like. Although the ghosts blinked so terribly that they could barely be seen and the joysticks couldn't control *Pac-Man* adequately,

Pac-Man became the best-selling game cartridge of all simply because of its name.

Had Odyssey been allowed to continue selling *K.C. Munchkin*, it might have stolen a lot of those sales away from Atari since their banned game was clearly the better of the two. Indeed, many people bought Atari's cartridge simply because it was the only version of *Pac-Man* that was available for the home. However these people soon distrusted Atari and no longer believed that everything the company released was worth buying.

The Atari-Odyssey lawsuit was only the first of several lawsuits in 1982. While Odyssey was sued by Atari over copyright infringements, Odyssey sued Mattel on another matter. Odyssey claimed that Mattel infringed upon its patent rights in the Intellivision football, baseball, tennis, hockey, basketball, and soccer cartridges. The courts agreed in July and forced a halt to the manufacture and distribution of those games. However, in October another court granted a temporary stay of enforcement that allowed Mattel to proceed and sell the games until a further hearing could be held.

In August, Astrovision sued both Atari and Commodore Business Machines for copyright infringements over two patents that Bally owned and Astrovision claimed had an exclusive license to. The patents covered a video display method called "bit-mapping". Bally refused to appear as a co-plaintiff with Astrovision and had to appear as an involuntarily plaintiff.

Both defendants were left undaunted by the lawsuit and both were confident that they would win. Ironically, Atari went ahead in November and sued Commodore over another matter. Atari claimed that Commodore was marketing joystick and paddle controllers for its VIC-20 computer that were identical to the joysticks and paddles Atari made for the 2600 and its line of computers. The Commodore controllers looked exactly like Atari's controllers and both were interchangeable. Atari sought to recover profits that it felt it lost from sales that had been made by Commodore.

Even though Atari had been involved in two lawsuits at one time, that number could have been higher. Fortunately Atari settled its lawsuit against Activision out of court before the other two suits began. Atari agreed that Activision (and any other third party software company) could market games for the 2600 as long as the packaging clearly stated that the game was for the "Atari Video Computer System" and that Atari received a set royalty for each cartridge sold.

People watched this case very closely because a lot of money could be made by marketing games for different systems; especially the 2600. Following the lead of Activision, many other companies jumped on the bandwagon. By the summer of 1982, dozens of companies announced that they would be releasing 2600 compatible games. So much product was released that retailers couldn't stock all of them and had to decide which would be the best sellers.

It was at this time that Imagic released its first trio of games for the 2600 and promised that more, as well as Intellivision games, would be forthcoming. The company made sure that its games would get noticed on retailer's shelves by packaging its cartridges in bright shiny silver boxes. The three games were *Trick Shot*, a pool simulation; *Star Voyager*, a space game; and *Demon Attack*, a *Space Invaders* type game where the object was to control the now familiar cannon at the bottom of the screen and shoot at the fast moving bird-like creatures that were dropping bombs.

Games By Apollo released several more games that were better than its first offering. Another Texas company, Venturevision, sprung up and released a game called *Rescue Terra I*. While many of the companies such as Spectravision and Telesys were previously unknown, major companies also went after a share of all the riches that the 2600 had to offer.

Armed with lots of cash, these companies had the ability to license well-known titles. Among them was CBS who began a new division called CBS Electronics. CBS went out and licensed several arcade titles from Bally such as *Wizard of Wor* and *Gorf*.

Another major company that began licensing games and releasing them for the VCS was Parker Brothers. In addition to licensing arcade games such as Sega's *Frogger*, Parker Brothers also licensed the movie title *The Empire Strikes Back* and designed a game around it.

Even the cereal company Quaker Oats got into the act by buying a company called US Games that had released a few VCS compatible games under the Vidtec label. One of the first things that Quaker Oats did was license the movie title *The Towering Inferno* from Twentieth Century Fox and turn it into a videogame.

By coincidence, Twentieth Century Fox also decided to sell VCS compatible software and quickly set up a division called Twentieth Century Fox Games of the Century that intended to market games that were based on Twentieth Century Fox movies and TV shows. Ironically, the first four games that Fox released had nothing to do with either medium. In an attempt to quickly get games on the market, Fox licensed four computer games from a computer software company called Sirus Software that they then translated and released for the VCS. They then followed the first four with original games based on the movies *Alien* and *Fantastic Voyage*.

Naming games after movies seemed to be the trend because the companies figured that if they released a game that was patterned after a hit movie, the game would also be successful. With this in mind, Atari licensed *Raiders of the Lost Ark* and *E.T.*. They would later learn that a great movie doesn't necessarily translate into a good game.

Atari 2600 E.T.

Pac-Man had been a major hit for Atari all because of its name. Atari figured that it could use the same ploy with *E.T.* and use name recognition to sell the game. What Atari failed to see was that *Pac-Man* was already a game that people knew how to play and they bought the cartridge expecting to find a game that somewhat resembled the arcade version. *E.T.* wasn't a game to begin with and the cartridge wound up being one of the biggest flops that Atari ever produced.

The gist of the game followed the basic plot of the movie; E.T. had to find pieces of his interplanetary telephone so he could 'phone home' for a rescue ship. Unfortunately, Atari didn't put much effort into the game. Most of the game's programming code had been used in an elaborate opening title screen that displayed a picture of E.T. The game itself was repetitious and unimaginative as E.T. kept falling into holes that the player had to help him out of. Most players gave up after falling in the holes several times. Although Atari sold one million copies of the cartridge, another five million remained unsold in warehouses. Atari learned that neither its name nor its licenses guaranteed that a game was going to sell. The bottom line was how well the game played.

Games By Apollo released a *Pac-Man* type game that involved sharks and called it *Lochjaw*. Universal threatened to sue the software company because they felt that the title and theme infringed upon their copyrights for the movie *Jaws*. Rather than fight in court, Games By Apollo agreed to change the title of their game to *Shark Attack*.

Universal also became involved in a battle against Nintendo and Coleco over the *Donkey Kong* name. Universal claimed that it owned the *King Kong* name and *Donkey Kong*, a game that involved a giant ape who kidnapped a beautiful woman and took her to the top of a high building, was just too close for comfort. In addition, Tiger, a manufacturer of hand-held games began a new software division called Tigervision and they licensed the *King Kong* name from Universal for their first videogame. The game, which was released for the Atari 2600, was a *Donkey Kong* clone.

Coleco, who had everything riding on its Colecovision and its *Donkey Kong* pack-in, agreed quickly to pay royalties to Universal. Meanwhile, Universal tried using strong-arm tactics against Nintendo and companies that licensed the *Donkey Kong* brand name. Nintendo refused to pay a cent to Universal, especially after it discovered that Universal did not own the *King Kong* name. Universal was ordered to pay Nintendo's legal fees as well as restitution to the companies that it illegally collected royalties from. A judge found that Tigervision's *King Kong* was too much like *Donkey Kong* and he ordered Tiger to pay to Nintendo the amount that it had originally planned to pay Universal for royalties. The attorney who represented Nintendo was once again Howard Lincoln. To show its appreciation Nintendo of America offered him a senior vice-president position with the company. He jumped at the opportunity.

What seemed like the perfect marriage between videogames and movies occurred in 1982 when Walt Disney Productions released a movie called *Tron*. The movie was about a videogame programmer named Kevin Flynn (played by Jeff Bridges) who gets sucked into the circuitry of a computer that he is programming. Once inside the computer Flynn finds a world that is ruled by the Master Control Program (MCP). With the aid of a digital warrior named Tron, Flynn is able to defeat the MCP and escape out of the computer back into the real world.

In conjunction with the release of the movie, Bally released several *Tron* arcade games that duplicated some of the action that took place in the movie. Mattel Electronics also released Intellivision and VCS games that included *Tron* characters or scenes.

While the arcade *Tron* games became big hits, the same couldn't be said about the movie, which received disappointing reviews. The game actually out grossed the movie. Disney was about to pull the movie from the theaters when the kids who played the game realized that the movie existed. They soon began attending the theaters to see the movie. Although *Tron* never became the year's blockbuster that Disney hoped they would have, it did earn enough money in the theaters to make it profitable.

Many software companies that focused on the Atari 2600 sprung up practically overnight. Mattel Electronics, which had accounted for 25% of the net sales for the entire company in 1981, began running scared in 1982. Privately conceding that they couldn't take over the market that Atari dominated, Mattel assumed an "if you can't beat them, join them" attitude. They did this by marketing *M-Network*, a new line of 2600 compatible games that were based on best selling Intellivision games. *Astrosmash* for Intellivision became *Astroblast* on the 2600. Although it didn't have the pretty graphics like its older cousin, the 2600's speed made *Astroblast* a better game than the one that it was based on. M-Network also released baseball, football, and soccer games for the 2600. Although they weren't anywhere as sophisticated as the Intellivision games that they were patterned after, they were light years ahead of the same sports games that were already available for the 2600.

Software vendors licensed different segments of American culture in an effort to attract the attention of potential buyers. Data-Age designed a game around the rock group Journey and their latest album *Escape*. In the game *Journey Escape*, the player controlled different members of the band as they tried to flee from a rock concert and avoid different groupies and agents. Throughout the game musical selections from the band's new album *Escape* played in the background. Meanwhile Parker Brothers licensed *Spiderman* and the *Hulk* from Marvel Comics and designed games around them. Atari tried a different tactic. It joined forces with another Warner subsidiary, DC Comics, and produced comic books to accompany specific game cartridges, beginning with *Yars' Revenge*. Yar was a giant fly that the player controlled. It was also Ray Kassar's first name spelt backwards. In addition, DC began publishing a line of comic books called *Atari Force*.

Atari also used 'Easter eggs' to sell games. 'Easter eggs' was the term given to surprises in the

games weren't documented. The first Easter egg had been programmed by Warren Robinett when he hid his name in a secret room in *Adventure* two years before. Other programmers like Rob Fulop who hid his initials in *Missile Command,* followed. The public responded favorably to this practice because it gave many games an added dimension of play.

Atari decided to cash in on the Easter eggs and released a quartet of games that were all somehow related to one another. The four cartridges of the *Swordquest* series came with comic books that supplied clues on how to solve the puzzle; although the direct object of the quest was never revealed. When a person solved the puzzle in *Earthworld,* the first cartridge in the series, he was ready to go on to the second, *Fireworld*. The third and fourth cartridges, *Waterworld* and *Airworld* were to come out in 1983. The first person who solved all four puzzles and the main puzzle that linked all the games, would win $100,000.

For people who weren't interested in solving Easter eggs, *Earthworld* was as dull and confusing as *E.T.* had been. Still, many people bought the cartridge with the hopes that they would be able to solve it.

As Intellivision continued to sell, third-party vendors began supplying software for it too. Activision released *Stampede* and *Pitfall!,* two favorites from its 2600 catalog. Unfortunately, the games looked exactly the same as they did on the 2600. *Pitfall!* , which had looked marvelous on the 2600, was nothing special on the Intellivision. Imagic released *Demon Attack* for Intellivision and Parker Brothers came out with *Frogger*. Finally there was Coleco who released a number of games including *Donkey Kong* for the Intellivision; as well as for the 2600 and its own Colecovision. By doing this Coleco became the first company that developed software for three consoles.

Imagic wasn't far behind Coleco in that feat. By releasing *Demon Attack* and *Atlantis* for the Odyssey^2 Imagic too marketed games for three separate companies. Unfortunately, these two games wound up being the only Odyssey^2 games that came out by a third-party company.

Companies also began targeting adults for their games. Odyssey advertised its new Master Strategy Series game *The Great Wall Street Fortune Hunt* in the *Wall Street Journal* of all places. Games by Apollo released a game called *Lost Luggage*, where the player had to collect luggage from an airport carousel that had gone haywire. Games By Apollo targeted *Lost Luggage* for frequent travelers who would appreciate the game's content.

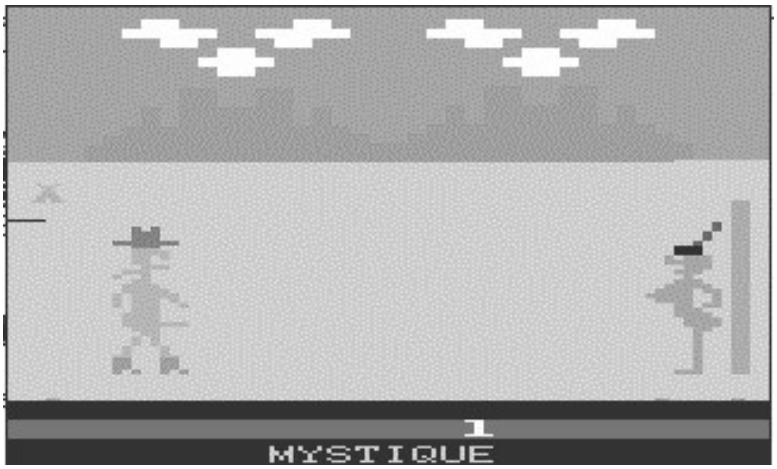
Several X-rated videotape companies announced their intentions of releasing X- rated videogames. Cal Vista said that it was negotiating with Coleco for a line of adult games for the Colecovision and that Coleco appeared very interested in the idea. Another company, VCX, announced that it would release ten Atari and Intellivision games by the end of the year. The first company to actually release X-rated videogames was Caballero Control Corp. who sold a line of "Swedish Erotica" videotapes. In conjunction with American Multiple Industries, they formed a videogame division called *Mystique,* which also used the familiar label "Swedish Erotica" on its packages. The company's first three games were released in October and carried a whopping $49.95 retail price. Atari quickly released a statement that condemned the games and promised that it was seeking a lawsuit to put an end to them.

Due to the memory restrictions of the 2600, the graphics didn't reveal enough to make the games sexually stimulating. Two of the games weren't even original and only added sexual overtones to existing games. *Beat 'em & Eat 'em* was similar to Activision's *Kaboom!*. The main difference here was that the player controlled a prostitute at the bottom of the screen. The only difference between *Bachelor Party* and *Breakout* was that the ball in the latter game had been replaced by a naked man and the bricks had been replaced by several naked women.

Custer's Revenge was the only original game that Mystique released. The idea of this game was to

get a sexually aroused George Custer from the left side of the screen to the right where a nude Indian maiden was tied to a post. Custer had to avoid falling arrows as he tried to walk across the screen. When he reached the female Indian, he raped her with each press of the joystick button. Mystique's motto was "When you score, you score!"

Custer's Revenge got more publicity than Mystique had intended when anti-porn and Native American activists began protesting that the game promoted rape and degraded women and Native Americans. Eventually, retailers refused to sell the game and the whole event put a damper on the future development of adult games.



Custer's Revenge

Games By Apollo turned one year old in October 1982. By that time the company had ten games behind it. It also had big plans for the future such as a game for the 2600 that talked without any need of a voice module like Odyssey and Mattel used. The company also planned to release four games for the Intellivision and Colecovision. Games By Apollo also looked beyond dedicated videogame consoles and was getting ready to release two games for the Texas Instruments TI-99/4A computer. There were also plans made to translate several 2600 games for the Atari 5200 and 400/800 computers.

Unfortunately, none of these games ever made it to the stores. By the end of 1982, Games By Apollo had been forced to file for bankruptcy under Chapter XI.

Ever since Games By Apollo had been founded, it constantly drained money from its parent company, National Career Consultants (NCC), which also suffered heavy financial difficulties.

NCC simply didn't have any experience in the consumer market just as Bally didn't when it launched its Professional Arcade. However Bally was a much bigger company than NCC and had larger assets to spend on its new subsidiary. When Bally saw that it was in deeper than it could handle, it got out.

However, the problem was not entirely NCC's. When Games by Apollo began a year earlier, the software market looked ripe and profitable. Unfortunately, other companies saw how profitable the business could be. By the end of 1982, the market's growth had completely saturated because of all the companies that were competing for the same shelf space in the stores. The distribution for a small company like Games By Apollo was nowhere near that of the giants like Atari, Parker Brothers and Coleco.

Although the management of Games By Apollo seriously hoped that they could reorganize and release their new products, this never happened. The company folded in early 1983 and became the first casualty of the videogame wars. It wouldn't be the last by a long shot.

A more serious casualty occurred on April 3 at the Friar Tuck Game Room in Calumet City, Illinois. Eighteen-year old Peter Bukowski was playing *Berzerk* when he suddenly succumbed to a fatal heart attack. It is unknown if it was actually playing the game or a prior condition that brought on the heart attack. However, Dr. Robert Eliot, a researcher with the University of Nebraska, released a study that said videogames could be hazardous to people who were susceptible to heart disease.

1982 ended on sour notes. Atari sued Coleco for $350 million contending that Coleco's Expansion Module #1 contained circuitry that was nearly identical to the circuitry inside the 2600. Coleco immediately filed a $500 million countersuit that charged that Atari had violated antitrust laws

by having their salesmen discourage retailers from selling Coleco products.

Whether Coleco's charge against Atari was true or not, the company had a very good year. Their sales had increased from $34.9 million in 1981 to $203 million in 1982. Their fourth quarter earnings in 1982 were $15.3 million. They had lost over $600,000 during the same period the year before.

Atari and Mattel also had higher profits in 1982 than they did in 1981. However, their fourth quarter earnings weren't so cheerful. Mattel lost money during that quarter. Atari earned money but it wasn't anywhere near as much as it had forecasted. The announcement that its profits were much lower than had been expected sent Wall Street scurrying. Warner stock dropped seventeen points in one day and trading of Mattel stock was suspended the same day. Investors panicked from the news and the stocks of other companies such as Coleco and Toys R Us also were affected. Imagic had planned going public but the news forced it to postpone its plans.

The soothsayers came out in droves and all of them began proclaiming the same bad news. They predicted that there was going to be a great shake-out in the videogame industry and that it was going to come soon.

CHAPTER TEN
1983

In January 1983 the talk that flooded the convention center at the Winter CES in Las Vegas was the news of Atari's stock dropping wildly and the rumors that the big shake-out was coming. The videogame manufacturers dismissed the news and a record number of them had booths at the show. One new entry in the 2600 compatible market, Zimag, even announced its company on billboards along the route from the airport to the convention center. The companies were willing to do anything to get their products noticed.

One company whose products were noticed at its CES booth was Games By Apollo. The only problem was that there wasn't anybody around to demonstrate the games. The booth was empty of executives and game demonstrators. This seemed to verify the rumors that the company was going under, despite the denials by the company president, Pat Roper.

Astrocade also set up a booth and failed to send representatives. This surprised many because Astrocade never claimed to have financial difficulties, although its Arcade never gained the popularity that the company hoped for.

The failure of Astrocade was ironic. It came at a time when the public was getting more and more interested in computers and developers were looking at ways where existing consoles could be turned into real computers. The Bally Arcade had been the first console with the ability to upgrade to a computer. Because of its poor distribution and advertising, it failed to catch on with the buying public.

Mattel Electronics, which had promised a computer attachment for over two years and never delivered, once again announced that it was definitely going to release one. The company unveiled its new redesigned Computer Adaptor at the Winter CES along with its new *Intellivision II*. The Intellivision II was smaller and cheaper than its predecessor, which was quickly losing the spotlight to the more powerful machines like the Colecovision and the 5200.

Mattel Intellivision II

But the power of its competitors wasn't the main reason why Mattel Electronics' designers revamped the Intellivision. After Coleco released the Expansion Module #1 the company was able to claim that the Colecovision could play more games than any other system when the Atari 2600 library was included. Since the Intellivision had more games available for it than the Colecovision, Mattel executives reasoned that they would be able to advertise the Intellivision as 'the system that played the most games' if it could also play all of the Atari 2600 games.

Since the Intellivision did not have an expansion interface like the Colecovision, Mattel Electronics' designers had to use the only input device that was available to them: the cartridge slot. The designers developed an Atari 2600 adapter that was essentially a 2600 clone that plugged into the Intellivision through the cartridge slot. It received its power from the Intellivision and then passed its video signal through the Intellivision to the RF modulator. This caused a problem because the Intellivision didn't have an external video input. This meant that a video signal couldn't merely pass through the system.

To accommodate the 2600 adapter, which was dubbed the *System Changer* upon its release, Mattel Electronics' developers designed the Intellivision II, a compact version of the original console. The

Mattel Intellivision II w/ System Changer

new design accepted an external video signal on pin 2 of the cartridge port solving the problem of the video pass-through.

Mattel Intellivision Computer Adapter

Now that the Intellivision II had the ability to receive an external video source, the designers were able to forge ahead and develop a computer add-on that also used the Intellivision II console strictly as a means to direct the video signal to the television. The long-awaited Computer Adapter plugged into the cartridge slot of the Intellivision II and accepted a computer keyboard, which in effect turned the Intellivision into the real 16-bit computer that had been promised for years. Unlike the original that was to have sold for over $700, the new Computer Adapter had a suggested retail price of only $150.

Mattel Intellivision Music Synthesizer

In addition to the computer keyboard, Mattel displayed a 49-key music keyboard that turned the Intellivision into a music synthesizer. The company also released several music tutor cartridges. The best of these was *Astromusic*, which took the basic concept of *Astrosmash* and taught people how to play the piano. In this game falling musical notes had to be shot down for points by hitting the correct key on the musical keyboard.

The Intellivision II had improved features such as inexpensive detachable keypads that could be easily replaced if they broke. Mattel Electronics also introduced a host of new peripherals. One was a real joystick that could be plugged into the controller ports. The rest of the peripherals all resembled the new console's styling as the company stressed a modular concept. Among them was a redesigned Intellivoice and a module like Coleco's Expansion Module #1 that accepted 2600 cartridges. Both units plugged into the cartridge slot and sat alongside the main console.

Mattel also demonstrated a new *Intellivision III* console to select journalists at the CES. With an intended retail price of $300 the Intellivision III had 12K of ROM and 10K RAM. Its graphics were astounding and it was able to produce a large number of colors on the screen at one time unlike the other available consoles.

The Intellivision III was able to play existing Intellivision games. It had a built-in voice synthesizer so it could play the Intellivoice games without the special adaptor. The controller was a combination of the original Intellivision keypad and a real joystick. Finally, there was a stereo output jack that allowed players to hook the console up to their audio system so they could enjoy the amplified sound effects as they played. Mattel promised that the new Intellivision III would be available in the summer of 1983.

If releasing the long-awaited keyboard adaptor for the Intellivision wasn't enough, Mattel Electronics also released a real computer that was designed exclusively for home use. The basic *Aquarius* computer, which came with 4K RAM that was expandable to 52K and built-in Microsoft BASIC, retailed for under $200. There were also several optional peripherals such as a printer, modem, and disc drive. Like all good computers, the Aquarius was able to play games and Mattel released several of its popular Intellivision titles for the computer. Of course this narrowed the

distinction between the Intellivision II and the Aquarius. Since one was a game machine that could perform computer functions and the other was a computer that played games, it was unclear what type of market Mattel Electronics was trying to capture. To make matters worse; the Aquarius didn't look like a respectable computer. Instead, with its bright blue buttons over white molding, the Aquarius looked like an expensive toy.

Mattel Aquarius

By 1983 the market appeared to be shifting towards computers. Mattel wasn't the only videogame company that tried to jump onto the computer bandwagon with an upgrade for its videogame console. At the January CES, three third party companies announced upgrades that would turn the 2600 into a real computer. The *2000 Piggyback Color Computer* from Entex featured a full size 70-key sculptured keyboard, 3K RAM that was expandable to 34K, built-in BASIC, and a retail price of $125. Despite its name, the Piggyback actually sat in front of the 2600 and connected to the console via an attached cord with a cartridge at one end that plugged into the cartridge slot. Peripherals included a modem, printer, and a disc drive. Although the Piggyback would have been compatible with the Intellivision II or Colecovision through their 2600 emulators, Entex also announced $7 converters that would connect the Piggyback directly to these consoles without the emulators.

Spectravideo's *Comp-U-Mate 2600* also sat in front of the 2600 and linked with it via a cartridge. The $100 unit had BASIC, a music program, and a drawing program all built into it. On the negative side, the unit featured a membrane keyboard, which made typing a chore. To compensate for this, each 'key' had an alternate function that allowed entire BASIC keywords to be typed at the touch of one button.

Unitronics took the principle of Starpath's Supercharger one step further with its *Expander*. While the Supercharger was a cartridge that attached to a cassette tape player, the Expander was a tape player that directly plugged into and sat atop the 2600. Unitronics developed tape-based 16K games that could be played by the unit. The Expander also included its own cartridge slot so the standard 2600 cartridges could be inserted without removing the unit. The Expander would also turn the 2600 into a 16K (upgradeable to 32K) computer when a 64 key computer keyboard was plugged into the base unit. Unfortunately, the raised keys were made from rubber and they hindered typing. In addition to the keyboard, Unitronics also promised peripherals such as a printer and a modem. The company never announced a suggested retail price for the Expander but it promised that the unit would be inexpensive.


Atari My First Computer

In February at the International Toy Fair in New York City, Atari responded to all of these computer upgrades with its own. Called *My First Computer* (renamed the *Graduate*), the entire 56 rubber key keyboard plugged directly into the 2600 and sat atop it. It also had its own cartridge slot so it never had to be removed if someone wanted to play standard cartridges. The $90 unit came with 8K RAM (expandable to 32K) and built-in Microsoft BASIC. Programs could be saved with an ordinary cassette tape recorder that hooked up with My First Computer via a cable supplied by Atari. The company also promised peripherals such as a printer and high speed storage either through disc

or wafer tapes. They also planned to release an entire new line of games for My First Computer. Because of the increased memory of the computer, the games would feature better graphics than what was already available by the 2600.

Milton Bradley announced a computer upgrade for the portable Vectrex. The 65- key keyboard plugged into the controller port and added 16K ROM and RAM to the console. It also included built-in BASIC and software would be available on 120K tape wafers. Milton Bradley promised that word processor software would be available for the Vectrex by early 1984.

Although everybody anticipated that Coleco would announce a computer upgrade at either the Winter CES or the Toy Fair, they were wrong. However the company did introduce the Expansion Module #3 at the Toy Fair. The Super Game Module, which would retail at under $120, added one million bits of information to the Colecovision. Games were provided on wafers that were actually tiny cassette tapes that contained thirty times the code of a 2600 cartridge. Unlike standard tape drives that normally took minutes to load a program, programs were loaded into the Super Game Module in less than ten seconds. Coleco announced that the games would be virtually identical to their arcade counterparts and contain all screens including intermissions. Because the games would come on tape, they would have the ability to save the initials of high scorers. *Super Donkey Kong* would be shipped with it.

In May, Coleco announced that the Expansion Module #3 wouldn't be released until August at the earliest. In addition to *Super Donkey Kong*, the module also would come with *Super Buck Rogers Planet of Zoom.*

The Expansion Module #3 was the big news for Coleco fans for the first half of the year. That changed in early June at the Summer CES in Chicago. It was there that Coleco first demonstrated its new computer; *Adam.*

Coleco Adam

Although Coleco kept the computer behind glass so that the CES attendees couldn't get their hands on it, crowds still conglomerated around it. They did this with good reason because Coleco promised that Adam would have the same impact on home computing that Colecovision had on home gaming. The company stressed that Adam was for people who wanted to buy a computer and have everything that they needed to make it fully operable when they arrived home. To reach this end, Adam was packaged with several components. The first was a 75-key sculptured keyboard. The second was a letter quality printer and word processing program. Finally, there was a Master Console that contained 80K RAM (expandable to 144K) and a digital Datapack that was similar to an audio cassette tape but able to record and playback at very high speeds. One cassette had the ability to store 500K bytes of information; 250 double-spaces typewritten pages. Rumors persisted that Coleco had trouble with its wafer system that had been planned for the Super Game Module and that was why the Adam utilized datapacks instead. The company insisted that the datapacks had been used because they were able to store more information. As far as software was concerned, Coleco included two datapacks; one was Smart BASIC and the other was *Super Buck Rogers Planet of Zoom.* All of this was priced at under $600.

The Master Console was essentially a computer with a built-in Colecovision. It too had expansion ports that accepted all of the expansion modules and a cartridge slot that accepted all of the cartridges. People who already owned a Colecovision weren't left out in the cold. For $400 they could buy the complete unit without the Colecovision feature. This unit hooked up to their Colecovision through its

expansion port.

While Coleco was announcing Adam, it was quietly putting the Super Game Module onto the backburner and pushing its release date back to 1984. The company claimed that since the Super Game Module and Adam both used the same datapack storage system, the datapacks would be in short supply. Coleco wanted all of them available for Adam. However analysts and journalists believed that this was simply a marketing attempt by Coleco to make more money. Since they could only get the Super Game Module by buying it along with Adam, they would have to spend $400 instead of $120. Naturally Coleco denied these accusations.

Coleco Gemini

Since the 2600 was still the best selling game console, many companies continued to jump on its bandwagon. Coleco released a new console, *Gemini*, which was basically a 2600 clone. Besides its styling, the only thing that differed it from the 2600 was its controllers, which incorporated the paddle and joystick into one. Atari quickly added Gemini to the lawsuit that it had against Coleco over the Expansion Module #1. Despite this, Columbia House, the company that ran popular record and tape clubs, took an interest in the Gemini and licensed it from Coleco for use in a new videogame club. Columbia House renamed the console the Columbia Home Arcade and used it as a promotion to get people to join the club. As an introductionary offer, people who joined were able to purchase the Columbia Home Arcade for only $49.95; half the price that Atari charged for the 2600. Those who took advantage of this deal had to immediately purchase one cartridge for $19.99 and five more within the following two years for between $24.95 and $29.95.

Coleco Kid Vid

In addition to the Gemini, Coleco also released a $50 voice module for children that had been invented by Ralph Baer. Unlike the voice modules that were sold by Mattel and Odyssey, the *KidVid* was a cassette player that hooked up to the Gemini or 2600 through a controller port. It played special audio tapes that were packaged with specific game cartridges. The tape ran while a child played a game. At certain points, the tape stopped and would only resume playing when the child made the correct response on the TV screen. To make sure that three to seven year olds would be interested in it, Coleco went out and obtained licenses for such provocative children's fare as Dr. Seuss and the Berenstain Bears.

Because videogames were booming, more and more companies announced products that they hoped would take the world by storm. Many of them never even made it to the stores. Among them was a system by an upstart company called Ultravision. The *Video Arcade System* (VAS) was a self-contained unit that included many features that the people at Ultravision thought the public wanted. Because the VAS was a game console first and foremost, Ultravision developed its own 16K, 32K and 64K cartridges for exclusive play on the machine. Taking a cue from Coleco and Mattel, Ultravision also offered an adaptor that would play 2600 compatible games and promised one that would play Colecovision cartridges. A keyboard adaptor turned the VAS into a 64K computer (expandable to

Ultravision VAS

120K) that was compatible with Apple software.

Like the Arcadia 2001, the console operated on both AC and DC current, which made it fully portable. It even came with a cigarette lighter adaptor so it could be played in a car. The VAS also contained its own built-in ten inch color monitor and VHF/UHF tuner. It even allowed for closed circuit TV cameras to plug into it and turn it into a security monitor.

The entire console, which weighed less than ten pounds, retailed for $500 and the computer keyboard cost another $300. In addition to the VAS, Ultravision also announced a line of 2600 compatible software that wouldn't be like anything else already on the market. Despite all of the publicity that Ultravision received in the videogame magazines, the VAS was never released and only one game, *Condor Attack*, ever made it to the stores. It wound up being a third-rate version of Imagic's *Demon Attack*.

Condor Attack was overlooked by practically everybody mainly because of its poor distribution and because it was very bad. *Demon Attack*, on the other hand, was a major success for the new company and it attracted the watchful eye of Atari who wasn't happy with it at all. The way Atari looked at it, *Demon Attack* was a direct rip-off of *Phoenix*, an arcade game by Centuri that was collecting quarters at a fantastic rate, and which Atari had bought the home rights. Although Atari planned a 2600 version of *Phoenix* for later in the year, it was the Intellivision version of *Demon Attack* that really got Atari's goat. Absent from the 2600 version of *Demon Attack* and only included in the Intellivision version was a space ship that the player had to defend against. *Phoenix* also had a space ship in it.

As far as Atari was concerned, *Phoenix* and *Demon Attack* were the same game, which meant that Imagic made money at its expense. Atari sued Imagic in late December 1982 and within a month the two companies settled out of court. Although the terms of their agreement were never disclosed, Imagic was still permitted to market its Intellivision version of *Demon Attack*.

The lawsuit between Atari and Coleco took much longer to settle. After Atari initially sued Coleco in late December 1982, Coleco counter-sued on charges that Atari had unfairly tried to monopolize the home videogame market. Atari allegedly obtained invalid patents and dealt with arcade companies so it could buy exclusive licenses. Coleco also charged that Atari spread false rumors about its competitors and their products and threatened its distributors and retailers against carrying competing merchandise. Additionally, Coleco claimed that Atari violated US laws when it bought part of Namco, the Japanese company that designed *Pac-Man*. Coleco accused that by doing this Atari had an unfair advantage to hit games that Namco might create.

The two companies finally settled out of court in April and Coleco agreed to pay Atari an undisclosed royalty for its Expansion Module #1 and Gemini sales. This opened doors for other companies to manufacture 2600 clones just as Atari's lawsuit against Activision paved the way for companies to sell 2600 compatible software. Mattel watched with interest.

Coleco's charges against Atari were never proven and were dismissed. Ironically, just as Atari and Coleco settled their differences, Parker Brothers filed an antitrust suit against Atari. Parker Brothers claimed that Atari had tried to entice wholesale distributors into selling only Atari videogames by offering them between 25% and 40% discounts on the games that they bought. Parker Brothers claimed that it lost $15 million in business from 26 wholesalers who canceled orders

because they decided to stock only Atari games.

Parker Brothers' petition had been denied by a US Federal Judge who questioned Atari's act but felt that Atari would lose more by abandoning this practice than Parker Brothers would lose if Atari instilled it.

Another Atari lawsuit was against American Multiple Industries, the manufacturer of the controversial X-rated game *Custer's Revenge*. Atari feared it would receive negative publicity if the third party company was allowed to release its software. Because of the subject of *Custer's Revenge*, Atari received many negative letters from Native American and women's groups. Atari wanted the game removed from the market because it feared the public would believe that it had endorsed the game when that wasn't anywhere near the truth.

American Multiple Industries wound up filing an $11 million suit against Suffolk County New York on the grounds that the county had pushed to prohibit the games from being sold. The county argued that they enforced the ban because they believed *Custer's Revenge* was a danger to the health and safety of its residents.

Playaround

The result was that the X-rated videogame industry received nothing but negative publicity. A second company, Gamex, released an X-rated maze game called *X-Man* and discovered that the distributors and retailers weren't responsive to it. Other companies, such as Multivision, had been interested in selling X-rated games but by this point decided against selling them. American Multiple Industries wound up selling its rights to the games to another company, Playaround. This company released *Beat 'em & Eat 'em* and *Bachelor Party* along with three other titles but decided against selling *Custer's Revenge*. On the innovative side, Playaround sold two versions of each of its games; one for males and the other for females. It also packaged two games together in one cartridge. Billed as the "**WORLD'S FIRST 2 IN 1 ADULT VIDEO GAME CARTRIDGE**," both ends of the cartridges could be plugged into the console since each end contained its own ROM chip. Although the cartridges didn't cost any more than a standard game cartridge, Playaround received very little distribution and support and the games died a quick death. Along with them died the controversy of the X-rated games for no other company ever released another X-rated game again.

Although X-rated games failed in the marketplace, they did prove that software vendors were willing to release something different to make their products visible in the stores. As more and more 2600 compatible games proliferated the market the software companies did whatever they had to do to make their games unique.

Starpath, the first company that produced the innovative Supercharger, went one step farther and introduced a new type of game that was very different from even its other games that were available. *Multi-Load* games were loaded into the 2600 one segment at a time. After the player completed the first segment, he then loaded the next one and continued from a new point. The Multi-Load games were more sophisticated and had better graphics than games from other manufacturers. This was due to the additional memory of the Supercharger and the ability to load different portions of a game at

different times. *Escape From The Mindmaster* was the first Multi-Load game that Starpath offered. This game turned the player into a human rat who had been caught in an alien labyrinth. The graphics displayed the maze from a first person perspective and the movement was so fluid that it felt like the player was actually walking inside a maze. The object of the game was to find several shapes that were hidden within the maze and bring them to their correct places while avoiding a monster that roamed. Once the pieces were in their correct places, the player advanced up a flight of stairs to the next maze. Each game segment contained two mazes and the player had to complete six in order to win.

Amiga Power Module

Amiga Corporation also announced a memory expansion device on the order of the Supercharger. *The Power Module* looked almost like the Supercharger and it also added 6K of RAM to the 2600 and played programs loaded from cassette tapes. An additional feature allowed two Power Modules to be interfaced together through an optional modem. This gave two players the ability to play a game against each other via the phone lines. The Power Module came with *Depth Charge*, the first on-line interactive videogame.

Another cassette game that came with the Power Module was another first for videogamers. *3D Ghost Attack*, as its title implied, was the first three dimensional videogame. Included with the tape was a pair of special glasses for the 3D effect.

In addition to the Power Module, Amiga also marketed special controllers for the 2600. The *Joyboard* was a controller that had to be stepped on in order to activate it. Instead of pushing a joystick forward, a player had to lean forward on the Joyboard. Although this added an extra level of play to standard games, Amiga developed a line of games that were to be used exclusively with the Joyboard. *Mogul Maniac*, a first person skiing game, came with the Joyboard. Amiga's other controller, the *Pro-Stick*, was a tiny joystick controller that fit in the palm of a hand and was more responsive than the standard Atari joystick.

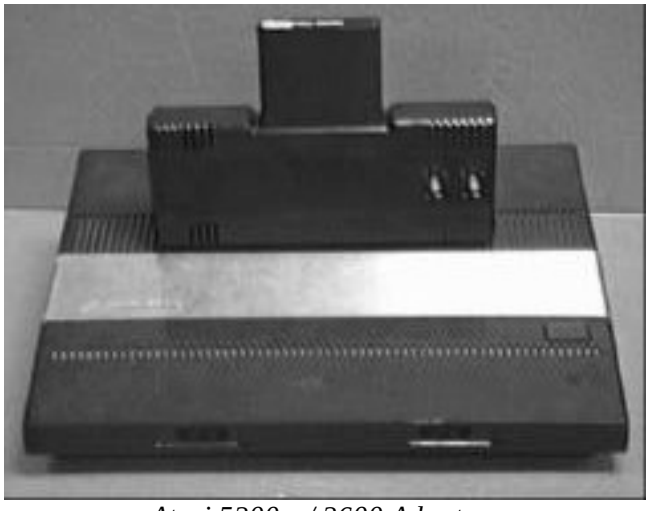
Amiga Joyboard

Other companies developed new controllers for the various consoles. Coleco's *Super Action Controllers* for the Colecovision put the player in physical contact with the action on the screen. Each controller looked like a pistol without a barrel. At its top was an eight-position joystick, an eight-button keypad, and a speed roller. On its handle were four trigger-like buttons, which precisely controlled specific areas of game play. The controllers had been designed especially for special sports games and they came with *Super Action Baseball*. Other sports games that Coleco developed for the Super Action Controllers were *Super Action Football* and *Rocky Meets The Champ*.

Coleco also offered the *Roller Controller*, a track-ball controller for the Colecovision. The Roller Controller came with *Slither* and other games were planned. Atari retaliated by releasing its own *Trackball* for the 5200. Like the Roller Controller, the Atari Trackball could only be used with certain games that had been especially designed to work with it. To make the controller more attractive, Atari

Coleco Super Action Controller

Atari 5200 Trak-Ball



Atari 5200 w/ 2600 Adaptor

Coleco Roller Controller

released *Centipede* for the 5200 since the arcade version used a trackball.

Atari also released a VCS Cartridge Adaptor for the 5200. Once this tiny unit was plugged into the 5200, it allowed the super console to play the hundreds of cartridges that were available for the 2600. To sell the adaptor, Atari launched an ad campaign that stated that the 5200 played more games than any other console.

For the 2600, Atari released a number of different controllers including a trackball and remote control joysticks. It also introduced the *Proline Joystick*, which was long and sleek and featured two controller buttons so lefties wouldn't feel left out and a *Space Age Joystick* that resembled a pistol. The fifth controller that Atari released was the *Kids' Controller* that looked like a big blue rectangle with twelve buttons on its face. The controller was released in conjunction with a new line of Sesame Street cartridges that Atari developed. Each cartridge came with an overlay that fit onto the controller and allowed very young children to easily manipulate the action that was on-screen.

Atari Kids' Controller

Milton Bradley also produced several controllers for the 2600. The first two were toy controllers that operated like standard joystick controllers but had been designed to make the player feel like he was part of the action. *Cosmic Commander* resembled the control panel of a spaceship complete with a radar control gauge and flashing lights. *Flight Commander* looked like the

cockpit of a jet fighter with an attached machine gun. Both controllers included cross-hairs so the player could take aim and fire at the targets on the screen and both came with their own game cartridge. Unfortunately, the games simply weren't fun; with or without the special controllers. A third controller, *Tank Commander*, had been announced but Milton Bradley wisely chose not to release it.

Milton Bradley Flight Commander

In May, Milton Bradley entered an agreement with Atari to produce the *Voice Commander*, the most sophisticated controller to ever grace a videogame or computer console. Designed for both the 2600 and 5200, the fifty dollar controller was actually a plug in peripheral that was both a voice synthesis and voice recognition unit. Attached to the module was a headset and microphone that allowed players to control on-screen movement strictly by speaking. In a game like *Asteroids* for example, all the player had to do to send his ship into hyperspace was say the word "hyperspace" into the microphone. Any word would do since the player had to first program the unit before playing. This was easily accomplished by pressing the joystick in the appropriate direction and saying the word that corresponded with that joystick movement into the microphone. Milton Bradley agreed to manufacture the unit and eighteen cartridges over the following three years.

Although the controller was highly anticipated, in early August Atari sent out a press release that stated that the Voice Commander was on "hold" without stating any reasons. By the end of that month, Milton Bradley filed a $43 million dollar lawsuit against Atari, charging the videogame company with breach of contract.

Atari was also involved in a lawsuit against Nolan Bushnell, the man who founded the company! When Bushnell left the company in 1978, he had been prohibited from any videogame activity until October 1983. In the weeks leading to that date, a rash of publicity surfaced stating that Bushnell would take over the coin-op business with his new arcade company *Sente Technologies* once the deadline passed. Atari contended that Bushnell violating the terms of his contract by releasing this advance publicity. Atari finally came to an agreement with Bushnell, which gave Atari the consumer rights to any arcade games that Sente created.

Ironically, Atari played a major role in the birth of Sente. In 1980, the arcade tank simulator *Battlezone* had been programmed by Ed Rotberg. After he was forced to convert *Battlezone* to the Army's specifications, Rotberg left Atari and joined up with two other Atari engineers to form a company called Videa. When Bushnell decided he wanted to enter the videogame business once again, he purchased Videa for over $1 million and renamed it Sente Technologies.

While Sente was primarily an arcade game company, Bushnell was also involved with a company that dealt with the home videogame market. Because there hadn't been any advanced publicity for it, it hadn't been included in Atari's lawsuit. The company, *Androbot*, introduced an exciting new peripheral for the 2600; a twelve inch high robot. Billed as the world's first real life 3D videogame robot, *Androman* was joystick controlled via a remote control infrared signal. The company planned to sell it with a game cartridge, a transmitter, a game playing field, and a set of game pieces. Like Odyssey's Master Strategy Series, the game-play shifted between the TV screen and the playing field where Androman resided. After a certain number of points had been accumulated on the screen,

Andromán had to navigate through an obstacle course and had to contact the pieces that had been distributed around the playing field. In addition, Andromán was able to speak to the player with either encouragements or warnings.

Despite the innovative peripherals from companies such as Starpath and Androbot, gamers were finding themselves with a number of old cartridges that became boring within a month after they bought them. As people invested more and more money into software, they became reluctant to buy any new games that would just join the pile of old games in no time. To appeal to this growing number of consumers, a company called Answer Software announced a device that could make old games seem completely new. The *PGP-1* (Personal Game Programming) system plugged into the 2600 console and included a slot so game cartridges could be inserted into it. Once they were placed, the player had the ability to change any feature in the game such as background colors and speed. Because all of the alterations to the program took place within the PGP-1's RAM, the cartridge itself was undamaged.

Answer Software PGP-1

The $200 unit worked by allowing users to actually change the binary code of a program. Answer Software also developed a series of guides that instructed the user on how to modify the best selling 2600 compatible games because very few consumers were fluent in binary programming. The company also released a 2600 compatible game called *Malagai*.

Innovations for game play weren't restricted to new hardware. By February, two software companies announced that they had utilized new chips in their standard cartridges that enhanced the memory capabilities of the 2600.

CBS Electronics' chip, *RAM PLUS*, tripled the capacity of the 2600 and improved the graphics, control, detail, and complexity of a game. The company planned to use RAM PLUS to develop sophisticated first-person games. The first was *Tunnel Runner*, a first-person maze game that was similar to Starpath's *Escape From The Mindmaster*. As it turned out, Starpath's Multi-Load game had better graphics.

US Games called its enhanced chip *RAM/ROM* and designed complicated strategy/adventure games around it. The new chip contained 8K of ROM and 2K of RAM and the games that used it featured more sequential screens and more sophisticated movement. US Games also developed a new controller that had the ability to zoom in or out. The company licensed the Pink Panther and used the character in its first RAM/ROM game; *Trail of the Pink Panther*.

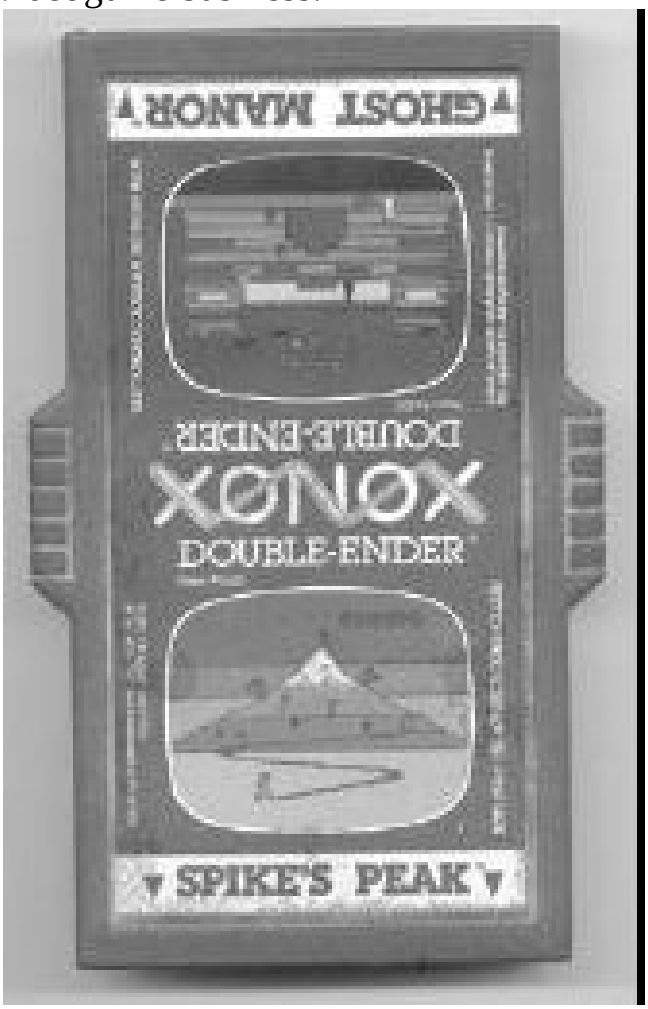
Unfortunately, US Games never released *Trail of the Pink Panther* or any other RAM/ROM game. In March the company filed for bankruptcy due to the unforeseen rapid oversaturation in the videogame market. Quaker Oats, the parent company of US Games, would have had to make substantial investments for the company to remain in business. This was something that Quaker Oats wasn't willing to do in the ever changing market.

The US Games story was repeated elsewhere. After purchasing major licenses such as *Mr. T, Mr. Bill*, and *Smokey Bear,* Data-Age also went out of business. The games that were based on these licenses were never released. The remaining inventory of both Data-Age and US Games were bought at salvage prices by a company called Kandy Man Sales who in turn sold the games to the public at bargain prices.

This dumping of games produced a domino effect. As dozens of games were unloaded at ridiculously low prices, consumers bypassed the newer and more expensive games in favor of the bargains. As inventories increased, more and more companies unloaded their unsold games in an effort to bring in some income and this just added to the glut that was already on the shelves. As games were discounted, manufacturers weren't able to make back the money that they spent on research and development and this forced them to close down their operations.

By year's end, the shake-out hit most of the software companies. Telesys, Spectravision, and even Twentieth Century Fox announced that they were leaving the videogame business.

Some companies began shipping videogames for the first time only to discover afterwards how over laden the market was. Among them was Avalon-Hill who released three strategy games. Another new software company manufactured cartridges that had circuit boards on both ends despite the apparent failure of the Playaround line. This company called itself Xonox, a name that had been chosen because it read the same thing from either direction. Xonox was the new software division of K-Tel, a record company that made its name in the seventies and eighties by marketing record collections and then advertising them to death on television. Xonox called its line of game cartridges *Double-Enders* and felt that it would succeed where Playaround failed because it marketed clean games that an entire family could enjoy. The company released two double-enders in 1983.



Xonox Double-Ender

Sega Enterprises Inc., the American division of the Japanese arcade company, released several 2600 compatible cartridges based on Sega arcade games. Because the company was owned by Gulf & Western who also owned Paramount Pictures, the company planned to release several games that were based on hit movies such as *48 Hours*. These games were abandoned when G&W decided to scuttle from the videogame business and close its Sega software division. Bally came to the rescue and purchased the Sega division, which stayed in business through 1984. However instead of releasing games based on movies it released several home versions of Bally arcade games. However movie-based games did make it to market when Wizard Video released two games based on the horror movies *Halloween* and *Texas Chainsaw Massacre*. Unfortunately very few stores carried them.

Wizard was lucky to get into some stores. Other companies didn't get their games into the stores at all. Zimag, the company that began the year with billboards to attract the throngs that attended the CES in Las Vegas, faded quietly. At the Toy Fair in February the Great Game Company announced a number of 2600 compatible cartridges that were all based on TV game shows such as *Jeopardy* and *Family Feud*. They never came out. Other companies such as Broderbund and Sydney Software also announced titles for the 2600 but failed to produce them.

Parker Brothers decided to continue marketing games but took a long look at the products that it was developing. After much thought the company decided to abandon most of the games that were in development and to only release what it considered to be the best of the best.

Imagic, which had hoped to go public at the end of 1982, put its stock offering on hold after Atari

revealed that it made a lot less than it had projected. The public offering was never made and in the spring the company received outside financing from the private sector. However by September Imagic found itself with financial difficulties like the rest of the industry. Because of a lack of sales due to the software glut, Imagic couldn't get major distribution for its new products. The lack of revenue forced the management to lay off nearly one third of its 170 employees. With limited distribution Imagic was only able to get its new products into some stores. Very few people were aware of them anyway since the company could no longer afford to advertise. By year's end, Imagic changed its course and decided to concentrate strictly on development. Since the company would only license out new programs, it totally ceased its manufacturing operations and laid off all of its sales and marketing employees.

Even the granddaddy of software companies, Activision, experienced a loss of business. By the end of the second quarter the company had a net loss of $4 million, down from a $4.4 million profit for the same period in 1982. To get it through the videogame crush, the company began releasing games for computers.

Starpath, the manufacturer of the acclaimed Supercharger, closed down quietly when Epyx, a computer software company, bought its entire design group. Epyx had no plans to enter the videogame market and closed out the entire inventory of Superchargers and software.

Amiga, the company who promised the Power Module, changed its plans and scuttled the module. In its place the company announced cartridges that contained three ROM chips. Housed in the same super long cartridge that was originally planned for the Power Module, Amiga called the new cartridges the *Power-Play Arcade Series*. The company never mentioned why it abandoned the Power Module; but at the same time it was getting ready to unleash a new 16-bit computer that it was developing.

Atari, the company that many people blamed for causing the shake-out because of its false projections, also suffered. The company announced in March that it had eliminated 600 jobs in Sunnyvale so it could move its production facilities to Hong Kong and Taiwan where it could cut costs.

In April the company announced that cartridge sales for the 2600 were up 10% from April 1982. They also projected that 10% of all the households in the country were planning to buy a 2600 console within the following year. Despite this optimistic forecast, Atari still closed its El Paso manufacturing plant and got rid of the existing inventory in that plant in an unusual way. Instead of unloading the consoles and cartridges to stores at bargain prices, the company fully loaded the products into fourteen trailer trucks. They were then brought to an Alamogordo, New Mexico landfill where they were buried in cement. Many speculated that Atari dumped the games because it would have been too expensive for it to unload them through the normal distribution channels. Atari claimed that the games were defective and unsellable.

In an effort to gain more sales, Atari began developing software for other game consoles and computers besides its own. Under the *Atarisoft* label, the company sold games that were the same titles that Atari owners had been enjoying such as *Pac-Man* and *Centipede*. The company also announced that it acquired all of the home rights to Nintendo's arcade hit, *Mario Bros.*.

The announcement that Atari was going to develop software for other formats including the Intellivision didn't make the people at Mattel very happy. They quickly filed a lawsuit against Atari where they charged that Atari had received trade secrets from former Mattel employees. Mattel claimed that Atari hired the ex-employees so they could develop and release Intellivision compatible cartridges in time for Christmas.

Interestingly enough, other software companies began targeting the Intellivision. Besides Activision, Imagic, Coleco, and Parker Brothers, a Canadian company called Interphase ignored the

2600 altogether and released two cartridges for the Intellivision and Colecovision; *Sewer Sam* and *Blockade Runner*. Interphase also went ahead and released *Aquattack* and *Squish'em Sam* solely for the Colecovision.

Mattel had other worries besides the threat from the third party software companies. By the time the Summer CES arrived in June, the company scratched the Intellivision III. They also dropped the M-Network moniker and simply sold all of their software under the Mattel Electronics banner. To compensate for this they introduced games that featured *SuperGraphics*, a programming technique that increased the Intellivision's graphics by adding hi-res definition. The improvement was apparent in multiple and scrolling play-fields, animated titles, and more colors. At the end of the second quarter, the company showed a $156.1 million loss and sales were down over $100 million from 1982's second quarter. To prevent any more losses, Mattel Electronics laid-off 600 employees and took the Aquarius computer off the US market, although the company continued to sell the computer outside the United States where it faced less competition. The company promised that it would still develop new hardware and software despite the losses. However by November Mattel it was considering closing down its electronics division before Christmas. The only reason that it didn't was because it felt that the move would harm its toy division.

Things looked hopeful for Odyssey when the year began, although it decided to abandon its plans to market the Odyssey^3. This had been done because executives at the company felt that the Odyssey^3 didn't advance enough technologically to compete against the inexpensive computers that were on the market. Instead of concentrating on new hardware, Odyssey turned to a new direction.

When US Games folded, Odyssey quickly picked up the rights for the Pink Panther. It followed this by announcing *Probe 2000*, a new line of software for competing videogame and computer systems. The first title that Odyssey announced was *Pursuit of the Pink Panther*.

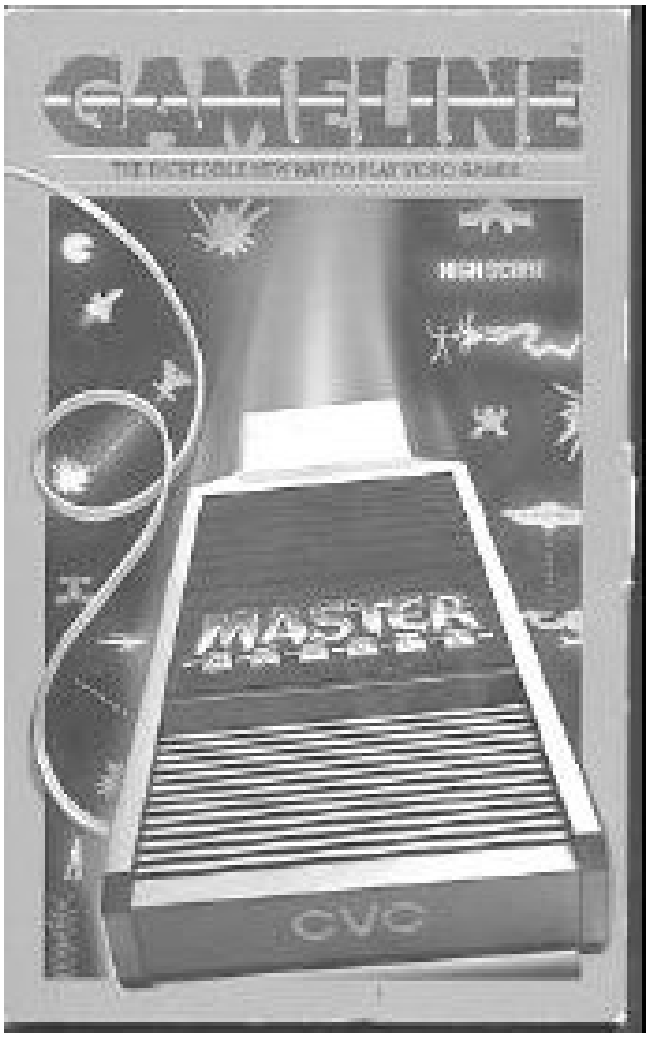
By October Odyssey released one Colecovision-compatible game called *War Room*. Unfortunately, it was to be the only game that would be released under the Probe 2000 banner. A severe chip shortage caused the company to scrap all of its other titles since it couldn't hope to get them out in time for the critical Christmas season. Following this disaster, Odyssey decided to abandon the industry that it created altogether.

While companies were folding because of the overabundance of games in the stores, many companies looked at alternate ways to deliver their products to the consumers.

Alternative methods of providing games had begun in 1980 when Mattel joined up with General Instruments and formed Playcable. Although the initial success of Playcable subsided with the popularity of Intellivision, other companies began looking at the potential of delivering games by cable. In early 1983 Atari planned a joint venture with Time-Life that would have offered between 20 and 30 games a month. The games were to have been Atari's most popular titles and the company planned to release one new game each week. As an extra bonus, subscribers were to have the opportunity to test out brand new games that Atari was developing. Unfortunately, after the troubles that Atari soon began having, the cable delivery system never got off the ground.

A third cable service, the *Games Network*, signed up 470 cable companies by February to deliver its goods. Unlike the previous two systems that required the subscriber to own a videogame console, the Games Network provided the hardware that would play the games. The company originally had hoped to be fully set up by September but it later changed this date to December. Following the shake-out the Games Network never started up and disappeared into game oblivion.

As computer enthusiasts knew, the phone lines were just as capable as cable in delivering software into homes. People who owned computers with modems had been dialing up networks for years. Videogame owners were awarded the same opportunity during the summer of 1983 when William



CVC Gameline

Von Meister, president of Control Video Corporation (CVC), initiated a new on-line service called *Gameline*. Von Meister was well suited to partake in such an undertaking. Previously he had founded The Source, the largest computer network at the time.

The secret behind Gameline was its Master Module, which resembled the Supercharger. Packed inside this 8K RAM cartridge was a 1200-baud modem. When the Master Module was inserted into the 2600, it automatically dialed a toll free number that connected the 2600 to a mainframe computer. While the player was connected to the main computer, he could select a game from a supplied catalog and instruction book. After the game downloaded to the 2600, the modem disconnected the line and the game was played like any other.

The company promised other uses for the Master Module. *Sportsline* would provide all sorts of sports information. *Infoline* would present all the latest news and stocks. *MailLine* would provide electronic mail and banking services to 2600 owners. The Master Module cost $59.95 in stores and then there was a $15 registration fee the first time a player logged on. The player was then charged one dollar a game, no matter how long it took him to complete that game. All fees were charged to a credit card and if the credit card belonged to a parent, he had the option to impose a credit limit so his kids didn't get carried away. Once they reached that limit, they were unable to download any more games until the following month.

The games that appeared through Gameline were supplied from companies that had signed up with the service. Their hopes were that a person would go out and buy the cartridge once he had sampled the game. Ironically, all of the companies that had signed up with Gameline were out of the videogame business by the end of the year. At that time Gameline found itself without any new games to offer, which eventually caused Gameline to suffer the same fate that had befallen its suppliers.

FOCUS ON Control Video Corporation

Following Gameline's demise, CVC borrowed $5 million from Bell South to form Masterline, an online service for Apple II and Commodore 64 computers. After this failed, Commodore decided that it wanted to create its own online service. Commodore bought shares of CVC and then licensed the technology of another service called Play-Net. Using Commodore's money, CVC paid off its investors and then closed the company; only to reform as Quantum Computer Services on May 24, 1985. Quantum then used the Play-Net technology and on November 1,

1985 introduced Q-Link, an online service for Commodore 64 computers.

When Commodore didn't whole-heartedly support its online service, and the Commodore 64 market began to wane, Quantum signed up with Apple in 1987 to distribute Apple Link, an online service for the Apple II. Unfortunately Apple wanted too much control of Quantum, which Quantum refused to relinquish. Apple paid Quantum $2.5 million in June 1989 to give up its rights to use the Apple logo and this in effect severed the deal between the two companies. The cutoff date to quit using the Apple Link name was October 2, 1989 and the company had to come up with a different name to use after that date. The new name chosen was America Online.

In June, Coleco announced that it had entered into a joint venture with AT&T. What this joint venture had in mind was to take existing cartridge based games and modify them so they could be played by competing two gamers via the phone lines. They started with Atari's *Star Raiders*, a one player game for the 2600, and modified it so two players could compete against each other. Each player would pilot an individual ship and the opponent's ship would display on the screen.

Three months later, the two companies changed their tune about what their system was about. By September they merely talked about producing modems similar to Gameline that would download a variety of games for all game systems. Although they promised that the Coleco modem would be available by the middle of 1984, it never appeared.

Three other companies found alternate ways to deliver games into the home so consumers could sample them before making purchases. All three utilized blank game cartridges.

Two of the companies, Romox and Cumma Technology, used similar systems. A retailer leased a terminal that had access to hundreds of game programs. For a minor fee, the customer placed his blank cartridge into a slot in the terminal. After choosing a desired game, the terminal copied the game program onto the blank cartridge that the customer was then able to use exactly like a standard cartridge. The blank cartridges could be reprogrammed over and over again.

If a customer used the Romox Programming Terminal, he first had to buy a blank ECPC (*Edge Connector Programmable Cartridge*) for between $15 and $25 depending upon the memory requirements of his game system. He then looked through a Romox catalog that displayed a screen sample and instructions of every game offered. After choosing a game, he paid the retailer between $1 and $20 depending on the game. The retailer then put the ECPC into the correct slot in the Programming Terminal and the desired game loaded onto the blank cartridge. Once the process was completed the customer went home and played the game. If he didn't like it, he could always return and get a new game loaded onto his cartridge for the standard fee.

Cumma's process worked almost in the same fashion. After purchasing a blank MetaCart in the format of his game or computer system, a customer placed the cartridge into Cumma's Metawriter. He then paid a fee of between $1 and $15 to get his desired game loaded. Like Romox's ECPCs, the MetaCarts were reprogrammable. In the Cumma system, which the company called an electronic vending machine, the retailer didn't have to be involved in the downloading process. The Metawriter stood upright and displayed a fifteen second preview of each game as well as instructions. When a consumer purchased a game, the Metawriter printed the game instructions on paper for the customer to take home.

There is an interesting footnote concerning Cumma Technology, the company behind the Metawriter. Its vice-president of engineering was Al Alcorn, the original programmer of *Pong*. Nolan Bushnell and Joe Keenan, two other former Atari alumni, also contributed heavily to the founding of

Cumma.

Both Romox and Cumma made money by selling blank cartridges, leasing Programming Terminals and Metawriters, and charging fees to software vendors for distributing their products. The software companies benefited because they received a royalty each time one of their games was downloaded onto a blank cartridge. They made even more money when a consumer purchased the cartridge of a game that he sampled from his ECPC or MetaCart. Unfortunately for both Romox and Cumma, the price of videogame cartridges had reduced to far less than what it cost a consumer to pay for a blank cartridge and a program. Neither system went national and both disappeared quickly.

While Romox and Cumma had received the support of the software companies whose games they distributed, the third company that produced blank videogame cartridges didn't get the support of anybody. Vidco International marketed a videogame recorder called the *Copy Cart* for 2600 compatible cartridges. Although the company stressed that the unit was intended only for use with its own game cartridges, US Copyright Laws allowed consumers to duplicate game programs for archival purposes. The Copy Cart sold for $59.95 and included one Vidco game cartridge and one blank cartridge. Additional blank cartridges sold for $15.95 each. Vidco's system allowed users to copy any game that they wished without any royalties going to the vendors. In most cases the Copy Cart was impractical. People weren't going to pay $15.95 to buy a blank cartridge when most cartridges were being discounted for five dollars apiece. However a few companies such as Atari were still developing new games and selling them at premium prices. Atari quickly filed a suit in Federal Court to block any sales of the unit. Atari won and the Copy Cart was removed from the stores.

As the great videogame industry wound down, Coleco began to set its sights on its new computer Adam. Coleco announced that it had sold in advance all 500,000 units that it expected to manufacture that year. In early August the company released the news that the system would be on store shelves by the end of the month. When that deadline passed, Coleco stated that the delay was because of the time it took for the FCC to approve it. Meanwhile, despite Coleco's optimistic report that the computer had been sold out, many dealers were cautious about carrying the new computer. Their prime concern was the profit margins, which they felt were very low. They were also skeptical that Coleco could deliver the finished product without any defects arising afterwards. Even if Coleco accomplished this, buyers still had another potential problem waiting for them if they chose to purchase an Adam; a severe shortage of compatible software.

Even Coleco's own stockholders were skeptical of the company. One stockholder who had purchased stocks shortly after the Adam had been announced, filed suit against the company. He claimed that Coleco hid problems that it had experienced while it was completing Adam. He also charged that the company sold 183,000 shares of stock in June even though it knew it was having engineering problems with the new computer. Coleco's stock dropped from $60 a share when the Adam was announced to $30 when the first postponement of the shipping date was made.

By November, Coleco announced that only 140,000 Adams would be shipped; down from the original 500,000. The company actually managed to ship some Adams but in very few numbers. Major department stores only received a fraction of the units that they ordered. In 1976 a similar problem had occurred when retailers didn't receive the number of dedicated game consoles that they had ordered because of a chip shortage. At that time only Coleco had been able to ship full orders and wound up smelling like a rose. Now it was Coleco's turn to look bad.

On the stand-alone scene 1983 presented a much prettier picture. The industry seemed to revive as a number of companies released a multitude of new games. Tiger Electronics and Nintendo went after

the hand-held market and released a palm-sized version of *Space Invaders* and *Donkey Kong*. Other companies released table-top standalone games based on popular arcade titles. Among them was Coleco who released three mini-arcade games: *Ms Pac-Man*, *Zaxxon*, and *Donkey Kong Junior*; Parker Brothers with *Q*Bert*; and Entex with *Robotron* and *Defender II*.

Meanwhile Palmtex introduced the world's first palm-sized programmable game system. The PVS (*Palm-sized Video System*) was to retail at under $30 and accept cartridges that cost $20 each. The PVS featured a liquid crystal display, color graphics, and 3D effects. Palmtex announced five cartridges to go with the PVS but all of them were original titles. Although it was a great idea, the PVS never made it to the stores.

The stand-alone of all stand-alones enjoyed a great year. In addition to the previously mentioned computer upgrade, GCE also released two other peripherals. The first, a '3D Imager' that plugged into the second controller slot, allowed people to play 3- dimensional games. The company also released a light pen that allowed Vectrex owners to draw pictures, compose music, or animate their own cartoon directly on the screen.

Laser based games also enjoyed a healthy year thanks to Rick Dyer of Advanced Microcomputer Systems who developed the first laser disc arcade game and Cinematronics who released it. *Dragon's Lair*, an interactive cartoon by Don Bluth, allowed players to go on a quest while controlling the action that took place in a cartoon. Because laser discs could display images randomly, players told the computer how to present the cartoon by pressing the joystick in a number of directions. Although the response time was a little sluggish as the computer searched for the correct path, *Dragon's Lair* was a major hit in the arcades mainly because of its uniqueness. Coleco quickly purchased the license to the game for $2 million and fueled speculation that the company was going to release a laser disc module for the Colecovision and Adam.

Bluth followed up *Dragon's Lair* with a second laser game before the first even shipped. *Space Ace* wasn't nearly as popular as *Dragon's Lair* had been; probably because the innovation had worn off. However this didn't seem to deter other arcade manufacturers such as Sega and Mylstar from releasing laser disc games.

Murder Anyone?

Home laser disc games also became available. Vidtex released two discs, *Murder Anyone?* and *Many Roads To Murder*, which allowed gamers to play the part of a pulp detective who had to solve a complicated murder. The player watched the plot unfold on the screen with real actors. Using the laser disc's interactive features, players had the ability to look at evidence or solve the crime. Each disc featured sixteen different plot lines.

Due to the oversaturation of videogames most companies either filed for bankruptcy or simply discontinued their videogame lines. Other companies looked for alternate products that would get them through the crisis. Atari was one of these companies. In January the company announced a new line of computers to replace the aging but popular 400 and 800s. Although the company touted that the new 1200XL would be compatible with the older models, early purchasers quickly discovered that it wasn't. As the 400 and 800 were discontinued they enjoyed a sales boom as people rushed out to buy them before they disappeared forever. Meanwhile the word spread through the

computer industry that the 1200XL was Atari's version of Ford's Edsel.

In March the company announced that it was working on a secret project called *The Falcon Project*. Atari revealed the following month that the Falcon Project was the company's code name for its new division that was going to break into the home telecommunication market. The new division was called Ataritel and it planned to offer telephones equipped with video terminals and keyboards. The new device would be useful for home security, control of appliances, computer interface, and a way for Atari to get videogames into the home via the phone lines. Despite the money that it constantly lost every day because of the great shake-out, Atari was very optimistic about its future. Ataritel was insurance that the company would survive even if videogames didn't.

By the time summer arrived, Atari found itself deep in controversy. It had been revealed that on the day before Atari announced its infamous projected fourth quarter loss, company head Ray Kassar went out and sold $250,000 worth of Warner stock. Kassar resigned on July 7 and James Morgan replaced him on September 6.

At one time the United States had been the leader in all forms of manufacturing from automobiles to television and radios. As time passed Japan slowly grabbed a foothold in those industries and eventually took them over. By the mid eighties virtually all electronic products were built overseas; mainly in Japan. Despite the fact that American companies such as RCA and Zenith marketed video tape recorders, the products were manufactured in Japan.

Although the Japanese appeared to monopolize the electronics industry, the only markets that they couldn't take over were computers and videogames. Computers appeared to be the only true American product remaining. Because they were small scale computers, videogames were also an American phenomenon. Ironically, the main player, Atari, was an American company despite its Japanese name.

Americans dominated the videogame world until 1978 when Taito released *Space Invaders* and Japan quickly took over with an attack all of its own. Following in Taito's footsteps were other Japanese invaders who successfully jumped on the video bandwagon.

Sega had been founded in 1951 by an American named David Rosen who returned to Japan following World War II with plans to marry his Japanese girlfriend. Initially Rosen Enterprises was an art export company. In 1954 Rosen began importing instant photo booths from the United States and these were very successful. Rosen then modified the imported booths and improved them. In 1957 he began importing coin-op games. In 1965 he purchased a U.S. company that manufactured jukeboxes in Japan. He merged this company with Rosen Enterprises and renamed the new larger company Sega (SErvice GAmes) Enterprises and began producing arcade games for the Japanese market, which challenged the American imports. In a move that would be similar to Warner Communications' buyout of Atari in 1976, Sega was purchased by Gulf & Western, the parent company of Paramount Pictures, in 1970.

Nintendo's history went back even farther. The company began as the Nintendo Koppai in 1889 to manufacture and distribute *Hanafuda,* Japanese playing cards. The Japanese word *nintendo* roughly means '*leave luck to heaven*'. Nintendo Koppai became the largest playing card company in Japan and in 1907 began producing Western playing cards thiat were becoming popular. The popularity of the Western cards grew and when new types of decks such as pinochle and poker were introduced, Nintendo Koppai established a distribution company called Marufuku in 1947 to distribute these new decks. The company changed its name to Nintendo Playing Card Company in 1951 and later became Nintendo Co. Ltd. in 1963. In 1970 the company entered the electronics age and released a hand-held computer game that featured a liquid-crystal screen; a product that was years ahead of its time. In the late seventies Nintendo licensed Magnavox's game machines to sell in Japan. Following the success

of Taito's *Space Invaders*, Nintendo began producing arcade videogames and scored a hit with *Donkey Kong* in 1981.

The Japanese arcade games were successful and before long the American companies fell to the attack as all of the major arcade companies, including Atari, began importing games from Japan. Ironically, while the arcades succumbed to the Japanese invasion, the home videogames steadfastly remained American (except for Odyssey, which became part of Philips, a Dutch conglomerate). Although much of the software that was produced was based on Japanese arcade games, they were still manufactured by American companies. Since the Japanese couldn't take over the videogame industry in the United States they had little recourse left to do but to control it in Japan.

In early 1983, Nintendo released a home videogame console in Japan, which it called the Nintendo FAMIly COMputer (*Famicom*). The console featured very good graphics and accepted the fifteen 24K cartridges that had been initially available. The Famicom sold out quickly and it wasn't long before Japan once again began setting its sights on the United States.

Nintendo Famicom

Initially, the executives at Nintendo felt that they couldn't contend against Atari so they decided to offer Atari the world-wide distribution rights to the Famicom outside of Japan. Atari was enthusiastic about the idea and pursued it. After meetings between Atari and Nintendo executives were held in May at Atari's Sunnyvale headquarters, the Atari executives flew to Kyoto Japan for their first look at the Famicom. There they were told how Atari could manufacture the unit inexpensively and Nintendo would receive a royalty for every unit sold. Everyone was enthusiastic about the deal and they all promised to meet at the Summer CES the following month to sign the papers. This little delay changed the course of history.

At the CES, Coleco had unveiled its new ADAM computer, which it displayed behind glass. Coleco chose to have *Donkey Kong* running on the machine. The only problem was that although Coleco did indeed own the US videogame rights to the game, Atari owned the computer rights. Ray Kassar became enraged when he saw the display and threatened Nintendo with both a halt to the Famicom deal and litigation for breach of contract.

Nintendo turned around and threatened Coleco with a lawsuit. Coleco tried to defend itself by arguing that although the Adam was a computer, it had the guts of a Colecovision, which in turn made it a videogame console. Knowing that it couldn't win a case with such a poor excuse Coleco promised to refrain from selling *Donkey Kong* for the Adam.

The problem with Coleco only lasted one month but it was during that month that Ray Kassar was forced to resign and the Atari empire began to crumble. Before long Atari could no longer afford to purchase the Famicom and the deal was off.

At first Nintendo executives, thinking about the millions of dollars in royalties that they wouldn't receive, were mortified with the outcome. But later as they thought about it they realized that Atari's problems might in turn be beneficial to them.

Nintendo had first sought Atari as a potential partner because it felt that Atari was too big to go against. Now Atari was falling apart and the coast was clear for Nintendo to market the Famicom in America on its own.

CHAPTER ELEVEN
1984

Thanks to the great videogame shake-out of 1983, the January 1984 CES was much more subdued than those of the year before. Ironically, despite the slump, seven million game consoles and 75 million game cartridges, 15 million more than in 1982, had sold in 1983. Of that number, only 27% had been closed out titles that sold for as low as $4.99 each. The remaining 73% consisted of popular titles that retailed for between $30 and $40. Because the industry wasn't completely dead, the Winter CES included a half dozen booths that featured videogames; a mere handful of the thirty companies that had attended the 1983 Summer CES seven months earlier.

The general attitude towards the industry in 1984 was one of cautious optimism. Many retailers began using their videogame shelf space for computer software, which they believed was where the market was heading. However, since there were still many more videogame consoles in homes than computers, retailers still believed that they could earn some profits from the videogames. Unfortunately the only games that yielded any profit were hot new titles and very few companies still remained that developed them. Those that did still remain had to compete against the hundreds of discounted titles that had flooded the market. One of the remaining companies, Activision, believed that once the salvaged titles made their way through the distribution chain, the way would once again be clear for new, exciting, and hopefully profitable cartridges to appear.

Meanwhile, retailers predicted that the cost of the videogame consoles would continue to plummet. The retail price for a 2600 or Intellivision had dropped to between $39 and $49 while the high-end machines like the 5200 and Colecovision were in the $80 area. These new lower prices made them more attractive to buy and added to the demand for new software.

Unfortunately the lower prices in the stores didn't help the manufacturers at all. Mattel sold the marketing rights to its unpopular Aquarius computer to Radofin Electronics, the company that built the system. In March, after examining its figures from the previous year, Mattel decided to close down its Mattel Electronics division completely. However the company's senior vice president of marketing and sales, Terrence Valeski, had faith in the division. He came to the conclusion that the three million Intellivision owners still made up a formidable market for good software. With this in mind he joined with Ike Perlmutter and Bernard Marden, the owners of Odd-Lot Trading, a New York based retailer of salvaged goods, and bought the division for $20 million. They immediately named their new acquisition Intellivision Inc. and promised that the new software titles that Mattel announced in January would be on store shelves by the fall. Afterwards, the company would develop brand new software. They also promised that they would sell some 2600 compatible games but they didn't specify the exact titles. Mattel agreed to service Intellivision Inc. products and to manufacture software for the new company for one year.

Coleco also seemed to want nothing to do with videogames any more and put its first Adams into production at the expense of new Colecovision units. Unfortunately the first systems that came off the assembly line were loaded with bugs. Because Coleco had turned the Adam into a media event when it first announced the computer, the press was eager to report every difficulty that the company experienced. Although it wasn't unusual for a brand new system to experience bugs, Coleco received more bad publicity than other companies.

At the Winter CES Coleco informed the press that full production had resumed on the Adam. A few days later an announcement went out that the company had to cut its work force by 8% in a move to consolidate. Coleco had lost a lot of money by the end of 1983 because of the relatively few numbers of Adams that it shipped. In January the price of the Adam went up from $600 to $750 and

this didn't help its sales too much. Retailers and members of the press grew skeptical about Coleco's ability to produce and sell a decent machine in mass numbers.

Initially Coleco had promised to deliver 500,000 machines by the end of 1983 but this number was soon reduced to 140,000. The actual number that Coleco produced and shipped was 95,000. According to Coleco, the company wanted to make sure that the product that it delivered was as good as possible no matter how long it took.

Sixty percent of those first Adams were returned because they were defective. Coleco assured the public that the actual return rate was only 5% and that the problem was in the instruction manuals. New computer users simply couldn't understand how the system worked and therefore returned it as defective.

Unfortunately the problems didn't stop with the poorly written instruction manuals. Many experienced computer users also had trouble getting some of their software to load. Others claimed that the output from the printer was uneven letter quality and that it was very slow and extremely loud. The word processor erased some text from memory when it shouldn't have and there were reports of jittery screens and cursors that failed to move.

Consumers who received perfect computers also found minor inconveniences. For instance, if someone wanted to just play a game, he still had to first turn on the printer with a switch at the back of the unit. This turned out to be a useless, annoying extra step for people who only wanted to play games.

Their troubles didn't end once they turned the printer on. After that a game had to be loaded and this proved to be a very long and unreliable process. When Coleco had first announced its digital data device it promised that that would be capable of loading programs at very high speeds. Adam owners soon discovered that it took several minutes for a game to load. This was much longer than it took a cartridge or even a Supercharger tape to load (but still less time than it took other computers to load programs from ordinary tape drives). Once the game was loaded, it could be played normally although the data drive would continue to advance the tape as it loaded the next level of play into the computer. If the gamer wanted to restart a game he had to wait for the tape to rewind and then completely load it from the beginning again.

As a sidenote, it is important to mention that in January Commodore Computers fired its president and founder, Jack Tramiel. Although this announcement caused Commodore's stocks to drop it didn't affect the rest of the industry in the slightest. At least not at that time.

On January 1 Milton Bradley began distributing the Vectrex Game System itself after closing down its General Consumers Electronics division. That had been done in an effort to reduce costs. However in February the company learned that it had lost $18.7 million because of the Vectrex and decided to discontinue the unit. All in all the game company lost $31.6 million since it purchased GCE in 1982. The Vectrex was just another casualty in the videogame shake-out. It had originally been designed to sell at $200 but Milton Bradley had dropped the price to $150 and then $100 in an effort to make it competitive. Unfortunately even at that price the company couldn't sell enough of them profitably. Milton Bradley couldn't drop the price lower than $100 because of the high production costs due to its built-in vector monitor. Despite this explanation many industry watchers believed that Milton Bradley had an ulterior motive for dropping the Vectrex line. A merger was in the works between Milton Bradley and Hasbro: a company that had long displayed no interest in joining the electronic gaming arena. That merger actually took place in May 1984.

In March news from Japan announced that Nintendo was seriously thinking about releasing an

American version of its best-selling Famicom. Despite the Famicom's success in Japan, gaming analysts viewed this as a poor move on Nintendo's part. They felt that the Japanese company didn't know anything about the American market except its will to dominate it.

Atari, who once did dominate the videogame business, was forced to restructure and move the majority of its operations overseas. All that remained of the mammoth company domestically was its management staff and its new Ataritel division. Despite this, the company formed a joint venture with Activision to deliver 2600 games into homes electronically. This was not the first time that Atari had formed such a partnership and the prior joint venture that it had with Time-Life resulted in nothing. According to Atari and Activision, they wouldn't use cable or telephone lines to transmit their games. However the exact method that they were going to use was never announced. They projected that the system would be available nationally by the end of 1984.

At the Winter CES, Atari CEO James Morgan told the press that the company's new policy was to only display products that would be available within the following three months. This had been done to gain credibility with merchants who had grown tired of Atari's habit of displaying vaporware: products that never came to be. The true test of this new policy began in May when the first of a tide of new product releases was put out by Atari. On May 8 the company announced that it had signed a deal with LucasFilm to produce two new games for the 5200 and the computers. The games, *Rescue On Fractalus* and *Ballblazer*, featured extraordinary graphics and play action.

On May 21, Atari surprised the entire industry by announcing an entirely new game console, the *7800*. Atari didn't believe that the industry was dead at all. Twenty million game cartridges had been sold between January and April 1984 and over half of them had been sold at their full retail price. However it thought that the public was ready for a new product and so it commissioned a market study to find out exactly what the public wanted. Atari learned that what consumers were looking for in a videogame console was one that had a large base of challenging software including arcade titles, and one that could expand with the technology. With this information in hand, Atari' worked with General Computer Corporation of Massachusetts and came up with the 7800.

Atari 7800

Atari promised that the $140 7800 would feature the best graphics of any game console. To provide this, its designers developed a new 4K chip dubbed *Maria*. Maria gave the console the ability to move 100 objects on the screen at one time and to provide 256 color shadings.

Learning from its past mistakes, Atari made the 7800 100% compatible with the immense software library available for the 2600. Cartridges for the 2600 could fit in the 7800 but not vice versa. Atari also promised that 5200 owners wouldn't be left out thanks to a new adaptor that would allow 7800 games to be played on the 5200.

Atari announced twelve initial cartridge titles for the 7800 including the two new LucasFilm games. The console was to be initially packaged with a *Pole Position II* cartridge but later that game would be built-in. Atari also planned to release a special *High Score* cartridge that would allow players to record their names and high scores for up to 65 different games. Also planned was the *Terminal Cartridge*, which contained a modem and terminal emulator. The cartridge would allow owners of the 7800 to access on-line services like Compuserve and would even dial the phone just like the deceased Gameline.

Finally, Atari announced that there would be a $100 keyboard available for the 7800 by the end of the year. This would turn the console into a 4K (upgradeable to 20K) computer that would be compatible with all Atari computer software.

News of the 7800 had been received with anticipation. Ironically, the same skeptics who criticized Nintendo for thinking about bringing its Famicom to the United States praised Atari for what they believed was the console that would renew the dying industry.

While Atari was publicly announcing its new products it was secretly trying to find a buyer for itself as Warner Communications decided to finally unload what turned out to be a great money drainer. In June the company began talking with Philips, the parent company of Odyssey, who displayed interest in acquiring 50% of Atari. Videogame analysts soon began speculating what this marriage would create. Since the 7800 included an expansion port and Philips was the inventor of the laserdisc, it was conceivable that the two were planning a home laserdisc game player. At the same time, Atari announced that it terminated its agreement with Androbot; thus *Androman* was never released.

July brought another announcement of even more new releases for the Atari family of consoles and computers. The first was *Mindlink*, an extraordinary new controller. The Mindlink used a headband that detected electrical pulses in the head and then transmitted these signals to a receiver attached to the 2600, 7800, or Atari computer through the controller port. The Mindlink came with *Bionic Breakthrough*, a *Breakout* type game where the player used his head muscles to control the on-screen action. Although other titles weren't specifically announced, Atari said that future Mindlink cartridges would include programs where people could monitor their stress and relaxation, and interactive games involving ESP.

Atari Mindlink

On the software end, Atari announced a new generation of cartridges that contained a new chip (nicknamed *Sara*) that expanded the ROM of a standard cartridge. This resulted in enhanced graphics and more challenging gameplay. Atari also hired the child psychologist Dr. Lee Salk to develop a series of games for toddlers. The first was titled *Peek-A-Boo*.

While Atari was telling about all of its wondrous new products, it also officially announced what everybody had long expected; the death of the 5200.

The demise of the 5200 turned out to be the only announcement that proved true, despite James Morgan's promise. However the reason that the products never materialized was because in July Warner Communications divvied up Atari Inc and sold off most of the three established divisions. The new fourth division, Ataritel, died a quick death.

Sixty percent of the arcade division was sold to Namco, the Japanese arcade company that had ironically been partly owned by Atari Inc. Namco, now the majority owner, renamed the company Atari Games. Warner Communications retained 40% of the company.

Warner also kept 25% of the home videogame and computer divisions before selling the remainder to Jack Tramiel, the former head of Commodore computers. The new portion of the company that he bought was renamed Atari Corp.

Tramiel's first move with the company was to place his three sons into top positions and then stop

all projects so he could evaluate what was going on. He then laid off 75% of Atari's staff leaving only 350 people remaining. For several months following, word out of Atari was very scarce. There were rumors that the company was working on two new computers. One was a 16-bit that would sell for half the price of a PC or Macintosh. The other was a new 8-bit computer that would also have a cartridge slot for 2600 compatible cartridges.

As it turned out, the 16-bit computer was the same computer that the software company Amiga had developed. Instead of developing its own computer, Atari had planned to buy Amiga Corporation and release that company's computer. However while the two companies were negotiating, Commodore Computers managed to do some fancy negotiating of its own and wound up purchasing the Amiga computer. As soon as that sale was publicized Atari turned around and sued Amiga for breach of contract.

While Atari was suing Amiga, it and Warner Communications were sued by MCA for royalties due from the game versions of *E.T.*, *The Last Starfighter*, and *Dune*. The latter two games hadn't even been released.

FOCUS ON AMIGA

In 1982, Jay Minor, one of the original designers of the Atari 800, approached his bosses at Atari with an idea for a new game machine that would use a Motorola 68000 processor. After Atari said that the machine would be too expensive, Minor left Atari and quickly joined a new company, Amiga, that had been set up by three Florida dentists. After a group of designers was assembled, they spent the next two years creating the hardware and operating system for the game machine code-named 'Lorraine'.

In 1983 Atari learned about Lorraine and was impressed. Atari paid $500,000 to Amiga to assist in the development of the chipset. In return, Atari received the rights to release the new game console for a year. After the first year, Atari could offer a keyboard that would turn the game system into a computer. Atari could also sell the Lorraine computer as a whole. In addition to marketing the Lorraine computer. Atari paid Amiga $500,000 for these rights and also agreed to purchase Amiga stock. In effect, Amiga would be taken over by Atari.

After Jack Tramiel took over Atari, he made it clearly known that he was very interested in the Lorraine chipset, and just the chipset, not the people or company that created it. In order to save their jobs, the people at Amiga had to work fast. They quickly turned to Commodore, a company that had also been after Amiga's chipset. In an 11th hour move Commodore bought Amiga. The $500,000 that Atari paid to fund the development of the chipset was returned to Atari.

On November 13, 1984, Jack Tramiel held his first press conference where he announced that Atari was going to produce high-quality 16 and 32-bit computers that weren't intended to compete against the IBMs. After losing the Amiga to Commodore, Atari purchased an operating system from a company called Digital Research.

As far as videogamers were concerned, the news wasn't good. The company didn't have any plans to release the 7800 or any of the other new products that had been announced during the year. Nothing concerning the future of the 2600 was even mentioned.

One of the last projects that the old Atari Inc. released for the arcades ironically reaffirmed the fact that the company was as innovative as ever. Designed by Dave Theurer who had earlier designed *Tempest* and *Missile Command*, *I, Robot* was the first game that featured state-of-the-art 3D polygon graphics, a technique that was nearly ten years ahead of its time. This bizarre game, which borrowed features from earlier arcade games like *Galaga* and *Pac-Man* even had an option where players could doodle their own abstract polygon generated *art*.

I, Robot never caught on in the arcades. This was probably due in part to its unusual graphics and gameplay, as well as Atari's failure to heavily push the game into arcades during its last months. Only 1000 *I, Robots* were ever manufactured and half of them supposedly were exported to Japan.

As the home videogame industry was quickly becoming a thing of the past, one new innovative company decided to release the *Halcyon*, a laser-disk based system. The company, RDI Video Systems, was founded by Rick Dyer, the force behind 1983's arcade sensation *Dragon's Lair*.

The Halcyon had been in development for nearly five years and had not been released earlier because market research had determined that it was ahead of its time. Following the arcade success of *Dragon's Lair*, which had used the Halcyon technology, Dyer felt the time was ripe to finally release the home system. Dyer even felt that *Dragon's Lair* had been primitive when compared to the type of games that the Halcyon could produce.

RDI Halcyon

The Halcyon went on sale in late 1984 at test sites on both coasts of the United States with a staggering retail price of $2000! Two games were released along with the system. *Thayer's Quest*, a game that was bundled with the system, was similar to *Dragon's Lair* but unfortunately didn't have the benefit of Don Bluth's outstanding animation. The other game, *Raiders vs Chargers*, was a football simulation that utilized three seasons worth of video footage to produce an embarrassingly simple game. *Thayer's Quest* also featured demos of four other games that were scheduled to appear. None of them did. Only a few people purchased the system and by 1985 the Halcyon, as well as RDI Video Systems, were only memories.

The sad state of the videogame industry was reflected in the consumer magazines that served it. *Video Games* ceased publishing in the Spring and then returned with a Fall issue that wound up being its last. *Videogaming Illustrated* began the year with a new look and a new name: *Video & Computer Gaming Illustrated*. However this new computer gaming magazine only lasted two issues and folded in March. *Electronic Fun With Computers & Games* became simply *Computer Fun* in April but its last issue came out a month later. Only *Electronic Games* managed to stay afloat during 1984 but that victory was short-lived.

As 1984 came to an end, there were only three contenders left in the videogame console race and all three looked very uncertain. Atari, under the restructuring of Jack Tramiel, was very quiet about

its plans for 1985 and didn't release any new products at all. Coleco continued to market the Colecovision but seemed to put the thrust of its development and money into the Adam. Finally there was Intellivision Inc. which continued to sell hardware and software. As the year closed the company released a new cartridge that had previously been announced by Mattel; *World Series Major League Baseball*.

For all intents and purposes, the videogame industry looked as good as dead.

CHAPTER TWELVE
1985

In 1984, Nintendo had sold 2.5 million Famicoms in Japan and 15 million cartridges. Despite the prophecies of doom that it received, Nintendo believed that it could achieve those numbers in the United States also. At the Winter CES in January, Nintendo officially announced its plans to market the machine in the United States and Canada.

The Nintendo Advanced Video System (*NAVS*) seemed to be a step up from the American systems that practically couldn't even be given away anymore. While those machines had the capacity for 16 colors, the NAVS was able to generate 52 colors. This allowed for realistic 3D graphics.

The NAVS was totally wireless. Its controllers would use infrared light to send signals to the console. The controllers were also different in another respect. Instead of the popular joystick, the NAVS' rectangular shaped controller featured a touchpad that could move in one of eight directions. It was similar to the disc on the Intellivision's controllers but more precise. The controller also had two buttons for game starts and resets. A light gun was also going to be sold with the unit for target games such as *Hogan's Alley* and *Duck Hunt*.

Nintendo also announced a 3-octave music board that would be available optionally. Unlike Mattel's music keyboard that only operated with the Intellivision computer, Nintendo's keyboard could also function by itself without the console since it used batteries and had its own built-in speaker.

Like all the other companies that had released consoles since Mattel first announced the Intellivision, Nintendo promised a keyboard to upgrade the new console to a computer. It also planned a *Game Basic* cartridge so players could design their own games from scratch. For those who weren't creative enough to do this, Nintendo also planned an "Edit Series" of full action games that players would have the ability to modify (but not save).

Since a videogame console is only as good as its available software, Nintendo unveiled 25 cartridges at the CES. The large library consisted of many sports games such as Baseball and Tennis as well as arcade classics from the Nintendo catalog like *Donkey Kong*.

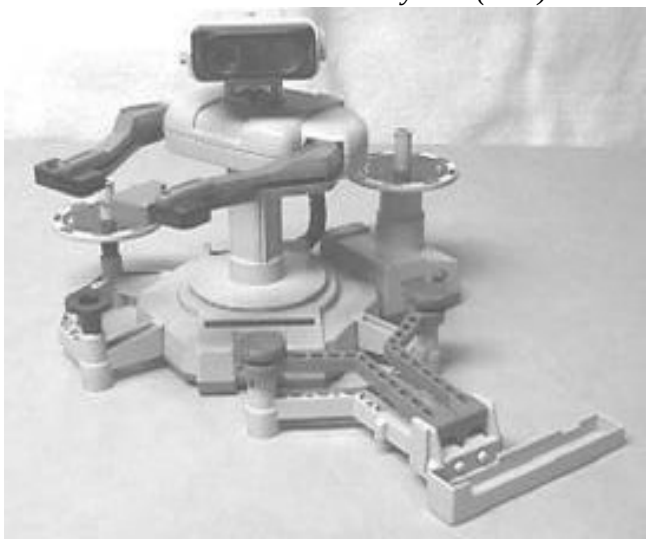
Despite the fact that videogames were selling so poorly everywhere, Nintendo received a lot of attention at the CES. That was good because most of the people who attended the CES were retailers who were out to purchase new items for their stores. Nintendo told these shopkeepers that the NAVS would be available by the late spring.

By the time of the Summer CES in June, the Nintendo game console still hadn't been released. Nintendo still had a booth at the show and its game console had some new features. Among them was a new name. Instead of the Nintendo Advanced Video System, it became the Nintendo Entertainment System (*NES*). A new release date of late summer had been announced and the initial number of cartridges had dropped to twenty.

Although the music keyboard had disappeared, Nintendo displayed a new peripheral; a ten-inch high robot called *R.O.B.* for *Robotic Operating Buddy*. R.O.B. was similar to Androbot's never released *Androman.* The Nintendo robot had the ability to assume sixty different positions as it responded to on-screen actions. Like the controllers, the robot was completely wireless.

R.O.B.'s. purpose was strictly to be a Trojan Horse. Since electronic retailers didn't want anything to do with videogame systems, Nintendo needed an angle to get its console into toy stores. R.O.B. was just the angle. Nintendo promoted R.O.B. as a toy. The console itself was incidental and just needed to operate R.O.B. Once Nintendo got the NES into toy stores it didn't plan on doing much with R.O.B.. Two games that utilized the robot were designed and four more were planned to be released by the

Nintendo Entertainment System (NES)



Nintendo ROB

end of the year. However Nintendo was certain that once people purchased the NES they would be hooked on its games and not its novelty robot.

Summer came and went without the appearance of the NES in any stores. Finally Nintendo announced that the console would be available in mid-October but only in the New York Metropolitan area. The national release of the NES was rescheduled for February 1986.

For $159, the console would come with two controllers, the *Zapper* light gun, the game *Duck Hunt*, R.O.B., and a game called *Gyromite* that used gyroscopes and R.O.B.

The release of the NES didn't send shivers down the spines of the other videogame manufacturers especially because there really weren't any left. Atari seemed to be out of the running since its new owner, Jack Tramiel, announced that he wanted his company to be a dominant force in the computer industry. As far as he was concerned videogames were dead and the future belonged to computers. Atari's future was questionable, however. In April, the company announced that it wouldn't attend the Summer CES. Atari appeared to be experiencing very heavy financial problems and industry watchers began wondering if the company would be able to produce the inexpensive 16-bit computers that it had promised. Atari did manage to ship small quantities of its new 130XE computer; an eight bit 128K that was the descendent of the old Atari 800 computer. Meanwhile, the company experienced more layoffs and the employees who remained discovered a 5-20% decrease in their paychecks.

During the same month, Coleco finally announced what everybody had been expecting for several months, the death of the Adam. However, the company did promise to continue developing software for both the Adam and the Colecovision. It proved this by releasing several new cartridges including *Jeopardy* and *Dragon's Lair*; the latter being the home version of the laser disc arcade game that Coleco had paid $2 million for. Since the game was released on a standard cartridge, the speculation that Coleco might be coming out with a laser disc interface for the Colecovision died. Coleco's future involvement in electronics was questionable, however. The only thing that had kept the company from declaring bankruptcy after pouring millions of dollars into Adam was the unprecedented success that it had with its Cabbage Patch Dolls during the preceding Christmas holidays.

The final videogame company was Intellivision Inc., which changed its name to INTV Corporation. By the beginning of 1985 the new company hadn't yet shipped anything and this led to speculation that it had gone out of business. However, when the American videogame business seemed completely dead, INTV finally began to stir. In October, the company announced the INTV System III, a brand new Intellivision console. Priced at $59.95, the console was to feature enhanced graphics and was to be compatible with all of the existing Intellivision software. INTV Corp. also planned to release all of the classic Intellivision titles at prices between $9.95 and $19.95 each. In the works was a mammoth advertising campaign in order to revitalize the stagnating interest in videogames.

Activision also believed that there was still a market in videogame software and in the summer it released two new cartridges for the 2600. However these two games, *Cosmic Commuter* and

Ghostbusters, didn't receive any advertising at all and had limited distribution. Activision clearly had not intended on reclaiming its former glory with these two titles.

Despite Nintendo's and INTV's belief that the videogame market was still alive and kicking, very few people in the industry shared this optimism. Videogaming's final knell appeared to ring when the title of *Electronic Games* magazine was changed to *Computer Entertainment* in May. The magazine was also given a complete facelift that resulted in a more sophisticated look to appeal to the average computer buyer. Unfortunately it didn't and the final issue of this pioneering magazine came out in August.

Computer Entertainment August 1985

CHAPTER THIRTEEN
1986

The Phoenix was a bird from Greek mythology that lived for five hundred years. It finally died in a funeral pyre of its own making. From the ashes of the dead bird a new Phoenix rose and lived another five hundred years.

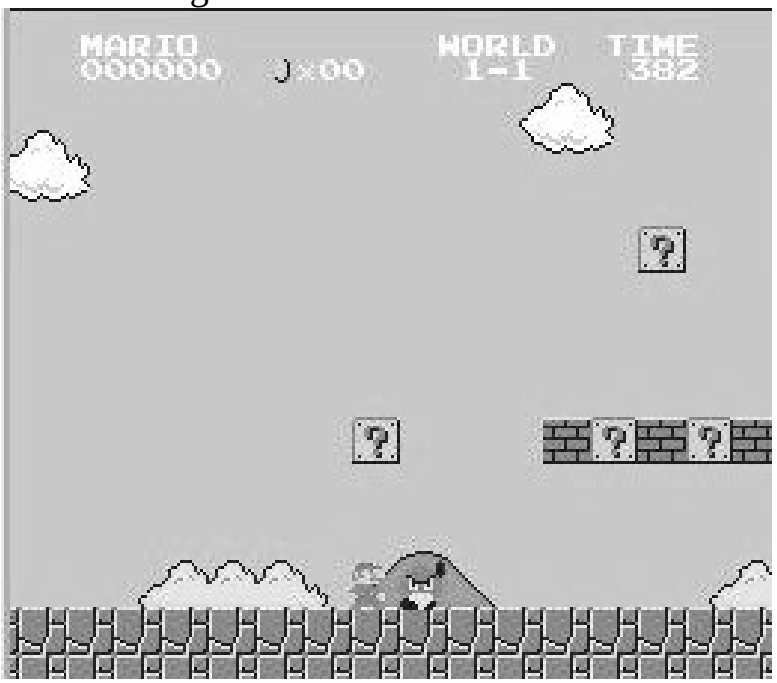
Like the Phoenix the videogame industry climbed from the embers of its own funeral pyre and began a new and prosperous life. At the 1986 Winter CES the talk among the attendees concerned videogames: the product that everybody had thought was dead.

To everyone's surprise Nintendo had a very good Christmas selling season test marketing the NES in New York. Videogame critics who bought the unit had raved about it so much that consumers in other parts of the country lamented over their inability to purchase it. At the CES, Nintendo's booth was overrun as retailers flocked to it to place orders on the machine that they believed would sell out as soon as it was available.

Much of Nintendo's surprising success was due to a carpenter named Mario. Originally referred to as 'Jumpman', Mario first appeared in 1982 in Nintendo's hit arcade game *Donkey Kong* as the man who had to work his way to the top of the screen to rescue his girlfriend from the giant ape. Mario appeared as a plumber with his brother Luigi a year later in *Mario Bros.* In this game, the two brothers had to battle attacking turtles within a sewer system. Like *Donkey Kong*, *Mario Bros.* was essentially a jumping and climbing game as Mario (or Luigi in two player games) had to jump over moving creatures and knock them out. Although the game didn't feature several different screens as *Donkey Kong* had, the play action was faster.

Mario Bros. was popular in the arcades and Nintendo followed it up with an arcade sequel that was unimaginatively called *Super Mario Bros.* This game took the basic jumping and climbing theme from *Mario Bros.* and transplanted the action to an entire scrolling world.

In 1985 Nintendo decided to include the *Super Mario Bros.* cartridge with the Japanese Famicom console. This decision proved to be an excellent one as thousands of people quickly went out and bought a Famicom. Many of them bought it simply to have *Super Mario Bros.* at home. They weren't disappointed because the home version of *Super Mario Bros.* looked and played exactly like its arcade counterpart. When Nintendo decided to repeat its Famicom success in the United States, it once again packaged *Super Mario Bros.* with the console. As the company had anticipated, many people bought the NES just to get the game.



NES Super Mario Bros

With the success of the Famicom in Japan, and the expected duplication of that success in the United States, it was only inevitable that independent companies would began producing their own software for the NES. It appeared to be 1982 all over again as third party companies scrambled to cash in on the success. However, despite the fact that the flood of third party software nearly destroyed the industry three years earlier, the third party NES software developers had the blessings of Nintendo. In fact, Nintendo even displayed these third party titles at the CES in small satellite booths within its own exhibit.

Naturally there was a reason for what seemed like madness on the part of Nintendo. The company, being well aware of what caused the great videogame shake-out of 1983, was determined not to let it happen again. In order to prevent third party companies from flooding the market with inferior software, Nintendo developed a processor that prohibited the NES from playing a cartridge that was manufactured by a third party company. A special 'lockout' chip inside the NES 'communicated' with similar chips that were inside every cartridge the company manufactured. If their signals matched, the game was playable. If the NES couldn't detect a signal because the cartridge didn't have the chip inside it then the game couldn't be played.

Nintendo was well aware that consumers demanded a vast selection of software when they purchased a game machine. The company also knew that the best way to offer a varied and unique selection was by having third party companies develop software. What Nintendo did was grant licenses to software developers and then manufactured the cartridges for them thus guaranteeing that the lockout chip was inside the cartridge. Nintendo claimed several reasons for doing this. The first was because it wanted to avoid another videogame shake-out. By manufacturing all of the cartridges, it had complete control on how much software reached the marketplace. It also claimed that it did this to prevent duplicate software from reaching the public. During Atari's heyday there had been five different baseball games available for the 2600. Nintendo didn't want this to be the case with its machine. The bottom-line, according to Nintendo, was that its policy of licensing games guaranteed the public that the game was good. Again, the company didn't want NES buyers facing the problem that Atari owners discovered: inferior software. As a way of showing the consumer that the game on the store shelf met Nintendo's strict conditions, it featured a gold "*Seal of Quality*" on its box. Of course at that time the public didn't know that Nintendo manufactured all of the cartridges no matter which software company was listed on the box. When they saw the Seal of Quality they really believed that the game went through stringent testing and had to be good. To them a company like Nintendo could do nothing but good if it went so far to protect its consumers.

Nintendo received nothing but praise. However other companies heard these raves and believed that they were for the videogame industry in general. Because of this belief Nintendo wasn't the only videogame company that had a booth at the CES.

Although Atari had set up an exhibit to display its new line of computers, it wound up putting those computers alongside 2600 and 7800 game machines. After the NES sold so well in New York, Atari had no trouble at all to quickly market its own videogame consoles since there were plenty of them stored in warehouses. Atari denied that it was the success of Nintendo that practically forced it to take the consoles out of mothballs. Its reason for doing so was because over one million 2600s had been sold in 1985. That was proof to Atari that there still was a market for good games and consoles and people were ready to trade up to the 7800.

Many attendees at the CES probably thought that they were in a time warp. While the 2600 sat on display in one booth, the Intellivision was in another. Like Atari, INTV Corp. also claimed to have a great year in 1985 with worldwide sales reaching $6 million. INTV displayed its new $59.95 *Intellivision III* as well as new game cartridges like *Pole Position* and *Super Pro Football*.

Contrary to what the spokesmen for the individual companies claimed, if it wasn't for Nintendo they wouldn't be selling games. If Nintendo hadn't done so well with its NES test marketing, Atari would have most likely shown only computers at the CES and INTV probably wouldn't even have been there.

Although videogame consoles were once again hot items, many consumers had trouble finding them. Since Nintendo's initial marketing campaign had done better than anticipated, the company felt that it couldn't produce the number of units that it now expected to be in demand quickly. In order to avoid an overall shortage the company decided to stall its nationwide release target date. Instead of

shipping the NES to the entire country at one time the company decided to gradually release it into the top twelve markets over a period of six months. At the end of January, Nintendo began shipping the NES to southern California along with fifteen cartridges.

After the units hit the stores, Nintendo announced that there wouldn't be any computer upgrade for the NES even though the console did feature expansion ports. Instead, the company promised a disk drive in time for Christmas 1986. Beyond that the company was tight-lipped although it hinted that it had an intriguing sounding five year plan set up for the NES.

In June Nintendo offered a new, less expensive way to purchase the NES for those who lived in an area where it was available. The new $99.95 package contained only the NES control deck with two controllers and a *Super Mario Bros.* game cartridge. The light-gun, robot and their respective cartridges were available separately. No matter how Nintendo packaged the NES it sold like hotcakes. By June the company had sold over 20,000 consoles in the United States.

Of course the videogame console field once again got cluttered. At the Summer CES another company announced a new unit that would join the NES, 2600, 7800, and Intellivision in September.

The company was the Tokyo based arcade company, Sega. Previously, when the company had been owned by Gulf & Western, its American subsidiary Sega Enterprises had produced home software for the 2600 and other machines. In 1983, Gulf & Western sold the subsidiary to Bally, which absorbed it. During the following year the parent company sold Sega of Japan to a group of Japanese investors. The company quickly set up a coin-op sales office in San Jose but that was the extent of its American interest. Like Nintendo, Sega also marketed a videogame console in Japan that it called the *Mark III*. Following Nintendo's American success during the 1985 holiday season Sega decided to once again have a presence in the United States so it could sell its Mark III. It quickly set up Sega of America and rushed to get the Mark III ready for a grand premiere at the CES in June.

By the time the CES came around Sega had renamed the American Mark III to the *Sega Master System.*

Sega Master System

The contents of the Master System were very similar to those of the Nintendo Entertainment System. It contained a Power Base console that featured 128K ROM and 128K RAM; two controller pads that looked and worked exactly like the ones for the NES; a light gun and a game cartridge. Sega also promised a number of peripherals that would be available by Christmas such as a track-ball Sports Pad controller, a Graphic Board for drawing pictures on the screen and a 3½ inch disk drive.

The Sega system was capable of playing games from two different types of software. The first was the standard $30 cartridge that could contain up to 1024K of code. The second type was a $25 credit card-sized Sega card that contained 256K of code. Although these numbers sound impressive it is important to note that they refer to the number of bits that the program contained, not bytes. Since every byte contains 8 bits, the amount of code that Sega's Mega cartridge really had was 128K ROM while the Sega card and Nintendo cartridges had 32K ROM. Although these numbers didn't sound anywhere as astounding as the numbers that Sega and Nintendo were citing, their games still contained twice the code than the most advanced Colecovision and 5200 games had.

Atari finally released its 7800 console at the end of June. Along with the console, the company offered only three cartridges: *Joust, Ms Pac-Man,* and *Asteroids,* a far cry from the fifteen titles that had been available when the NES first hit the shelves. Atari immediately released another three titles

and then promised that many more would be available during the following months. By September, only *Galaga* made it to the stores and three previously announced titles disappeared from Atari's list of upcoming games. Critics once again began accusing Atari of displaying vaporware at the CES. They also warned that in order for the 7800 to compete against the other systems at Christmas time Atari would have to release at least five more cartridges by the end of the year. Even if Atari managed to release the games it was questionable about how many retailers would carry them. The old Atari had lost its credence with retailers by displaying products that weren't anywhere near ready. Now the new Atari seemed to be playing the same game. Retailers didn't want to stake their profits on products that they didn't even know if they would receive.

Atari also played the same games with the 2600. The company released a newly designed 2600 that resembled a small 7800 and retailed for less than fifty dollars. The console was targeted for lower income households that couldn't afford the higher priced consoles. To accompany the new thrust that Atari placed on the 2600, in July the company announced that it was negotiating with INTV about licensing some Intellivision titles for the 2600. Atari was so confident that the licensing deal would go through that it included the titles of the INTV games on its lists of upcoming games that it sent to dealers. The licensing never went through and the titles were eventually dropped from the dealers' lists. Since the 2600 was no longer a hot machine very few retailers suffered because they couldn't obtain those games. The new companies like Nintendo and Sega respected their dealers and only announced products that would be readily available.

While Nintendo and Sega introduced their new wares, INTV reintroduced its products. The company released its Intellivision III nationally in May and it released two long awaited cartridges, *Hover Force* and *Super Pro Football*, in October. It also announced that it would introduce a brand new INTV System 4 game console and at least nine new cartridges at the upcoming Winter CES.

While electronic videogames were going full stream ahead, another form of videogame also became popular: videotape games. Videotape games were similar to the laser Mysterydiscs although they couldn't offer the benefit of instant access. However since the majority of the population owned video cassette recorders instead of laserdisc players, videotape games were the only types that were available to them.

Parker Brothers released *Clue*, the first videotape game, in 1984. During the following two years Mattel and several other companies joined the throng. Unlike videogames where the action took place solely on the screen, the videotape games were more closely related to the old Odyssey Master Strategy Series that took place on a screen and on a game-board. Most of the games came with game-boards, playing pieces, and a 45 minute or one hour videotape. Unfortunately, unlike the Odyssey games that could be played an infinite number of times and always be different, the videotape games had been limited in their playability. Since the same videotape had to be played each time, it wasn't too long before the action became repetitious and the game got relegated to the closet. Some companies took the approach that the Mysterydiscs used where there were a multiple number of different scenarios but the same problem arose when all these different versions were played out.

Despite these drawbacks the videotape games sold very well. Because the videotape games grew in popularity, the vastly superior videodisc games faded from the public's eye. The two Mysterydiscs wound up being the only bonafide game discs that were released. The reason for this was because the public had failed to accept the videodisc format itself. Since very few households had one, developers weren't eager to spend their time and money creating game discs that probably wouldn't sell.

While the public ignored the videodisc, it went crazy over the audio laser disc that had been developed by Philips and Sony and first released in 1984. Like the videodisc, the audio disc utilized a laser beam to read information that a computer decoded and translated into something that the

consumer was familiar with. In the case of the audiodisc it was music. Because the audio disc was only five inches wide it was called the *CD* (Compact Disc).

Because CDs were encoded with digital information, streams of bits, it wasn't long for developers to realize that computer information could also be stored on the tiny discs. By 1986 companies began manufacturing CD players for computers because one CD-ROM could store millions of more bytes of information than a floppy disc. The only drawback with the CD-ROM was that data couldn't be saved to it; only read. This proved a drawback to the CD as a mass storage device for computer users but it was just the thing that software developers were looking for. Before long, software such as the entire Groliers encyclopedia was available on one CD-ROM. It seemed like the sky was the limit on what could be available on CDs and one of the things that developers had their thoughts focused on was games. Since a CD was able to contain thousands of time as many bytes than a ROM cartridge, there was no telling what kind of games they could produce.

CHAPTER FOURTEEN
1987

When 1987 began videogame consoles were once again selling at a phenomenal pace. In the six months since the 7800 became available, Atari sold 100,000 of them. Sega managed to sell 125,000 Master Systems in only four months! Still, the clear winner seemed to be Nintendo, which sold 1,100,000 NES consoles in just fourteen months! Following the doctrine of 'if it's not broken, don't fix it', Nintendo didn't plan anything new (besides software) for 1987 and continued selling its consoles at the incredible rate that it was enjoying.

Riding high from the resurgence of videogames, INTV found itself with an incredible amount of backorders because it couldn't produce software fast enough to satisfy the demand. The company displayed nine new Intellivision titles including *Tower of Doom*, a game that INTV claimed was more complex than any other game ever designed for the Intellivision.

INTV also displayed its new INTV System 4. The new console looked just like the System III (which looked exactly like the original Intellivision) but also included detachable controllers, a real-time clock and fewer microchips making the system easier to repair. The System 4 was totally compatible with all Intellivision software except for the computer keyboard and its related software.

Interestingly, the Intellivision's former owner Mattel debuted a new type of videogame at the Toy Fair in February. Their new *Captain Power* toys consisted of $30 hand-held spaceships that were used in conjunction with a Captain Power TV series. During certain segments of the TV show children had to shoot light beams from their spaceships towards the television and shoot down the on-screen enemies. While they did this their scores were tallied on a scoreboard built into the spaceship. The Captain Power toys and show evoked much controversy as parents complained that there was too much promotional tie-ins between television programs and toys. What the Captain Power show did in effect was force parents to go out and buy the toys so their children could 'watch' it.

Mattel Captain Power

Atari, which had the most to lose with the success of the other videogame companies, struggled to compete. At the Winter CES the company claimed that it had sold out all of its 2600 and 7800 game consoles in 1986 and looked forward to another great year. Thanks to the continued interest in the 2600, Atari displayed *Jr. Pac-Man* and two other games for the machine. The new cartridges were priced at $10-15 making them a good deal cheaper than the Nintendo cartridges that were retailing for over $30. For the 7800 Atari planned eight new cartridges for 1987 and all of them carried a retail price of $15.

To the surprise of everyone, Atari displayed a mock-up of a brand new $129 game console that was incompatible with both the 2600 and 7800. The company named the new console the *XE Videogame System* and it was essentially an Atari 65XE computer without a keyboard. Ironically, Atari also displayed a number of peripherals for the new console and one of them was a plug-in keyboard that turned the game machine into a computer. Other peripherals included a joystick; cassette tape drive; light gun and two disc drives. The console was capable of playing all of the software that was

Atari XE Game System

available for the Atari 8-bit computers.

The big question was who did Atari have in mind when it designed the new console? If consumers wanted a computer they could just go out and purchase the XE computer. If they just wanted a game machine they could buy a 7800. Atari explained that the XE Videogame System was for people who weren't ready for computers and didn't want anything to do with them. If that was so, why was Atari including a keyboard, which in effect turned the game system into a computer? The general response by the attendees of the CES to the new game system was one of amusement and everybody felt that it was sure to be a disaster. Of course nobody forgot Atari's policy of displaying products that it never intended to release and many felt that the XE Videogame System was just another one of those products. Since it was just a mock-up many people felt that Atari only displayed the XE Game System at the CES to test the attendees' reactions to it. Based on these reactions Atari could then decide if it should go ahead with the product or not. If that was the case then the CES should have been the only time that the XE Videogame System was shown.

Unfortunately it wasn't. Atari once again displayed the XE Videogame System the following month at the Toy Fair. Absent were the many computer peripherals that had been shown at the CES. Atari now decided to package the console with the keyboard, joystick, light-gun and a cartridge.

By the time of the Summer CES, the XE Videogame System was a definite release on Atari's schedule. With a suggested retail price of $150 the final production model had *Missile Command* built into it. The company also supplied *Flight Simulator* and *Bug Hunt*, a game that used the light-gun, on cartridges. Although Atari planned to transfer 50 existing disc-based computer games to cartridges for play on the XE, it once again promised an optional disc-drive. However this promise had been taken with a grain of salt by the dealers who were skeptical about anything that Atari said. High in their memories were the false release dates promised by the old Atari. Although they hoped that the new Atari would be better with its promises, they were very pessimistic concerning the future of the XE Videogame System.

Atari 2600 Jr.

Atari also displayed new software for the 7800; the console that didn't have any new software released for it during the preceding eight months. Atari promised three new cartridges by the end of the summer but they were never released at that time. Owners of the 7800 didn't see any new 7800 software in the stores until after Christmas. However, since the 7800 was compatible with 2600 cartridges, they at least were able to purchase new software that Atari announced for that system. All in all the company promised sixteen games for the 2600. Included in that number were several previously released games that Atari licensed from other companies. From Coleco, Atari bought the rights to *Donkey Kong* and four other titles and it licensed *Q*Bert* from Parker Brothers. At a time Nintendo and Sega were releasing games that were at the forefront of technology, Atari was unloading four and five year old games that had already been considered archaic only months after they had first been released. However they were making a push to revive life in the ancient 2600.

Early in the year the company released a new redesigned Atari 2600 that it called the *2600 Jr*. The new unit was much smaller than the previous model and cost under $50.

Exus Foot Craz Activity Pad

Surprisingly, several other third-party companies began releasing software for the 2600 for the first time. Epyx, the computer software company that had taken over Starpath, released two of its hit computer games; *Summer Games* and *Winter Games*. Froggo Games, a new software company, released several games that weren't new but were available for the first time. *Karate* had been announced by Ultravision in 1983 but had never been released. Three other games: *Cruise Missile*, *Sea Hawk*, and *Sea Hunt* had been put out by a Japanese software company called Sancho in 1984 but they had never been available in the United States before. The two remaining games that Froggo Games released weren't new in the United States as they had been released previously by other companies under different names. *Spiderdroid* was really Parker Brothers' *Amidar* and *Task Force* had previously been released by Spectravision as *Gangster Alley*. The third distributor of 2600 compatible software was an unknown company called Exus Corporation, which released two cartridges; *Jogger* and *Reflex*. The two cartridges were sold together with the *Foot Craz Activity Pad* that plugged into the controller port. Like Amiga's Joyboard, the Foot Craz was a controller that had to be stepped on in order to make it work. The player used the activity pad in conjunction with the two cartridges in order to exercise.

Nintendo owners were also able to buy a controller mat for the NES. This one was two-sided and had been released by Bandai, an NES licensee. It was part of a *Family Fun Fitness* package and came with an *Athletic World* game cartridge. One side of the mat displayed eight control circles that caused an on-screen character in *Athletic World* to do different things depending which one was stepped on. The opposite side of the mat had twelve numbered squares that games in development such as *Stadium Events* and *Aerobics* would use. The mat plugged into the second controller port of the NES and worked in tandem with a standard controller that plugged into the first port.

In August, Tonka Toys, a major manufacturer of toys and games (and the parent company of Parker Brothers), bought the US sales, marketing and distribution rights to the Sega Master System from Sega of America. After the sale, Sega of America continued handling the warrantees and Sega of Japan continued designing and manufacturing the software. Sega sold the rights to Tonka because the toy company had a favorable reputation with retailers and was able to get the Sega Master System into more stores where it could compete better against Nintendo.

One of the first peripherals that Sega sold after joining with Tonka was a pair of eyeglasses that when worn, allowed special games to appear in 3D on the TV screen. The Sega glasses weren't anything like the cardboard 3D glasses that had been around for years and simulated 3D by using one red and one blue lens. Instead it used LCD technology and looked much like a pair of expensive sunglasses. The glasses plugged directly into the Sega Master System with an attached Sega Card and were very comfortable even after hours of play. Of most importance to many people was the fact that the 3D glasses even worked perfectly when worn over a pair of normal eyeglasses.

Atari released the XE Game System in November and the response was far less than the company had hoped. Critics tore the machine apart in their reviews of it. On the hardware side, they were dissatisfied because the XE came with the same ten year old joystick that accompanied the 2600. The XE itself wasn't even really new since it was really an XE computer which was basically a descendent of the Atari 400 that had come out in 1978. As far as the included software was concerned, nobody

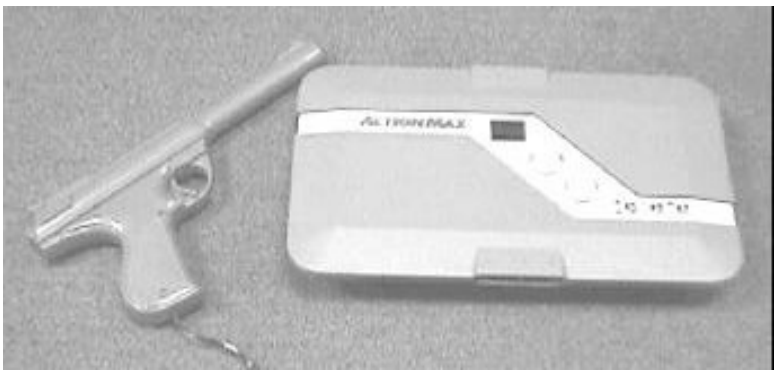
Sega 3D Glasses

was happy with the built-in *Missile Command*, which was the same exact version that the company had released for its computers back in 1981. If Atari had really been serious with the XE Game System, it would have at least chosen a modern game to accompany the machine. *Flight Simulator II* received good reviews but it was also an old game that was available as a cartridge for the first time. The only new game was *Bug Hunt*, which unfortunately contained a real programming bug. The entire screen flickered every time a shot was fired from the light-gun.

Atari released other software for the XE but all of them were old game cartridges like *Pac-Man* and *Asteroids* that had been available for the computers for several years.

Atari didn't even bother to change the original packaging that they came in. Instead, a label had been placed on the boxes that said the games were also playable on the XE Game System.

Videogamers wanted the most advanced product with the most available software and the XE was far from being an advanced product. As far as the software went, that remained to be seen. Privately, most people were betting that Atari had once again released a console that they wouldn't be able to support.


WOW Action Max

As Atari marketed the XE Game System to a skeptical audience, Worlds of Wonder released a brand new videogame console that it called *Action Max*. Like the other videogame consoles, Action Max came with a light-gun. However that is where the similarity ended. All of the games that were played on Action Max utilized the light-gun.

The games for Action Max came on VHS videotapes instead of cartridges and the console had to be hooked up to a video tape player as well as a television. As a tape played, the gamer had to shoot at live action targets that appeared on the screen. A red light on the console lit up whenever a target was hit.

Action Max suffered from the same fault as other videotape games: the games became very predictable after only a few plays. Although Worlds of Wonder announced an ever-growing library of new titles, only a few were actually released due to financial problems that the company fell into while developing the new console. Although the console reached stores, without the benefit of any advertising it eventually wound up in the discount bins.

When Nintendo of America sold out of its hardware and software by September, it turned to Japan for more supplies. Unfortunately it couldn't receive enough additional products to fill the demand because other Nintendo subsidiaries in Canada, Europe, and Japan were desperately seeking merchandise also. Despite a shortage of equipment, the Christmas buying season turned out to be a great one for Nintendo and the videogame business in general. To no one's surprise, the NES wound up being the best selling toy of the season in both dollars earned and units sold. The company estimated that it sold three million consoles and fifteen million cartridges in 1987. Six million of those cartridges were by third party manufacturers.

Atari also sold out its supply of 1.5 million consoles but that number included the XE Game System, the 7800, and the 2600.

Sega didn't sell out its entire stock but came close. Its retail sales from July, when Tonka took over its distribution, to December totaled $90 million, 20% higher than the company had anticipated. Many of its games were in such high demand that Sega had to allocate them.

As proof that the videogame industry was once again healthy, the October issue of *ANALOG Computing*, a magazine for Atari computer users, began a new column called *Video Game Digest*. *Video Game Digest* told about the latest videogame news and software reviews for all of the videogame systems. Long time gaming fans were pleased to see that the column had been written by Arnie Katz and Bill Kunkel, the two men who founded the first videogame magazine, *Electronic Games*. A question was posed to readers whether they wanted the column to continue or whether they wanted a separate magazine devoted only to videogames. Unfortunately, *ANALOG* disappeared from the stands after that issue. Although the videogame industry appeared to be on the rebound, Atari computers were no longer popular.

It seemed like the great shake-out of 1983 had never happened. Many dealers felt that with the knowledge of what happened in 1983, they were able to prevent another shake-out from occurring again.

The 1983 crash had been caused by an overabundance of software on the market. Nintendo had announced time and time again that because of its licensing policies, it regulated the number of cartridges that were available to the public. There wasn't any danger of an avalanche of Sega or Atari titles because very few third-party developers took an interest in those systems. Most developers were prohibited from developing software for competing systems because of their agreements with Nintendo and they had to abide by Nintendo's demands because that's where the money was.

However, there was still a danger of overabundance on the hardware level. By the end of 1987 there were four companies producing non-compatible consoles and all of them used technology that was over ten years old. For 1988, the companies planned to bring out up-to-date hardware that had the potential of making the consoles that were on the market obsolete.

Until then it was business as usual. The companies intended to make every dollar they could from products that were about to become outdated.

CHAPTER FIFTEEN
1988

The Nintendo booth at the Winter CES was alive with activity as the company and twenty licensees displayed all of the new products that they planned to introduce during 1988. Although Nintendo manufactured and distributed the cartridges for all of the licensees, they supplied each of the third-party companies with the dates that their new software would be shipped to the stores. Because Nintendo wanted an amiable relationship with its licensees, retailers, and customers, the company was very good when it came to meeting the release dates that it promised. Unfortunately Nintendo couldn't meet the 1988 ambitious release schedule that it had announced.

The reason for this was because a severe chip shortage caught Japan in its grasp. Although the shortage affected Sega and Atari to a minor degree, Nintendo was hurt dramatically because it produced the most cartridges. The shortage began early in the year and lasted throughout most of 1988. This forced the companies to delay production of their most awaited titles until 1989. One of those titles was *Super Mario Bros. 2*; a sequel to the hit game that accompanied all NES consoles. *Super Mario Bros. 2* was originally supposed to have been released in March but the chip shortage pushed that release date into October. When the cartridge was finally distributed it was allocated to retailers in such limited quantities that on its release day, many people lined up at stores hours before they opened in order to purchase one.

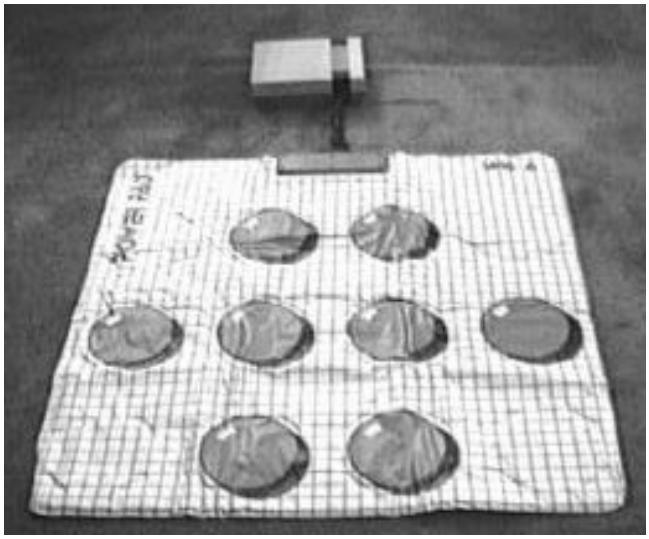
When 1988 began there were twenty licensees producing software for the NES. This can be compared to the 28 companies that had produced software for the Atari 2600 in 1983. Many people in the retail industry feared that this vast number of companies would lead to an eventual demise of games once again. Nintendo assured them that it had a number of safeguards in place to prevent that from happening again.

The first was the security chip that Nintendo built into its console and software that prevented unauthorized companies from manufacturing NES cartridges. Nintendo claimed that by granting licenses to software companies they were able to screen out the bad games and release nothing but the best titles. Because only Nintendo manufactured the software for the third-party companies, they also limited the number of titles that a licensee could produce. This was done to prevent a glut from taking over the marketplace.

Because of Nintendo's safeguards on software, many people in the industry doubted that there could be another shake-out on the scale of the one in 1983. Nobody ever considered that there could be a potential glut in hardware. With four incompatible systems in the marketplace, it was conceivable for such an oversaturation to occur. However since Nintendo had such a tight reign over the market, the chances of it happening were very slim. The Sega, Atari, and Intellivision consoles didn't sell in the sort of numbers that made third-party companies interested in them so they didn't threaten to produce an overabundance of software.

The only reason that Nintendo was leading in the videogame race was because it had revived the industry and had all of the major software titles behind it. Many critics insisted that the Sega Master System was slightly better than the NES in playability and graphics but that didn't deter the majority of customers from buying the NES. As far as kids were concerned, peer pressure resulted in the purchase of an NES. How could a kid who owned a Sega expect to be popular when all of his friends had a Nintendo? To own an Atari was unthinkable! In fact, an entire new generation of videogame players didn't even know what Atari was. Sure, it was the company that made the neat games for the arcades; but for the home? Impossible!

What this new generation of gamers didn't realize was that Atari Corp. was a descendent of the company that built the videogame industry in both the arcades and the home. Atari displayed only videogames at the Summer CES. It tried to recapture its former glamour by announcing that it had hired Nolan Bushnell to design new games for the 2600 and 7800. It also previewed 45 new titles for its three consoles.



Nintendo Power Pad

If the announcement by Atari was supposed to scare Nintendo, it didn't work. Nintendo responded to the threat by buying the rights to Bandai's Power Pad from Bandai and then packaging it with the NES. The $179.95 package, which also included two controller pads and a light-gun, was called the *Power Set*. *World Class Track Meet*, a track-and-field game that incorporated the power mat, and the old familiar NES inclusions; *Duck Hunt* and *Super Mario Bros* were also included in the Power Set.

Nintendo announced that two more cartridges that used the pad would be available when the new Power Set arrived in the stores. It also promised that its new software would be compatible with the pad that had been previously marketed by Bandai.

Nintendo's huge share of the American market made it practically impossible for any other company to topple it. Since the competing consoles all had 8-bit processors no console had a technological advantage over any other. The only thing that could scare Nintendo was a machine by a competing company that was a vast improvement over the NES.

The first of the potential threats was the *Control-Vision*, a new interactive system from Hasbro Electronics that had been developed by Nolan Bushnell's Axlon company. Unlike the consoles that were already on the market, the Control-Vision was going to use videotapes. Axlon developed a compression routine where five full-motion video tracks and 16 digital audio tracks could be crammed together on one videotape without any loss of quality. In addition, the system could switch back and forth between the 21 tracks instantaneously. In addition to the video and audio, the videotape would also contain the program code. Hasbro claimed that the new system would be a cross between a movie and a videogame. Two games, *Night Trap* and *Sewer Shark*, were produced at a cost of $4.5 million and more games were scheduled to follow.

Although the Control-Vision was scheduled to appear on store shelves in early 1989 it never happened. Hasbro had originally hoped to sell the system for $200 and intended to market it directly against the NES. It turned out the cost of dynamic RAM (DRAM) was more expensive than Hasbro had anticipated and there was no way that the company could release the system for less than $300. Nobody at Hasbro or Axlon felt that the system could ever succeed at that price so the project was scrapped.

It was ironic that Hasbro had been trying to market an electronic game in the first place. Hasbro had traditionally avoided electronic games and Milton Bradley had even dumped its Vectrex system in 1984 as it tried to woo the company. By coincidence Hasbro wound up with a second videogame manufacturer in 1988. When Coleco finally filed for bankruptcy in 1988 Hasbro was waiting in the wings to pay $85 million for the right to Coleco's spoils.

Nintendo never shuddered from the Control-Vision. However Nintendo did sit up and take notice when NEC, a major manufacturer of computers worldwide, released a new videogame console called the *PC Engine* in Japan only. Nintendo feared the PC Engine because it featured 16-bit graphics.

A bit is a unit of information that a computer uses for storage and data. In an 8- bit computer, the

data gets processed 8 bits at a time. A 16-bit system, as its name implies, can process 16 bits of data. Since it processes twice as much data as an 8-bit machine in the same amount of time the CPU works twice as fast. The result of this is faster games.

The PC Engine had an 8-bit processor so it wasn't any faster than any of the other systems. However it had a separate 16-bit graphic processor. This meant that the console was able to deliver more information to the screen such as an array of colors. It is easy to explain in simple terms how this is possible. An 8-bit system sends data to the screen in units of bytes that consist of 8 bits. Each bit can be either turned on or off. A byte contains 8 bits allowing for 256 different possible on-off combinations, each standing for a different character or instruction code. However the PC Engine sent data to the screen in 16-bit words, which meant that over 65,000 different combinations could be sent to screen. Since many people judge a console on its graphics, this was a major advantage for the PC Engine.

Despite the potential of the PC Engine, at this time NEC didn't have any plans of exporting the machine to the United States. As far as the Japanese were concerned, Americans weren't ready for the power of the 16-bitters.

Soon after the PC Engine began hitting the shelves Sega of Japan announced its own 16-bit videogame console that it said would be released by the end of October. The new nameless console would accept its own cartridges, as well as software that was available for the Japanese 8-bit Sega Master System. Unlike the PC Engine that only featured 16-bit graphics, Sega's new machine would also boast a powerful 16-bit processor. Like NEC, Sega didn't say if and when the new machine would be available in the United States.

Nintendo found itself one step behind Sega and NEC. Rumors circulated that Nintendo would announce its own 16-bit machine in November but that month came and went without any news. Industry analysts felt that if Nintendo didn't come out with its own 16-bit system right away, it wouldn't have a chance in the upscale console market when it did decide to release one. Just like the NES stole the thunder from the other 8-bits because it was the first of its kind, industry insiders speculated that the same principle would work against Nintendo in the 16-bit market.

Regardless of what Nintendo of Japan decided to do, Nintendo of America had its hands full with a $100 million lawsuit filed by Atari Games on December 12. Atari Games was the arcade company and not the Atari that manufactured the 2600, 7800, and computers. Atari Games had a subsidiary called Tengen, which was a licensee of Nintendo compatible games. Atari claimed that it lost a lot of money because of the stringent demands that Nintendo placed on its licensees. Because Nintendo manufactured the cartridges for all of the third-party software companies, Atari felt that the company had a monopoly that eliminated competition.

While it was filing the suit, Atari announced that it had found a way to bypass the special circuitry that had prevented companies from manufacturing their own NES compatible software. The company announced that the first games that Tengen would manufacture on its own were *Pac-Man*, *Gauntlet*, and *RBI Baseball*; three titles already licensed for play on the NES by Nintendo. Atari also planned to break from Nintendo's strangle hold by distributing its games itself. The company felt that this would increase its visibility since Nintendo tightly controlled the number of cartridges that a licensee was able to produce. Last of all, Atari planned to manufacture its cartridges in the United States.

After the lawsuit was filed and shortly after the announcement of Atari's 'independence' from Nintendo, the public awaited a retaliatory move by Nintendo. The videogame giant remained quiet for the time being, anxious to let developments follow their own course and see where they lead.

As Atari Games battled Nintendo for the right to manufacture home videogames, it learned that it suddenly faced less competition in the arcade world. This was due to the purchase of Bally/Midway

by Williams.

Williams was one of the oldest arcade companies in existence. It had been founded by Harry Williams who in 1929, purchased a franchise for a coin-operated game called *Jai Alai*. The company started as the Automatic Amusement Company when Williams developed his first game, *Advance*. In 1933 the company became the first to offer pinball machines powered by electricity and to prevent cheaters, Williams introduced the *tilts* to pinball.

During the fifties and sixties Williams was a leading pinball manufacturer but it never became as well-known as its leading competitor, Bally. Williams followed the trend in the mid-seventies and released its first arcade videogame. *Paddle Ball* was such a rip-off of *Pong* that even the cabinets of the two arcade machines were similar. Needless to say *Paddle Ball* was not a success. Williams stayed away from videogames for the next several years until 1980 when it released *Defender* amid mixed feelings. Fortunately *Defender* struck gold.

As Williams diversified into different areas such as slot machines, lottery terminals and hotels and casinos, the corporate name was changed to WMS although the arcade division remained as Williams. In 1988, with the purchase of Bally/Midway, the company became the world's leading arcade manufacturer. From that time on Williams once again became a pinball company as WMS used the Williams and Bally names exclusively for pinball machines and the Midway name for its arcade videogames.

On the print side, *ANALOG Computing*, the magazine that had the new column *Video Game Digest*, reappeared on the stands in April under new ownership. The column appeared in three more issues of *ANALOG*. In November, the publishers of *ANALOG* went ahead and launched a new magazine, *Videogames & Computer Entertainment*. Arnie Katz and Bill Kunkel were once again at the helm of a major videogame magazine.

VGCE November 1988

The videogame market was alive and well and appeared to do even better than it had during its heyday of 1982 and 1983. However despite higher sales, Nintendo only had an estimated 11 million control units in American homes. This was nowhere near the 30 million 2600s that Atari had sold in the ten years since that unit had been introduced. Although the NES seemed to be more popular then the 2600 ever was, it was doubtful that Nintendo could ever claim the numbers that Atari was able to purport. The new era in videogames was expanding much more rapidly than anybody could imagine. With the powerful 16-bit machines on sale in Japan, the foremost question on everybody's lips was how long it would take these consoles to reach the United States.

CHAPTER SIXTEEN
1989

When the 2600 ruled the videogame empire many third party companies tried jumping on to the bandwagon by releasing new controllers or adapters for the console. In 1989, the NES inevitably proved that it reigned over the videogame industry. The past then repeated itself as companies again raced against one another to produce new types of controllers for the leading Japanese game console. The first of these new products was unveiled to the public at the 1989 Winter CES.

LJN's *Roll & Rocker* was very similar to Amiga's Joyboard as a player had to stand on it for it to work. However, while the Joyboard replaced the Atari standard controller, the Roll & Rocker worked along-side the Nintendo controller. Once the standard controller plugged into the Roll & Rocker, gamers could simulate real skateboarding or surfing action depending upon which cartridge they plugged in. In two player games, players could plug two Roll & Rockers into the NES so they could compete against each other head to head.

LJN Roll & Rocker

Broderbund publicized its *U-Force* controller as the "Force Field Controller" because it could detect the motion, velocity, and direction of hand movements. What this meant was that the U-Force allowed gamers to control the action on the screen without having to hold anything in their hands. The U-Force recognized wavings of the hands and sent translated signals to the NES, which duplicated them on the screen. The action was most apparent in boxing games such as *Mike Tyson's Punchout* where an on-screen boxer instantly imitated the punches that a gamer had made in the air. For other games, a series of switches on the U-Force allowed gamers to configure it to fit their needs. The unit also included a T-bar that screwed into its base so players would feel more comfortable with driving and flying games.

Broderbund planned to release the $69.95 U- Force in May. The company was so optimistic about the unit that they expected to sell between 500,000 and 750,000 controllers before the end of the year.

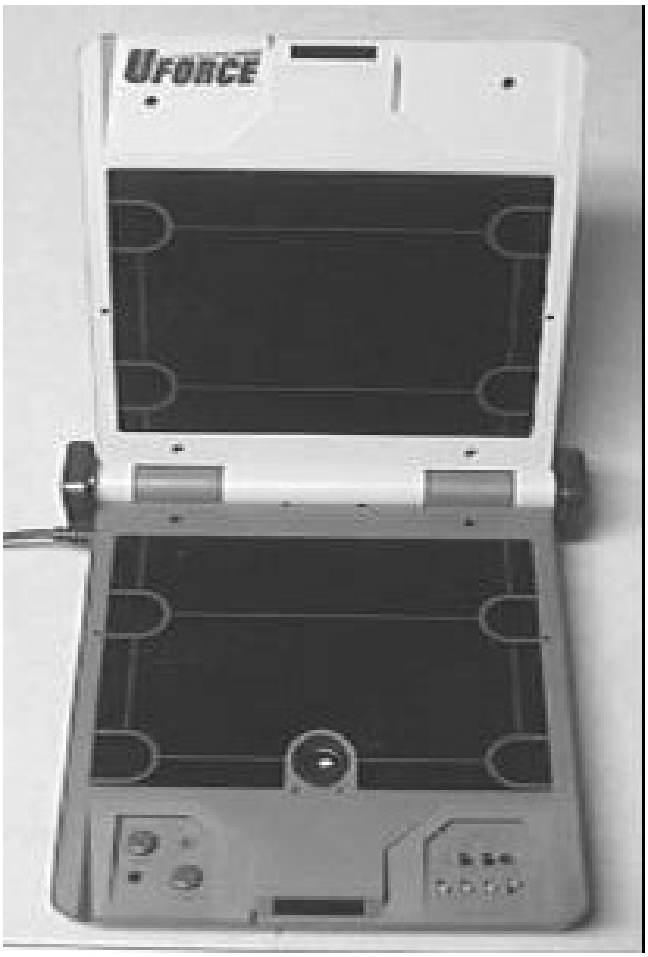
Shortly following the U-Force's introduction, Mattel reemerged from videogaming isolation to market a controller that was very similar to Broderbund's remarkable innovation. The *Power Glove* fit exactly like a glove over a player's right hand (sorry lefties) and controlled on-screen movement by the movements of the player's arm and hand.

It was merely a coincidence that Broderbund and Mattel released similar 'hands-off' controllers within a few months of one another since both devices had taken years to develop. As it turned out, the Power Glove had been designed by VPL Labs for NASA who had wanted to use it as a way to repair satellites that were out in space. The movement of the astronaut's hand within the glove sent signals to a remote device. This device caused a robotic hand to move in the same manner that the astronaut moved his own. Eventually VPL Labs licensed the glove out to Abrams/Gentile Entertainments who then negotiated with Mattel to develop applications to bring the glove into the home. The result was the Power Glove.

Before the Power Glove could work, the gamer had to attach a sensor device to the top of his television and to the NES. Once it was set up, it was able to monitor independent sensors that were inside the glove and thus determine what action was to take place. However before a game could be

Mattel Power Glove

played, the gamer had to input instructions into the glove that told the sensor device what every movement meant. Attached to the glove was a built-in keypad that contained its own microprocessor for this purpose. Once the sensor device was able to understand what the different movements meant, it sent this information to the NES just like any standard controller. The keypad also included a built-in controller that was very similar to the ones that came with the NES.



Broderbund U-Force

Because many games used different types of controls, Mattel built into the Power Glove fifteen different templates, or precoded instructions, that the various games used. The instruction manual informed gamers how to change the templates and how to program the Power Glove themselves. In addition to using the Power Glove for games that were already on the market, Mattel also designed games for specific use with the Power Glove. *Glove Ball* for example, was a three-dimensional cross between *Handball* and *Breakout*. The player had to hit a ball into a wall of tiles and break the wall apart before he could advance to the next room. Instead of using a paddle to hit the ball, the player merely had to 'hit' empty air with his open palm as if a ball was coming at him.

The large amount of software and peripherals that were available for the NES proved that it was the hottest thing to hit the toy stores. It was so popular that a new Saturday morning cartoon show featuring characters from hit Nintendo games was developed. The *Super Mario Bros. Power Hour* featured both live action and animated cartoons. The live segments starred the brothers Mario and Luigi while the animated parts also featured *The Legend of Zelda*, a character from another best selling Nintendo cartridge.

As the popularity in the NES increased dramatically, Nintendo introduced new ways that it could capture an even larger share of the marketplace. In August the company announced the formation of the *NES Network*. This new on-line service would allow people to trade stocks, perform home banking and compete head to head in games with people anywhere else in the country via their Nintendo control deck and a modem. The service was nothing new to Nintendo since it was already in use in Japan where people used their Famicoms for such purposes. On October 2 Nintendo and Fidelity Investments, the largest privately held investment manager in the United States, announced a joint venture to make the NES Network a reality. Fidelity agreed to develop software that would give NES owners access to a number of financial services.

Nintendo continued to build its image so it could get the NES into more households. However others tried to portray the Japanese company as an evil monopoly that had built its huge empire at the

expense of others. Atari Corp., the manufacturer of the 2600, filed a $250 million anti-monopoly suit against Nintendo. Atari charged that Nintendo had prevented its licensees from making their NES games available for other videogame consoles. Nintendo called the charge absurd and said that Atari was merely looking for an excuse "for its poor competitive performance" in the marketplace.

Meanwhile Atari Games, which had filed its own anti-monopoly suit against Nintendo a year earlier, announced in early January that its software subsidiary Tengen had terminated its licensing agreement with Nintendo. Since the company had found a way to bypass Nintendo's "lock out" chip it was free to manufacture cartridges on its own and therefore no longer had to submit to Nintendo's outrageous policies. Nintendo immediately sued and charged that Tengen breached its contract. In addition Nintendo also sued Tengen on copyright infringement. By this time, Nintendo had been granted a US patent for its "lock out chips" or 'authenticating processors' as they were technically called. The company claimed that instead of getting around the "lockout" chip Tengen merely copied the patented processor that was inside the cartridges.

Once Tengen began manufacturing cartridges on its own, it found itself against a major hurdle. Because Nintendo distributed the cartridges for every third party software company that it had licensing agreements with, the company had a stronghold on the retail market. Tengen had limited distribution since it was a young company that never had to deal with the problem before. However many retailers were unreceptive to the upstart company. It wasn't long before rumors began spreading that Nintendo had forced its retailers not to sell any Tengen games. Nintendo apparently threatened to hold back deliveries of its products to any store that went against it. Naturally this was something that the retailers couldn't let happen since they made more money by carrying everything Nintendo had to offer instead of just the titles that Tengen put on the market.

Although Nintendo intended on making it hard for Tengen to market its own games, another third party software company, Color Dreams, also found a way to bypass the "lock out" chip. The company didn't worry about any lawsuits by Nintendo because it emphasized that it had never infringed on Nintendo's copyright. Instead of disabling the lockout chip, it had bypassed it and that was perfectly legal. Because it intended to manufacture and distribute its own software, it didn't have to pay licensing, manufacturing and distributing fees to Nintendo. Thus it was able to market high quality games for ten dollars less than what the licensees charged.

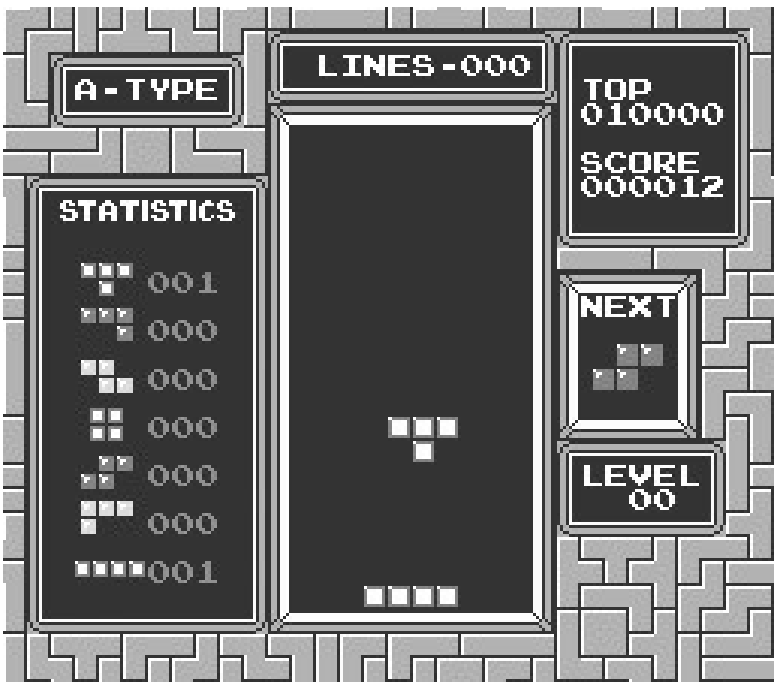
Although Nintendo made more money on the third party software than the licensees did themselves companies still flocked to become Nintendo licensees and to get the coveted "Nintendo Seal of Quality" on their boxes. However people soon began to question exactly what the seal of approval stood for. When Nintendo had first begun issuing them it said it was to keep tabs on what was released to the public. Nintendo didn't want to make the same mistakes as the game companies of the early eighties did and have several similar games on the market. Unfortunately that reasoning no longer seemed to be true in 1989. A large number of the more than forty licensees all released baseball cartridges for the NES and all of them had been approved by Nintendo. Marketing like this only assured that none of the companies that produced baseball cartridges would have a megahit since their audience had such a huge number of titles to choose from. Another potential problem that seemed hypocritical to Nintendo's policy was the fact that all forty companies planned to release two titles each year; the maximum number that Nintendo allowed each company. It's uncertain whether the executives at Nintendo really believed that consumers would buy all eighty new games that came out every year or if they really expected store owners to stock them all. Since Nintendo profited on every cartridge that sold anyway, it didn't seem to matter which titles were visible on the shelves and which weren't. However for the small third party companies that depended on the sale of their one or two titles to survive, the large number of games that were being released yearly was something to worry about.

It was bad enough for the public when two different titles were released that were similar in play. It was even worse when two separate companies both released the exact same games, title and all!

This happened in mid 1989 when both Nintendo and Tengen, the two companies that were already battling in court, released individual versions of a Russian game called *Tetris*. *Tetris* was an enormously popular game that had been designed in the Soviet Union by Alexey Pajitnov in 1985. The object of the game was to keep blocks from piling up to the top of the screen.

Robert Stein, the founder of a European software company called Andromeda, discovered *Tetris* while he was in Hungary. He quickly negotiated with Pajitnov for the world-wide rights to the game. Once he acquired them he quickly licensed them to Mirrorsoft, a British software company, and Spectrum Holobyte, its American subsidiary. Mirrorsoft then licensed the Japanese coin-op rights to Sega and the North American coin-op, game console and handheld rights to Atari Games. Ed Logg, the man who programmed *Asteroids* for Atari, then went ahead and programmed an NES version of *Tetris* for Tengen, Atari Games' software division. Upon it release the game quickly became an instant hit. Mirrorsoft retained the computer rights to *Tetris*.

Tengen Tetris



Nintendo Tetris

Meanwhile, Spectrum Holobyte was doing some negotiating on its own and began trying to license the Japanese computer and console rights to the game. At this point Nintendo was interested in obtaining the highly addictive game for its console and Gameboy worldwide. At this point it learned that Robert Stein had been mistaken from the beginning. He had only received the *computer* rights to *Tetris*, which did not encompass the gaming consoles or the portables. Nintendo's Howard Lincoln and Minoru Arakawa quickly flew to Moscow to deal with the Soviet Foreign Trade Association personally. They came home with both the console and the hand-held rights and quickly churned out copies of the game. They even made *Tetris* the game that was included with the Gameboy, which dramatically helped sell the handheld unit.

Tengen, which legally didn't have any rights to the game, quickly argued that the Nintendo billed the Famicom as a computer but a judge didn't see it that way. Tengen was ordered to recall all of its *Tetris* cartridges that were still on store shelves. In all 268,000 cartridges were returned and they all had to be destroyed making it a collectable like Odyssey's *K.C. Munchkin*. Nintendo also tried to recover lost revenue from Tengen but Tengen appealed and the case dragged on in court.

Of the two versions, Tengen's was superior. Nintendo's choice of colors was confusing and many players complained about their inability to distinguish between a dark blue block and a dark blue

opening. This confusion didn't exist in the Tengen edition that also included a variation that allowed gamers to compete against each other at the same time. The screen displayed two boards simultaneously. In the Nintendo *Tetris,* two gamers could compete but they had to alternate turns.

Tengen & Nintendo Tetris

While Nintendo was fighting against a company that manufactured software for its console, other companies were introducing new hardware in an effort to topple the Nintendo dynasty. View-Master/Ideal released a new console that had been designed especially for young children between the ages of three and eight. Like Worlds of Wonder's Action Max, which had made a brief unspectacular appearance in 1987, the *View-Master Interactive Vision* used videotapes instead of game cartridges. However this system emphasized learning rather than violent action. Instead of using a light-gun to shoot down enemy objects, the View-Master Interactive Vision utilized a controller that featured five color-coded buttons and a joystick so children could highlight certain on-screen objects.


View-Master Interactive Vision


Konix Multi-System

On the standard videogame front, the 16-bit systems seemed to be the direction that the industry was heading. However in England, a company called Konix displayed a 32-bit system. Actually the *Konix Multi-System* had a 32-bit processor that had been downgraded to 16 bits. Konix expected to get the unit into British stores by September and hoped for distribution in the United States by early 1990 where it would retail for around $300. Konix spoke with both Mattel and Disney about distribution rights but nothing was ever signed.

The designers of the Konix Multi-System built their unit around the belief that the controller is the most important part of a videogame console. The result was something that almost resembled Coleco's Expansion Module #2 for the Colecovision. The Konix console was small with a large steering wheel built into it. Gamers could also add a stick shift and a foot pad to really simulate a car ride. The wheel itself was detachable so handlebars for motorcycle games could replace it.

Konix developed other controllers for the system. One was a light gun that had attachments to turn it into a light rifle. It even had a recoil when it fired to make it realistic. The most expensive controller retailed for $375 and was a chair that moved in different directions so that the person sitting in it felt like he was actually piloting a plane. The Konix Multi-System mounted into the chair so it moved with the player.

Unlike other videogame systems, the Konix Multi-System used 3½ inch discs rather than cartridges because they were less expensive to produce. Each disc retailed for $25 and contained a

megabyte of code.

While the folks in England prepared to release what they felt would be a breakthrough in the videogaming world, NEC had a major hit on the other side of the world with its PC Engine, the 8/16-bit hybrid. By April NEC had sold 1.5 million units in Japan, which amounted to half of all the videogame console sales in that country. Although the company hadn't made firm plans to release the PC Engine in the United States, a company spokesman did announce that they were looking into the feasibility of it. This was a turnaround from their philosophy of a year earlier when they believed that Americans weren't ready for the new console. Apparently they were because a steady stream of PC Engines was being imported into the United States from Japan at hefty markups.

The PC Engines that were imported into the United States were smaller than any other console that was available in the country. This was a surprise because the tiny console that was roughly the same size as a portable CD player packed more graphic power than the other systems. The software for the PC Engine was tiny cards that looked like thick credit cards. Ironically these cards, which contained 2 megabits of code, resembled the Sega Cards that only had 256 kilobits of memory. The cards came packaged in the same plastic 'jewel boxes' that compact discs came in. The reason for this was because in early 1989 NEC released a CD player for the PC Engine that gave it the ability to read data from compact discs. The company also released eight CD- ROM discs and naturally packaged them in jewel boxes. To remind consumers that the PC Engine was capable of reading programs from compact discs, NEC packaged all of its software in the jewel boxes.

Although the CD player could be used to listen to standard audio discs, it had been designed especially for videogame use. CDs were a great breakthrough in videogame technology. Prior to their introduction, the maximum amount of code that a game could utilize was 256K bytes. A compact disc was able to contain 550 megabytes of code; or 2000 times that of the most powerful cartridge. Since the CD could be accessed randomly and quickly, the PC Engine was able to load new information without the gamer being aware that such input was taking place. Because the disc was able to hold so much information, CD-based games offered the ultimate in complexity, detail, and sound.

NEC TurboGrafx-16

On May 23, 1989 NEC made the announcement that beginning in the Fall the PC Engine would be available in the United States as the *TurboGrafx-16*; a name that derived from the machine's graphics power. The American version was twice as wide as the Japanese console because it needed additional electronics for FCC approval. Despite these minor changes the TurboGrafx-16 and the PC Engine played the same exciting games and displayed the same outstanding graphics. However the TurboChip game cards couldn't be interchanged between the American and Japanese consoles, just as they weren't on the Nintendo and Sega Master System. NEC also announced a $400 CD player for the American market that would give the console the ability to play the outstanding CD based games.

Although NEC said that the TurboGrafx-16 would be in American stores in the Fall, it actually arrived in New York and Los Angeles stores in late August. The console came with a TurboChip game card called *Keith Courage In Alpha Zones* and one controller that was similar to those by Nintendo and Sega. An optional accessory was the *TurboPad* that featured a joystick instead of a controller pad. Surprisingly the console only had one controller port allowing only one gamer at a time. Fortunately for fans of multiplayer games NEC also released a *TurboTap Adaptor* that had five

controller ports. Once the TurboTap plugged into the console's single controller port, five controllers could then be plugged into it so that up to five people could play a single game at one time. Another peripheral, a *TurboBooster*, plugged into the back of the console and linked the TurboGrafx-16 to a monitor and audio system. Once it was hooked up to a sound system the stereo capabilities of the TurboGrafx-16 were really appreciated.

As it did in Japan, NEC followed-up the Turbografx-16 with the Turbrografx-CD a few months after its initial release.

NEC Turbografx-CD

Sega Genesis

At the Summer CES Sega announced that beginning in the Fall, it would release its true 16-bit console in the United States. Sega planned to distribute the new *Genesis* console without the help of Tonka. Although Sega was very happy with how Tonka distributed the Master System, the company wanted to handle the Genesis on its own.

As was the case with NEC's PC Engine, Sega's American and Japanese consoles both had the same internals yet the software was not interchangeable. This was done to prevent a gray market from developing. Because of licensing agreements that varied in different countries, some titles were available in Japan that weren't in America and vice versa. In other cases, one software company held the American licenses to a game while another may have the Japanese rights. If a gamer could import the Japanese cartridge the American licensee would lose income that he should have been entitled to. A similar scenario occurred when audio compact discs first appeared. Many consumers imported foreign copies of discs that they believed were superior to the American discs and the American copyright holder lost out on a royalty. To prevent this, Congress passed a law that prohibited retailers from selling imported compact discs. Since the law didn't apply to videogames the manufacturers themselves prevented the gray market from developing.

Sega Genesis with Power Base Converter

Like NEC, Sega packaged the basic $200 Genesis console with only one cartridge, *Altered Beast*, and one controller. This was a far cry from Atari's original Video Computer System that came with two joysticks and a pair of paddle controllers. A second controller could be purchased separately for $20. Sega also planned on a number of peripherals. The first to be released was a *Power Base Converter* that allowed the Genesis to play the Master System's 8-bit software. Although the games didn't look or play any better on the Genesis, Master System owners at least had the option to upgrade their console without having to sacrifice any of their software.

Another exciting peripheral was the *Telegenesis Modem,* which Sega didn't expect to hit store shelves until late 1989 or early 1990. Using the modem, players could compete against one another

via the phone lines. The company also hinted about a keyboard adaptor that would turn the Genesis into a home computer. The possibility of the keyboard was doubtful however since every company had promised one since Mattel released the Intellivision in 1980. The only videogame system that actually had been released with a computer keyboard was Atari's XE Videogame System and that died quietly.

Because software selection was the most important commodity to a new game system Sega also announced that it was working with twenty third-party software companies to develop games for the Genesis.

Like NEC, Sega shipped the first Genesis units in late August 1989 to stores in the New York and Los Angeles area. Nearly everyone who bought one was pleased with the console's high resolution and crisp stereo sound. People immediately compared the Genesis to the Turbografx-16. Although many felt that the Turbografx-16 offered better graphics, most were impressed by the Genesis' speed. Comparisons against the NES were out of the question but Nintendo's 8-bit console still outsold both 16-bitters together. Nintendo still had the largest selection of games on its side. However, as the 2600 had proved, that didn't necessarily mean that the console would survive. The bottom line for most players was the quality of the games; something that many NES compatible games were beginning to lack despite their quality seals from Nintendo.

Even though 16-bit machines promised to be the next big thing in videogames, the two best known names in the industry didn't seem to rush into the race. The designers at Atari were working on a 16-bit game machine that had nothing in common with its 16-bit ST computer. The earliest that the machine could possibly be available would be the summer of 1991. Meanwhile at the Nintendo camp the long awaited *Super Famicom*, which was due to appear in Japanese stores in the summer, was delayed again as major design changes had to take place. It looked highly unlikely that the 16- bit Nintendo unit would arrive in the US before late 1991 since it wouldn't come until at least a year after the release of the Japanese Super Famicom. Industry insiders viewed this as a bad move by Nintendo, which seemed to be letting Sega and NEC walk away with the 16-bit market to vie up between themselves.

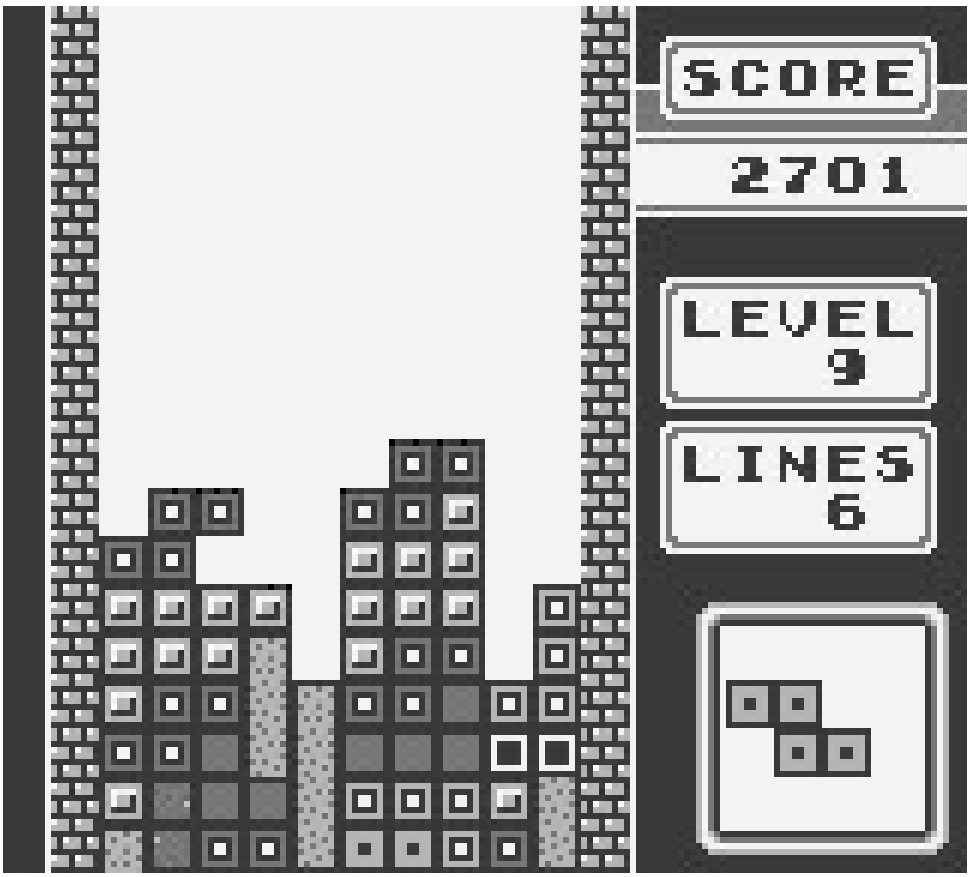
Although Nintendo and Atari faltered behind NEC and Sega in the 16-bit area, both companies had intentions on making bigger killings with smaller products.

Actually the race to market a portable videogame unit began in January when Epyx, the computer software company, unveiled the *Handy Game* behind closed doors to select attendees at the Winter CES. Although the Handy Game, which only consisted of several circuit boards, was far from being marketable, many people were impressed by its capabilities.

Epyx worked hard to shrink its Handy Game into a marketable form. However Nintendo surprised Epyx in May by announcing its own portable little unit. Nintendo called unit the *Gameboy* since it was about the size of a Sony Walkman. In fact the Gameboy was so similar to the Walkman that Sony's head of R&D chastised his team for not developing the portable videogame console themselves. The Gameboy was on the order of Microvision; the programmable standalone that Milton Bradley released in 1982. Like Microvision, the Gameboy featured an LCD screen and interchangeable game cartridges. However, while the LCD graphics on the Microvision were primitive at best, the black and green graphics of the Gameboy were of high resolution and allowed for scrolling backgrounds. The Gameboy featured real digital stereo sound and came with stereo earphones so a gamer could play anywhere without disturbing those around him. Also included was a "Video Link" that allowed two players to hook up two Gameboys and compete head to head against each another. The only catch was that each player had to own a copy of the same game cartridge. One cartridge that everybody would own was *Tetris* because Nintendo decided to package it with the Gameboy. The Gameboy version of *Tetris* also featured an option not available anywhere else. When it was used with the Video Link, the

portable *Tetris* allowed two players to go against one another on the same board at the same time.

Nintendo Gameboy



Nintendo Gameboy Tetris

Nintendo also designed the Gameboy to be more than a toy. The company planned to market a modem so the Gameboy could act as a terminal and receive stock market prices via the telephone.

The bad things about the Gameboy revolved around the screen. At less than two inches square the screen was too tiny to display the type of detail that players were use to from the NES. Because it was a portable, most people played the games with the unit too close to their eyes and this created eye

strain. Another negative feature about the Gameboy was the fact that it didn't have any backlight. Unlike a television screen that creates its own light, the Gameboy had to be played in sunlight or in a bright room. Once under these conditions the player had to struggle with the unit so he could get enough light but not any glare.

Despite these negative aspects Nintendo was betting that people would buy the $109 Gameboy in the same multitudes that they bought the NES. Like they did with the NES the company assigned licenses to third party companies. The same rules applied where the companies would work exclusively on the Gameboy and no other portable. Many developers thought that this exclusive clause seemed a little silly because the Gameboy was the only portable. Or so they thought.

One month after the announcement of the Gameboy, Atari, in an effort to once again make itself a viable force in the gaming world, displayed its forthcoming *Portable Color Entertainment System* at the Summer CES.

Atari's Portable Color Entertainment System was actually the Handy Game that Epyx had displayed in January. Because of financial difficulties and a threat of bankruptcy, Epyx sold the system to Atari. The two companies then worked out an agreement just hours before the system was unveiled at the CES. Atari would manage the marketing and manufacturing of the unit and Epyx would handle the development of the software.

As its name implied the new system by Atari was also a portable programmable system like the Gameboy with one major difference: it had a color screen.

Actually the differences went beyond just a color screen. The screen was backlit so games could even be played in total darkness. It was also slightly bigger than the one on the Gameboy, decreasing the chances of eyestrain.

Although both units were shaped like rectangles, the two didn't resemble one another in the slightest. The Gameboy looked like a vertical rectangle. The screen was on the top and the controls were directly below it. On the other hand the Atari unit looked like a horizontal rectangle with the screen in the direct center. There was a controller pad on the left side of the screen and two sets of A and B buttons on the right. The unit could also be played completely flipped around with the buttons on the left and the controller pad on the right. This was so 'righties' didn't have an advantage over 'lefties'.

Like the Gameboy the Atari Portable System also generated stereo sound. Although there was a built-in headphone jack port, the unit wasn't packaged with a pair of earphones. It did come with a cable that could link together eight units. Unlike the tiny software cartridges that were available for the Gameboy, games for the Atari system were supplied on fragile game cards similar to those for the TurboGrafx-16. A *California Games* game card was to be supplied with the unit.

The Gameboy and Atari Portable System were quickly compared against each other. The $109 Gameboy weighed 10.6 ounces and required four "AA" batteries while the $149 Atari System weighed one pound and needed six "AA" batteries to operate it. Although both units could operate on electricity with adapters the AC adaptor was to be supplied with the Atari System while it was optional for the Gameboy. Finally, because the Gameboy used an 8-bit processor, it was definitely slower than the Atari unit with its 16-bit processor.

In August, Atari and Epyx sponsored a three day developer's conference to demonstrate the capabilities of the system, which by this time had been given the new official name of the *Lynx*. More than 100 developers and third-companies attended and many of them signed agreements with Atari and Epyx to develop software for the system. As an added bonus to Atari, many of these companies also displayed an interest in the 7800.

Atari released a small number of Lynx in New York and Los Angeles at the end of October, just in time for the holiday season. Unfortunately, delays prevented the company from shipping the portable

in large numbers to the rest of the country and this forced shortages everywhere. Due to these delays, the Lynx was postponed from national distribution until the spring of 1990 and the Gameboy became the unchallenged sales leader in portables for the 1989 Christmas season.

Atari Lynx

With five consoles and two portable units to choose from, videogame consumers in 1989 had a harder choice to make than their counterparts of 1983. To help them, several new magazines arrived on the newsstands in the wake of the success of *Videogames & Computer Entertainment*. Among them was *Gamepro*, which specialized in game reviews, *Electronic Gaming Monthly*, which focused on new releases and information, and *Game Player's Strategy Guide*, which supplied information on how to beat the games. Beginning in early 1989, Signal Research, the publisher that put out the *Game Player's Strategy Guide*, began publishing a general videogame magazine called *Game Players*.

The magazines depended on advertising revenue in order to survive and the majority of this income came from NES licensees. Ironically, Nintendo itself didn't advertise in any of them. There were several reasons for this. The first was that Nintendo felt it was so big that it didn't have to advertise. With a name that was quickly becoming synonymous with 'game playing', Nintendo felt that there was no need to advertise something people already knew about.

Another reason that Nintendo didn't need to advertise was because all of its licensees were doing the dirty work for it since Nintendo profited on every sale that a licensee made.

Another irony was the fact that the magazines themselves advertised new NES software without the aid of Nintendo. When Nintendo revealed new software titles at the CES shows twice a year the magazines quickly mentioned them. It was the only chance that the magazines had to preview the games because Nintendo never sent out advance preview copies. Since the licensees hoped to have a favorable review at the time their new titles were released, they were more than eager to send out these advance copies.

A final reason why Nintendo didn't advertise in the magazines was because the company released its own slick magazine called *Nintendo Power*. Unlike the magazines that didn't have the manufacturer backing them, *Nintendo Power* viewed every Nintendo cartridge as if they were the greatest thing that ever happened. Of course *Nintendo Power* never reviewed games made by non-licensees such as Tengen and Color Dreams.

As the eighties came to a close, gamers looked towards the nineties with anticipation. When the decade had begun, Atari had been riding high and Mattel was trying to make a name of itself with its advanced system. Nintendo and Sega were only known to Americans as Japanese arcade game developers. It was a decade of lows and highs for an industry that at first people referred to as a fad.

As technology advanced at an alarming speed, people could only wonder what kind of games they would be playing at the end of the nineties.

CHAPTER SEVENTEEN
1990

Sega Master System 2

Nintendo still dominated the industry when 1990 began but the field continued to get more crowded. Sega introduced a new, downscaled 8-bit system to replace the Master System. Lower in price, the new console was compatible with all of the Master System's cartridges, although it couldn't accept the Sega Cards that hadn't been available for a while anyway. Sega also released several new cartridges to accompany the new console; the first new Sega 8-bit games in several months. The emphasis on new software for the Sega 8- bitters was partly because Sega of America had a new president who wanted to see his company take over a major part of Nintendo's business. Michael Katz, who had previously held major positions with Atari, Coleco, Mattel and Epyx, was someone who clearly knew the videogame industry inside and out.

Sega didn't have to make any changes to its Genesis, which was quietly outselling NEC's TurboGrafx-16. This didn't hinder NEC from signing up 21 outside companies to develop software for the unit. NEC also proved that it was serious about its console. The company announced that it would no longer manufacture televisions, video recorders and other electronic products for the United States market so it could devote its American operations to the TurboGrafx-16. In Japan meanwhile, NEC introduced three new models of the PC Engine. On the low end of the retail scale at the yen equivalent of $130, was the *Shuttle*, a unit that derived its name from the fact that it looked like a spaceship. The Shuttle was compatible with all of the Turbocards but couldn't play CD based games. It could also hook up to a PC Engine backup unit so games could be saved.

The $175 *CoreGrafx* was basically a PC Engine that could attach directly to a video monitor via audio-video cables rather than the standard RF modulator (TV/Game switch). The CoreGrafx featured an external bus so it could connect to the PC Engine backup unit or the CD-ROM player.

At the top of the line was the $275 *SuperGrafx* that resembled the American TurboGrafx-16. The unit featured 32K of RAM, which was four times the amount of memory in NEC's two other new consoles. This extra memory allowed the SuperGrafx to move up to 128 figures on-screen simultaneously; twice that of Nintendo's still unreleased Super Famicom. The SuperGrafx was also capable of providing twice as many background visuals than a standard PC Engine game, giving it the ability to create 3D effects. Although the SuperGrafx was able to play standard PC Engine games, the PC Engine and the two other new units could not play games that were available for the SuperGrafx. Even though the unit could plug into backup and CD-ROM units, it could only support peripherals that had been developed especially for it.

After NEC released its trio of new consoles Nintendo formally announced that it was finally going to release its long awaited Super Famicom in November 1990 in Japan only. Even though the company promised that the unit would eventually be available in the United States, nothing was disclosed about when that would happen. The 16-bit console, which would be packed with the new *Super Mario Bros. 4*, wouldn't be compatible with the NES.

The Konix Multi-System, the British videogame system, still did not have an American distributor. With a suggested retail price of $300, most felt that the console was too expensive to be successful.

Nintendo Super Famicom

SNK Neo•Geo

Curiously enough another company decided to enter the American videogame market with a console that cost much more than the Konix Multi-System. SNK, a former Nintendo licensee, was also a manufacturer of arcade games. Its *Neo•Geo* looked like any other arcade upright except that a player had a choice of five different games to play for a quarter. As in a home videogame system, each game was stored on a cartridge. In this case the cartridge was the size of a VHS videotape and could store 330 megabits of code. After a game lost its popularity arcade operators simply had to change the cartridge instead of the entire machine. One unique aspect of the Neo•Geo was that it allowed players to insert 4K memory cards, which were purchased from the arcade operators, into the machine so they could save their games.

At the end of 1990 SNK released a home version of the Neo•Geo in the United States. This followed a successful introduction of the unit in Japan earlier in the year. The home version used the same cartridges as the arcade machines. It also accepted the memory card so players could save their games in the arcades and then play them at home. Although SNK flaunted the Neo•Geo as a 21-bit machine, it actually used the same 16-bit processor as the Genesis. It also had an additional 8-bit processor that was the same as the one in the Sega Master System. The dual processors allowed the Neo•Geo to display 4096 different colors on the screen at one time (the TurboGrafx-16 could only display 512 simultaneous colors). On the audio side, the Neo•Geo was able to produce sounds from fifteen different channels, as opposed to Genesis' ten separate channels. Seven of the Neo•Geo audio channels had been dedicated solely to digitized speech.

All the goodies that the Neo•Geo offered did not come cheap. SNK sold the Neo•Geo in two different packages. The basic Green System was priced at $399 and included a Neo•Geo console and one controller that sported several buttons and a joystick. For an additional $200 a consumer could purchase the Gold Set, which came with an additional controller and one game cartridge. The cartridges themselves carried a suggested list price of $199.

Because of its high price, SNK aimed to sell the Neo•Geo to video rental establishments that would then rent the hardware and software to consumers.

Renting videogames became a profitable business for video stores in 1990. Because of the vast number of cartridges that were available for the NES, consumers found that they simply couldn't afford to spend a tidy sum of money on titles that might be bad or boring. With the slew of videogame magazines that were available consumers had the opportunity to read game reviews. However this still couldn't give them a clear idea on whether they would enjoy the game or not since the review was naturally tailored around the writer's likes and dislikes. Of all the entertainment software available, videogames were unique in the aspect that the buyer never necessarily knew what he was getting. While music could be heard on the radio and movies could be rented, videogames, which were less passive than the others, couldn't be previewed in any way.

It is not known who rented out the first videogame cartridge, but the idea quickly spread from one video store to another. Most retailers favored the Nintendo compatible software since that was the unit that was in the most households. As the bigger chains such as Blockbuster Video became involved in the videogame rental business, Nintendo took notice and frowned upon it. Every title that was rented was one less cartridge sold and fewer profits to add to its treasury. Unlike movie companies that received a royalty for every rented videotape, the videogame companies received nothing from this practice.

Since it wasn't illegal to rent out videogame cartridges Nintendo couldn't stop the stores from doing so. However the company did score a victory in its war against the rentals by filing a suit with the US District Court of New Jersey against Blockbuster Video.

Unlike a videotape that doesn't need any instructions on how to use it, most videogames played pretty poorly if they weren't played properly. Owners of video rentals were faced with a dilemma. If they included the game's original instructions with a rented cartridge, the renter could conceivably lose the instructions and render the game basically unplayable. To get around that problem stores like Blockbuster included photocopies of the original instructions. By doing this they didn't have to worry about the instructions being lost since the original could always be copied again.

What the store owners neglected or ignored was the fact that the instruction manuals were copyright protected. Therefore any duplication of them without the permission of the copyright owners was a direct infringement of that copyright. Nintendo claimed that Blockbuster had violated its copyrights by photocopying the instruction manuals for inclusion with the rented cartridges.

The courts sided with Nintendo and forced Blockbuster and other companies to stop photocopying the instructions. However this didn't stop the companies from renting out the game cartridges. Before long the games contained rewritten instructions for the game. Because these cards were then glued onto the cartridge cases, there wasn't any danger of them getting lost unless a renter purposely ripped them off. Because the instructions were paraphrased, they didn't infringe upon the copyright owner's rights. On the negative side, they contained only the briefest of instructions and some didn't give players all the information that they would have received from the genuine instruction manuals. However they were better than nothing and a perfect way around Nintendo's attempted destruction of the rental market.

In an effort to stop companies from renting out game cartridges completely, Nintendo lobbied Congress to pass a law that forbid the practice. Although Congress had planned to pass a bill outlawing the rental of computer software, they specifically excluded cartridge-based software because cartridges couldn't be copied.

While Nintendo did everything it could do to put an end to game rentals, the company's arch-enemy Tengen promoted the idea. Tengen's belief was that if a game was a good one it would be purchased whether it was available for rental or not. Rentals gave players the ability to review games that they otherwise might have overlooked altogether. To promote the rental concept, Tengen began a campaign that gave people who rented a Tengen cartridge a discount if they chose to later buy it.

Tengen needed all the help it could get to sell its products. Because it wasn't a licensed third-party company many retailers refused to sell it due to the pressure from Nintendo, which threatened to sue stores that sold Tengen's products. Very few retailers were willing to go up against Nintendo and jeopardize the revenue that they were enjoying just for the sake of carrying one specific brand of software. Many of the retailers who did opt to carry the Tengen games kept them in a separate display away from the licensed titles.

Because of these alleged 'strong-arm' techniques that Nintendo was practicing and the anti-monopoly suits that were filed against the company, the Federal Trade Commission began subpoenaing industry insiders to look into Nintendo's business manners. The matter wouldn't be

resolved until 1991.

While Nintendo questioned the legalities of Tengen releasing software for the NES, another battle between the two companies finally ended. The courts ruled that Tengen's version of *Tetris* was illegal but they didn't fault the software company for releasing a title that it didn't have any rights to. The real loser was Mirrorsoft, the British software publisher that sold the rights to Tengen although they didn't own it themselves. The courts ruled that Mirrorsoft had to pay Nintendo the revenue that it lost from Tengen's *Tetris*.

As Nintendo finished up its litigations with Tengen, the company faced another lawsuit on the horizon. This had to do with a code altering interface device that was similar to the PGP-1 that Answer Software displayed for the Atari 2600 in 1983.

The *Power Pak* had been designed by Codemasters, a British company. Like the PGP-1, the Power Pak allowed gamers to change up to three aspects of an NES game such as number of lives, colors, and speeds. The game cartridge plugged into the Power Pak that was inserted into the NES like a standard cartridge. If a player desired to change more than three game aspects, he could plug one Power Pak into another and change as much code as he wished. Included with the unit was a booklet of codes to over 200 popular games. If a game was too difficult and couldn't be mastered, the player could make it easier. As was the case with the PGP-1, the original code remained unaltered. Codemasters claimed that the unit would add new life to old games by enhancing them.

Camerica, a Nintendo licensee, originally planned to distribute the Power Pak in the United States and Canada. However within a month after the Power Pak's first announcement Camerica began heavy negotiation with another major distributor that turned out to be Galoob Toys, a San Francisco based international toy company. The Power Pak was renamed the *Game Genie* in the deal. Galoob received the US distribution rights to the Game Genie and planned to release it by June 1990. The Game Genie wouldn't cost more than a standard NES cartridge.

Nintendo immediately sought a restraining order against Galoob to prevent the toy company from marketing the Game Genie. Nintendo claimed that the interface ruined the life span of a game thus making the game unmarketable. What Nintendo feared most was that someone would rent a game like *Super Mario Bros.* and use the Game Genie to take the challenge out of it and quickly get to the end. Once the player reached the end he would more than likely not buy the game since he had already conquered it. Nintendo didn't get the restraint the first time it went to court and quickly sought an appeal. It won a temporary restraining order the second time preventing Galoob from advertising or selling the Game Genie. Galoob quickly appealed but the case, as well as the thousands of Game Genies that Galoob had stored in a warehouse, were tied up for the remainder of 1990.

Although NES owners couldn't buy the Game Genie, two other peripherals became available in 1990. One was an exciting new alternative to the light gun. Konami's *LaserScope* looked somewhat like a flight controller's headgear. The unit wrapped around a player's head and covered his ears like earmuffs. A slim microphone extended out in front of the player's mouth. Another extension came out over the player's forehead and rested in front of his eye. Attached to this eyepiece was a plastic shield with a set of crosshairs painted on.

The LaserScope worked with all the light-gun compatible games. To fire a shot, the player moved his head until the crosshair of the eyepiece covered his potential target. At that point he said "fire" into the mouthpiece and the LaserScope automatically fired a shot.

The other new peripheral was one that was similar to the musical keyboard that had been originally promised by Nintendo back in 1985. The new keyboard was released by Software Toolworks and called The *Miracle Piano Teaching System*. The name was well chosen because once it was available, children no longer shunned their piano lessons.

Unlike the musical keyboard that had been available for the Intellivision Computer during the

final dark days of Mattel Electronics, the Miracle had been designed so that it could work independently from the NES. The keyboard came with jacks so users could hook it up to their audio system. If they didn't desire a piano, they could program the Miracle to imitate over one hundred other instruments. If they didn't want to play any instrument at all, the Miracle also came pre-programmed with over one hundred songs that could be played at any time.

Software Toolworks Miracle Piano Teaching System

The Miracle was the perfect piano teacher. Once it was connected to the NES via a controller port, learning to play the piano wasn't any harder than playing *Super Mario Bros*. The Miracle came with a special NES cartridge that featured games that made learning how to play the piano fun. For starters, the screen displayed a keyboard with a musical scale above it. Every time someone pressed a key on the Miracle, an identical one on the screen flashed along with it. Once amateur Mozarts were familiar with the keyboard, they were ready to move on to the drills. One drill that allowed students to learn notes combined Mattel's *Astromusic* with a traditional arcade shooting gallery. It featured a musical scale that had ducks swimming across the different lines on the musical scale. The player had to shoot the ducks by hitting the correct key on the keyboard. Another lesson taught rhythm by having the player control an on-screen robot who had to jump up and hit some power plugs at the correct moment.

The system was priced at $299, making it comparable to the free-standing music keyboards that were already on the market. Software Toolworks promised to release additional cartridges that would concentrate on more types of music such as country and rock.

The Miracle gave NES owners the ability to use their console for other purposes besides games. Nintendo also looked for other practical applications and the NES Network that it developed with Fidelity Investments in 1989 had been one result. In October 1990, Nintendo announced that it was severing its ties with Fidelity because much needed user-interface software had never been developed by Fidelity. The NES Network was not abandoned, however. The Famicom in Japan already had a modem available for it and the on-line service that was available had been a success. Nintendo hoped to duplicate that success in the United States sometime in 1991.

Although NES users couldn't get on-line in 1990, a wealth of new software was available for them. Color Dreams announced a *SuperCartridge*. Unlike standard cartridges, the SuperCartridge had its own built-in 8-bit processor that worked in tandem with the NES' 8-bit processor to produce outstanding graphics filled with a palette of colors. Although the SuperCartridge games wouldn't be on par with the 16-bit games of the Genesis or TurboGrafx-16, Color Dreams promised that they would be superior to any other NES-compatible game on the market.

As far as standard cartridges were concerned, two "new" companies joined the ever-growing list of NES licensees. 'New' is used loosely because although these two companies were new to the NES, both of them were familiar to long time gamers.

The first was Parker Brothers, whose last videogame cartridge had been released in 1984. Parker Brothers released a game for the NES called *Heavy Shreddin*, which involved the winter sport of snowboarding. Going beyond the NES, Parker Brothers also released a computer version of *Trivial Pursuit* for the IBM PC.

The other new Nintendo licensee was INTV Corporation, the company that had evolved from Mattel's electronics division. INTV announced that it was going to develop software for the NES, Gameboy, and Genesis. Although the company promised to continue supporting the Intellivision, new software for the ten year old console would only be available through mail order.

During the first half of 1990, several “multiple game” cartridges appeared. These high memory cartridges were half the size of standard Nintendo cartridges and contained up to forty games. As it turned out, these cartridges were counterfeit and contained illegal versions of licensed Nintendo games. In June, US Customs agents seized 700 of these illegal cartridges in a sting operation in Wilmington North Carolina. Besides the multiple game cartridges, counterfeit copies of *Super Mario Bros. 3* were also appearing. In order to stop the flow of counterfeits that were entering the United States and Canada, Nintendo filed several copyright infringement lawsuits against video rental stores, retailers, distributors, and importers.

Legitimate licensed developers of NES compatible games received some surprising news near the end of the year. Nintendo announced that it was going to allow its licensees to manufacture their own cartridges. Nintendo claimed that it made this move because it believed that the quality of the games wouldn’t suffer. However many insiders believed that Nintendo was only knocking down its equivalent of the Berlin Wall because many of its licensees were becoming very dissatisfied with Nintendo’s complete control. This meant only good news to consumers since the licensees would be free to purchase components from whatever supplier they wished. Those components would probably cost less than if they had been purchased directly from Nintendo. The savings would probably trickle down to the retail level resulting in lower prices for new cartridges. Of course Nintendo wouldn’t suffer at all since the licensees still needed the all important “lock out” chip that could only be purchased from Nintendo itself.

Although the videogame consoles sold steadily, 1990 wound up being the year of the portable. Based on its wonderful sales at the end of 1989, Nintendo estimated that it would sell five million Gameboy units and 20 million cartridges in 1990. Atari expected to challenge that number when it released the Lynx nationwide in the spring at a recommended price of $179. The Lynx wasn’t the only competition that the Gameboy had to face.

At the first CES of the nineties, NEC revealed a prototype of its own hand-held videogame console. The unit looked very much like a Gameboy with a color monitor. Although specifics about the machine were lacking because of its premature showing, NEC officials said that an optional TV tuner would be available that would turn the unit into a tiny television set. Of more importance the new unit would be compatible with the TurboGrafx-16 and accept all the Turbochip games (but not the CD games). In an unprecedented move for a Japanese company, NEC planned to release the portable unit in the United States first instead of Japan.

NEC had named its portable unit the *TurboExpress* in time for the Summer CES. Although the company had a working model behind closed doors at the mammoth electronic show, they displayed prototypes in showcases to keep the show attendees from getting their hands on the unit. NEC priced the unit between $199 and $249 making it the most expensive portable. The optional tuner was set to retail at $99. By this time NEC officials changed their minds about debuting the TubroExpress in the United States. They now planned an early Fall release in Japan and expected to have limited quantities for sale in the United States by November.

Naturally, people compared the TurboExpress to the Lynx. Since there were pros and cons to both systems, consumers didn’t have an easy choice when choosing a color portable. While both units utilized credit card sized cartridges, the NEC software was less fragile and easier to load. They merely plugged into the cartridge slot at the top back of the machine. The Lynx wafers had to be inserted in a compartment that was hidden behind a hinged door at the bottom left of the unit. Both portables needed six AA batteries but the Lynx turned itself off after four minutes of non-use to conserve its power. Car cigarette lighters or AC adapters could also supply power to both machines.

The TurboExpress had a smaller screen than the Lynx but its resolution was sharper. Although

both units had color LCD screens, the ones used by NEC had an active-matrix LCD. Each pixel, the dots that made up a picture, was controlled by its transistor. In a passive-matrix LCD display such as the one that the Lynx had, on-screen motion caused visible trails or ghosting.

An important feature in a color portable was the range of colors that the screen could display. The Lynx was able to show an impressive 4096 colors while the TurboExpress could only display 512. On the other hand, the NEC unit was able to display all 512 of those colors at one time whereas the Lynx could handle only sixteen colors at a time.

Both units came equipped with cables that could connect them to other sets. The Lynx could link eight players at one time while the TurboExpress could only connect two. In addition each of those eight Lynx players would view a game from his own first-person perspective, a feature that was built into the Lynx itself leaving the software free for better graphics. On the other hand, the TurboExpress could also double as a television set with its optional tuner.

The TurboExpress was smaller than the Lynx but the Atari portable cost less. Despite the higher cost of the TurboExpress, it was definitely the better buy for those who already owned the TurboGrafx-16 since the software was compatible. However, since NEC sold fewer consoles than Nintendo and Sega, the majority of people shopping for a portable wouldn't have been influenced by this bonus.

NEC TurboExpress

If buyers weren't yet confused about which unit to buy when the TurboExpress was released, then they would be soon afterwards. Sega announced that it too was going to market a portable color videogame console that would be available before Christmas. The *Game Gear* was rectangular like the Lynx, but not as wide, and it had a slightly smaller screen in its center. To the left of the screen was a directional controller pad and to the right were two control buttons and a start button.

Sega Game Gear

Although the Game Gear used the same Z-80A processor as Sega's Master System, the two units were not compatible. Sega had felt that graphics that had been designed for standard televisions wouldn't look well on a tiny screen. The company did borrow game titles from the Master System and redesigned them for play on the Game Gear.

While Atari, Sega, and NEC scrambled to overthrow Nintendo's dominance of the portable game market, a company called Hall of Fame Games planned to release another monochrome portable game console by Christmas. The *PowerPro* would be about the same size as the Gameboy but laid out horizontally like the Game Gear. The PowerPro would have a 3.3 inch screen and use game cards similar to the TurboExpress' TurboChips. Although Hall of Fame Games wasn't ready to reveal the

release date or the retail price, it did promise that it would cost much less than the Gameboy. In the wings, the company was also developing a color portable.

Rumors also began spreading about two other portables by Camerica that would eventually be available. One was a Gameboy clone that would play all of the cartridges that could play on the Gameboy but cost a lot less. The other was a color portable that could also play the monochrome Gameboy cartridges. However as Christmas came and went, none of the new or rumored portables made an appearance. At that time the Lynx had its own problems due to a lack of new software, a problem that wasn't new for Atari. For 1990 at least, Nintendo wasn't toppled in the portable gaming market.

CHAPTER EIGHTEEN
1991

1991 began on an optimistic note as far as Nintendo was concerned. At the Winter CES the company joyfully announced that its sales for 1990 increased 27% from 1989. An astounding 7.2 million NES consoles and 3.2 million Gameboys had been sold during the year and overall sales totaled $3.4 billion! On the software side, the company sold sixty million NES cartridges and nine million for the Gameboy. Nintendo proudly proclaimed that it controlled 87% of the market and was in 30% of all American homes. Based on these figures the outlook for Nintendo looked extremely bright. Unfortunately Nintendo's optimism took a 180 degree turn when sales for the NES plummeted by 46% during the first half of 1991. All of a sudden history seemed to be repeating itself. Even though Nintendo claimed that another videogame shake-out of 1983's magnitude could never happen again, the truth of the matter was there was an overabundance of both software and hardware. Although the Atari dynasty had collapsed because there had been just too many games, by 1991 there were more cartridges available for the NES than there had ever been for the 2600.

Another problem was the fact that the eight year old NES began to show its age. Although it still boasted the largest catalog of available software, the limitations of the system were apparent when compared to the 16 bitters such as the Genesis and TurboGrafx-16. Also, as Nintendo began gearing up to the release of its own $200 16-bit *Super NES* by September 1, many NES owners wondered how much support the 8-bit machine would receive after that date. Nintendo announced at the Summer CES that the Super NES would be compatible with the NES despite previous reports to the contrary. However, unlike Atari's 7800 that accepted 2600 cartridges, an NES cartridge couldn't simply plug into the Super NES because the 8-bit cartridge had a 72-pin connector as opposed to the Super NES' 62-pin connector. Nintendo later said that an adaptor for the Super NES, such as the one that allowed the Genesis to accept cartridges for the Sega Master System, was feasible. The only reason that Nintendo didn't include it with the Super NES was to prevent consumers from having to pay the extra cost that the adaptor would add to the SNES' base price. However the company planned to release the adaptor at a later date if the market warranted it, contradicting its earlier statement about compatibility.

Nintendo SNES

Most analysts agreed that Nintendo would sell out all two million Super NESes that it was readying for the United States. After that it was anyone's guess. If Japanese sales were any indication then the Super NES would be a successful on its first day of release in America. In Japan, Nintendo had sold out 400,000 Super Famicoms on the first day that they were available in November 1990. Two weeks later, 400,000 more consoles sold out in just one day. More than 1.5 million Super Famicoms had been sold in Japan by early 1991. It took Sega and NEC combined a year longer to sell that number of 16-bit consoles in the United States. Nintendo expected to double that number by the end of the year.

As Nintendo geared up for expected heavy 16-bit sales, NEC continued to trail far behind the current 16-bit leader: Genesis. NEC dropped the price of its TurboGrafx-16 to $100 in May in an effort to sell more consoles. This put the TurboGrafx-16 into the same price bracket as the NES and

made it more attractive to buyers. NEC also lowered the prices on many of its games.

Sony SNES Playstation Prototype

The TurboGrafx-16 was unique in the gaming world because of its optional CD player. However both Sega and Nintendo planned to release CD players for their 16-bit machines. In April word went out that Nintendo and Sony joined forces to develop a $700 CD player that would be available in Japan in 1991 and in the United States by the Spring of 1992. Part of the deal allowed Nintendo to use characters from movies by Columbia Pictures, the movie company that Sony owned. By June the partnership with Sony dissolved and Nintendo signed a deal with Philips. Now Nintendo planned to release a CD player in Japan by the Fall of 1991 and a year later in the United States. Ironically, Sony announced its own CD/super game machine that would be available by Christmas 1991. The *Sony Playstation* consisted of a Sony CD player and a Nintendo Super NES. However since the Sony player and the Philips player would be incompatible, owners of a Sony Playstation wouldn't be able to play disc-based games designed for the Super NES.

Sega also planned to release a CD player in Japan by the Fall of 1991. However it planned to beat its rival Nintendo to the US marketplace by releasing its Genesis CD player in the Spring of 1992. Sega designed the JVC-built CD player so the Genesis would sit directly on top of it. A plastic interface unit that plugged into ports located in both the Genesis and the CD player, connected the two units. Like the videogame console, the CD player contained a 16-bit processor. The disc-based games would be able to access both processors giving the games more speed and better graphics than the standard cartridge-based games.

While Nintendo and Sega battled each other about who would get their CD players to the market first, SNK also experimented with CD software for its Neo•Geo. The console grew more popular as major retailers such as Toys R Us began selling the it. However its very steep price kept it from competing directly against Nintendo and Sega. SNK felt that a CD player that used inexpensive compact discs (as compared to the very expensive Neo•Geo cartridges) would be the perfect boost for the system. Unfortunately, because the Neo•Geo was a pseudo 32-bit machine, SNK's prototype CD players couldn't deliver information as fast as the CPU could process it. Because of this SNK didn't rush out and announce a CD player as quickly as then other companies. However it promised that once it straightened out these problems, it would definitely release a CD player for the Neo•Geo.

While SNK tinkered with CD players for its 32-bit console, rumors came out of Sunnyvale that Atari was developing its own 32-bit super videogame console. Atari intended to release the *Panther* in September to coincide with the release of the SNES. According to the rumors the Panther ran at 16Mhz, twice as fast as the Genesis and four times faster than the Super NES. In addition, the early reports said that it would accept Lynx game wafers.

By May, Atari verified that the Panther was indeed a reality. However when Atari never displayed it at the Summer CES, many analysts wondered about the actual status of the machine. Their suspicions proved genuine a few weeks later when Atari suddenly pulled an about face and declared that work on the Panther had been discontinued. No reason was given other than that Atari would be able to better concentrate on a new project that it called the *Jaguar*. By year's end, the only available information about the Jaguar was that an outside company was developing it with new technology that wasn't yet available in other systems. However the major news about the Jaguar was the rumor that it was a 64-bit system!

At about the same time that Atari announced the death of the Panther, word traveled across the

Atlantic that the plans to bring the British Konix system to the United States had failed. If the fate of these two systems foretold the death knell of the rest of the gaming industry the other companies were simply not listening. Both Sega and NEC announced their own 32-bit consoles that they expected to deliver in 1992.

As the gaming companies began introducing CD drives to enhance their games, other companies were looking at CD-ROM drives for more practical purposes. Commodore unveiled the first home interactive system at the 1990 Summer CES. It was dubbed *CDTV* (Commodore Dynamic Total Vision). In addition to playing new program discs the unit could also play standard CDs and CD+G (CD + graphics) discs. The CPU of the CDTV player was a Motorola 68000, a 16/32 bit CPU that was also employed by Commodore's Amiga computer. Like the videogame consoles, the CDTV was simply a computer without a keyboard. Commodore began planning strategies on how it would use the CDTV to get into homes without computers. Interestingly enough, the CDTV was released by Commodore's new Interactive Consumer Products division, which was headed by none other than Nolan Bushnell of *Pong* fame. When it was released in early 1991, there were nearly one hundred discs available for the new player. Unfortunately, the new device commanded a hefty retail price of $999!

Philips, the company that invented the CD-ROM, didn't get its multimedia player on the market until a few months after Commodore. Although Philips didn't advertise its *CD-i* (CD Interactive) player as a game machine, the initial software consisted mostly of games and children's programs. The public responded move favorably to the CD-i than it did to the CDTV but this was only because Philips pushed its unit much harder than Commodore did with hands-on store displays. However its retail price of $1400 didn't help sell it to consumers who only viewed it as an expensive game machine.

Philips CD-i

Despite the promise of exciting 16 and 32-bit gaming and multimedia consoles, the majority of game owners still owned the 8-bit NES and that was all they were interested in. At the end of September Control-Data, a company that made its name by developing early Super Computers, announced a modem for the NES. The software that was included with the modem allowed residents of the state of Minnesota to dial up and order lottery tickets through their NES. The state planned a six month test period beginning in the summer of 1992 where people would pay ten dollars a month to have the ability to order lottery tickets from their home. Control-Data felt that if the system passed its six month trial period, NES owners would eventually be able to use their consoles for other on-line services such as Compuserve.

Naturally the idea was met with mixed reactions. Many people felt that it would give minors the ability to gamble by ordering lottery tickets themselves. Control-Data claimed that people who used the system would have to supply a password that the minors wouldn't have access to. However the citizens of Minnesota felt that the state would be sending the wrong message to kids by releasing such a product. After hearing how the majority of the people in the state felt about it, the lottery commission quickly scratched its plans for the on-line lottery.

In April NES owners learned that they would receive a $5 rebate coupon from Nintendo that could

be applied to their next purchase of an NES cartridge. This came about because Nintendo had been charged with price-fixing. Allegations had been made that Nintendo had threatened retailers with warnings that if they charged customers less than $99 for an NES, then they would receive late or unfilled shipments. Nintendo denied any guilt. However in an effort to clear the matter quickly the company agreed to send the $5 coupons to every registered NES owner who bought the console between June 1, 1988 and December 1, 1990. The company also paid $1.75 million in administration costs to Maryland and New York, the two states that had initiated the price-fixing investigation. An additional $3 million was paid by Nintendo to these states to enforce their antitrust laws.

The price-fixing suit arose from many allegations that Nintendo used so-called strong-arm tactics in its attempt to create a monopoly in the videogame industry. As if in response to these charges, Nintendo began to loosen its iron grip. The first signs had come at the end of 1990 when the company announced that it was going to allow its licensees to manufacture and distribute their own games. Of course Nintendo would still supply the licensees with the 'infamous' lock-out chip that assured that it would still profit from the deal. *Smash TV* became the first independently manufactured licensed game when it was released by Acclaim at the end of the summer.

Meanwhile the lockout chip resulted in another lawsuit. Nintendo had filed a suit against Tengen charging the independent company with patent infringements in order to release NES-compatible cartridges. However Tengen wasn't the only non-licensee who manufactured cartridges for the NES. Many critics made accusations that Nintendo had singled Tengen out because it was by far the biggest. However in its testimony, Nintendo proved that the three other non-licensed companies: American Video, Color Dreams and Sharedata, had not infringed upon the patented chip. Many retailers still refused to stock cartridges by any of these companies because they feared that the mighty Nintendo might make reprisals against them. American Video even sued Nintendo for $105 million and charged the company with violation of antitrust laws. American Video's main contention was that the lockout chip forced the buying public into purchasing only Nintendo-licensed cartridges.

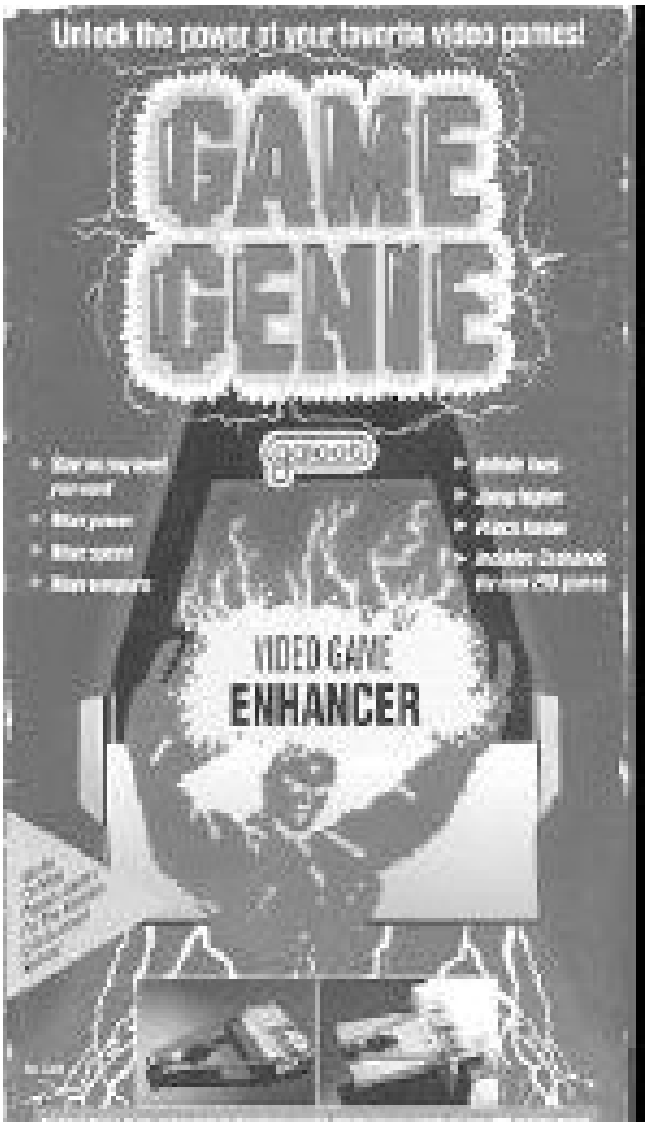
The lawsuit against Tengen ended in May 1991 when the United States District Court of the Northern District of California granted a preliminary injunction to Nintendo. This prevented Tengen from selling any more NES-compatible cartridges. The court ruled that Atari Games had lied to the Copyright Office so it could obtain a copy of the lockout chip's source code. Tengen had to remove all of its NES-compatible cartridges from store shelves following the decision. Tengen quickly appealed and the court allowed it to keep its games on the shelves while it waited for the appeal.

In early 1991 Nintendo of America sort of dropped the exclusively clause that it required its licensees to use. Previously, in order to become a licensee, a company had to refrain from marketing a licensed title for any console other than the NES for a period of two years. This guaranteed that the games for the NES were unique. However, Nintendo only dropped the clause for companies that developed games for the Super NES. The standard contract remained intact for the 8-bit NES games.

Sega also had lawsuit problems. In June RazorSoft, one of the Genesis licensees, wanted to release a game called *Stormlord*. Sega refused to manufacture it because several statues in the game were depicted without clothing. Sega requested RazorSoft to fix it but RazorSoft refused because it felt that the statues revealed no more than what was normally shown on television. Following this, Sega revoked RazorSoft's license. Undaunted, RazorSoft went ahead and released *Stormlord* on its own. Sega quickly sued RazorSoft for the unauthorized use of Sega's logo and trademarks as well as for breach of contract.

Another lawsuit that Nintendo was involved in was against Galoob Toys and their Game Genie. By the end of 1990, Nintendo had successfully stopped the program altering peripheral from reaching store shelves in the United States. However, Nintendo had failed to reach a similar injunction in Canada where the unit had been distributed by Camerica since June 1990. Nintendo claimed that

owners of the Game Genie had altered rented games and rendered them so uninteresting that they no longer wanted to purchase them afterwards. Nintendo however couldn't prove to the court that a single sale had been lost because of the Game Genie. In July 1991 a US District Court ruled that the Game Genie didn't infringe upon any of Nintendo's copyrights and lifted the injunction that had banned the sale of the device. Although Nintendo promised to appeal the decision Galoob began shipping its long awaited Genies in August. Shortly afterwards the courts granted Galoob permission to pursue the nearly $15 million in sales that it figured it lost while Nintendo kept the Game Genie off the market.



Galoob Game Genie

After the Game Genies were released Galoob announced that Codemasters was developing a Game Genie for the Genesis that would be ready in time for Christmas 1992. Unlike its bout against Nintendo, Galoob didn't expect any trouble from Sega and didn't receive any.

Acemore Game Action Replay

Ironically, shortly following Galoob's favorable verdict, another company announced a peripheral similar to the Game Genie. Acemore's *Game Action Replay* allowed players to bring the action on the screen to a virtual standstill and then proceed one frame at a time as if it was being viewed on a VCR. The game could also be played in slow motion. The Game Action Replay could also save games and resume them from the exact same spot at a later date. The unit could save up to five different locations of a game or five totally different games. Because the device contained a lithium battery, the games could be saved for up to six years. The player could also cycle through the saved games and display a still frame of each scene that was preserved. Although the Game Action Replay was only available for the NES, Genesis owners weren't excluded from the new peripherals that could record games. Triton Toys' *TRI-Pad Recording Controller*, which could be used by both the Genesis and the NES, recorded button presses. Some games required difficult controller manipulation in order to get through them. The Tri-Pad Controller could record the order and duration of each button press. The player could then repeat the sequence easily at the touch of another button. The controller also allowed for the endless repeating of the programmed moves and the playing back of the moves at super speeds.

After achieving its victory against the Goliath-like Nintendo in Canada, Camerica decided to once again tackle the gaming king in the United States. In 1991 the company announced that it was going to release twenty NES compatible unlicensed cartridges in spite of the bitter blow that Tengen had

received in the courts.

Camerica also planned two remarkable products that it hoped would attract the gaming public. In 1990 there had been rumors that Camerica would release both a Gameboy clone and a Gameboy compatible color portable. Although neither of these products ever saw the light of day, Camerica corroborated in 1991 that it would market two products that were similar, yet completely different, to the rumored products of the year before. Instead of a Gameboy clone, Camerica announced an adaptor that would allow NES owners to play Gameboy cartridges on their televisions. The adaptor was roughly the size of an NES cartridge and plugged directly into the NES cartridge slot. The Gameboy cartridge plugged into the adaptor. Although NES owners could play Gameboy games on a color television, the games were still in black and white.

The other unit that Camerica promised was a portable NES player called *The Express*. Resembling a large Gameboy, the Express had a built-in color screen and Camerica swore that it didn't infringe upon any of Nintendo's copyrights.

Gameboy 4-Player Adaptor

The manufacturers of the other portable consoles realized the potential that an NES compatible portable would have. However, since the Express never reached the store shelves, it was business as usual for them. Although it was technologically inferior to the other consoles on the market the Gameboy continued to dominate the portable race. This was partly due to the Nintendo name and the large number of cartridges that was available for it. Nintendo also made the Gameboy attractive to fans of multi-player games by releasing *F1 Race,* a first-person racing game. Unlike other Gameboy games that allowed two players to compete simultaneously, *F1 Race* came with an adaptor that connected four Gameboys at one time. Although Bullet Proof Software immediately announced a four-player football game that would use the new adaptor, it also developed its own adaptor that could support eight players at a single time.

Gametek Travel Guide

Despite the innovations by individual companies to allow more and more players to use the Gameboy at a single time, other companies were developing practical uses for the tiny console. GameTek announced a line of *InfoGenius* cartridges that turned the Gameboy into an all-purpose information machine. One cartridge turned the Gameboy into a portable spell checker that could determine the correct spelling of over 70,000 words. Another cartridge offered a travel guide that included helpful information about twenty of the most popular American cities. For international travelers Gametek developed a number of cartridges that allowed Gameboy owners to use their consoles as language translators. Gametek planned five languages: German, French, Italian, Japanese, and Spanish. All of the InfoGenius cartridges retailed at $39.95 when they were released in the Fall of 1991.

Coincidentally, while Gametek was turning the Gameboy into an electronic organizer, Sharp

Electronics was turning its hand-held electronic organizer into a game machine. For several years the company had been selling the *Wizard*, a calculator sized organizer that could also function as a dictionary/thesaurus; time and expense manager and financial planner with the help of different software cards. In October 1991 Sharp introduced several game cards such as *Tetris* and *Organizer Chess*.

In May, Sega released its color portable. The $149 Game Gear was approximately the same size as the new planned Lynx that had never been released. For that price buyers received the console and a game called *Columns*, a colorful contest that was similar to *Tetris*. Six cartridges were available for the Game Gear at the time of its release and Sega promised an additional thirteen titles by the end of the year. Optional peripherals included a battery pack; an AC adaptor, a cigarette lighter adaptor, a cable to connect two Game Gears together and a $99 tuner that could turn the Game Gear into a color television.

With most of the portable sales going to Nintendo, Atari stepped up its campaign to make its Lynx color portable more visible to the public. In January the company signed a deal with Flight Video, a company located in airports that rented out movies to fliers. Flight Video planned to open up outlets in twenty airports across the United States where it would rent out the Lynx and two games for $9.99 a day. Travelers could rent the Lynx before boarding their plane and then return it at an outlet after they landed.

Atari Lynx II

Sales for the Lynx doubled in 1991 from the previous year. Business was so good that Atari Entertainment, the marketing arm of the company, moved from Sunnyvale to Lombard Illinois. Shortly after the move, Atari announced that it was going to release a new smaller and less expensive Lynx console in time for the summer. The new console would use one graphics chip that had the same power as four graphic chips in the old unit. Since it contained fewer components it could sell for $99. In April, when Atari actually slashed the price of the Lynx from $149 to $99, many people thought that this was because Atari was marketing the new console. They soon found out that it was the original Lynx that had been reduced to $99 putting it in the same price category as the Gameboy. However there was a catch. At $99, the only thing that a consumer received for his money was a Lynx console and nothing else; not even a cartridge. Atari continued to market a $149 Lynx package that contained: a console; a *California Games* game card; a power adaptor; a multiple player cable (standard with the Gameboy); and a coupon that was good for one free game card from a selected group. Summer came and went without any further word about the new Lynx. The new Lynx II finally materialized towards the end of the year after inventories of the original Lynx ran out.

The Lynx was popular but this popularity came at the expense of Atari's sagging consoles. By the end of the year Atari announced that it was discontinuing its 2600 and 7800 lines completely so it could concentrate on better supporting the Lynx.

By the end of 1991 the three major videogame magazines were doing so well that they all established '900' phone numbers. These numbers allowed players to call for information or game tips at rates ranging from one dollar to $1.75 per minute. In the June issue of *Electronic Gaming Monthly*, the editor proudly proclaimed that the magazine was read by over a million readers each month. Although the circulation wasn't anywhere near that number, the magazine was so popular that each issue was passed around among many readers. In addition, Sendai Publications, the company that published *Electronic Gaming Monthly* launched two additional magazines to help fulfill the demand

of information that gamers hungered for. *Mega Play* was aimed at Sega users and *Super Gaming* was a magazine devoted to international gaming. As a leader in reporting international gaming news, Sendai also launched *World Net*: a network that various videogaming magazines around the world used to pool their information. Meanwhile, Signal Research found its own niche in the gaming world by publishing a series of strategy guides that ranged from the Nintendo NES to sports games intended for children. On September 28, 1991, *Gamepro*, which had been the first magazine to install a '900' telephone number for gamers, set a new precedent by premiering a television show of the same name. No longer did gamers have to take their eyes away from their television sets in order to catch up on the latest gaming releases and reviews.

Videogames were hotter than at any other time in their long history, a history that was partly displayed in St. Louis. On June 15 the National Videogame and Coin-Op Museum opened its doors. Visitors could view 75 arcade videogames and pinball machines. Among them was *Humpty Dumpty*, the first pinball machine to feature flippers, and of course the original *Pong*. The three dollar admission price also included four free tokens.

1991 also marked the end of home videogaming's second decade. It had been a volatile decade that began with Atari leading an ever-growing industry. By the end of the decade, Atari was only a bit player. The industry now belonged to the Japanese and to Nintendo, the company that revitalized the dying industry and made it even bigger than it had been before.

But Atari wasn't prepared to surrender.

CHAPTER NINETEEN
1992

1992 marked the twentieth anniversary of videogames. Surprisingly, little mention of this landmark was made in the videogame magazines. Of the dozens of videogame companies that sprouted in the early seventies to market their own versions of *Pong*, only Atari still remained in the videogame business. Although Atari had led the industry during videogaming's first ten years, the company couldn't claim that position during the second decade. However, even though Atari had been down for the count many times, it never managed to succumb completely. Atari began 1992 optimistically with the hope that it would once again rule the videogame world.

Atari planned to do this with its highly secret Jaguar. Although no one outside the company actually saw this wonder machine, Atari began to drop vague hints about it to the press. It seemed that Atari was testing every possible configuration for the Jaguar. In an early 1992 press release, Bob Schuricht, Atari's National Sales Director, claimed that the company was considering several versions of the Jaguar including 32 and 64- bits. The spokesman was also vague about how the software would be loaded into the machine: citing everything from cartridges and CDs, to keyboards, modems, and disk-drives. Of course this description included just about every input device possible but Atari wasn't taking any chances. Whatever technology the industry seemed to be heading towards was the one that Atari wanted to be in on. By not committing itself to any set technology, Atari planned its Jaguar to be at the forefront of the videogame industry once it was finally released.

By the end of the year, Atari's officials were finally willing to talk about the Jaguar. The system would definitely be 64-bit at its release sometime in the summer of 1993. It would contain a RISC-based processor and new custom chips that would allow for scaling, rotation, and stereo sound. The Jaguar would accept cartridge-based games that would contain more code than the SNES cartridges but less than those for the Neo•Geo.

According to Atari, four initial cartridges would be available for the Jaguar. Following the system's debut, Atari planned to release two new cartridges every month. Surprisingly, the 64-bit system would be inexpensive. Although Atari hoped for a retail price of $99, it realized that $150 would be more realistic. If the company priced the system at $99, it would not include a game cartridge. To make the system even more desirable, Atari also planned peripherals such as a keyboard and a modem.

Nintendo, the company that led the industry during most of the second ten years, began 1992 on a sour note. During the 1991 Christmas season, Nintendo lost its position as the top selling videogame company to Sega, which had taken control of 55% of the 16-bit market. In many cases, the Genesis had outsold the SNES by as much as two to one. Many of the sales were in part due to a new game that Sega released called *Sonic The Hedgehog*.

In this *Mario Bros.* type game players controlled an intelligent hedgehog that could travel at "supersonic" speeds. The game itself jumped off of store shelves almost as fast and before long it was the single best selling cartridge. Sega took advantage of this popularity and soon packaged it along with the Genesis.

Shortly afterwards players began complaining that the new Genesis sets that they bought would not play unlicensed games. What Sega had done was replace the motherboard in the Genesis with a new one that contained less circuitry. The new motherboard reduced the cost of the system and this was passed on to the consumers. However, while they were in the process of changing the circuitry, Sega's designers also added protection circuitry. In addition to the unlicensed games, several old

Sega Genesis Sonic The Hedgehog

Sega titles didn't play on the new systems either.

Thanks to *Sonic The Hedgehog*, the Genesis attracted thousands of new customers and pushed Sega into the lead of the videogaming race. To stay in the lead the company planned to release a CD-ROM player that would work in conjunction with the console. In October 1991 the company had released the Mega-CD in Japan. Sony manufactured the $380 CD-ROM player that sat beneath the Sega Mega-Drive and the two units worked in tandem to produce outstanding games. The Mega-CD contained its own MC68000 processor that ran at 12.5 MHz: much faster than the 7.5 MHz that the Mega-Drive's processor ran at. Together, the two CPUs eliminated any game pauses while the system loaded new information from the CD.

In addition to the 68000 CPU, the Mega-CD also had two custom graphics chips. These chips allowed the CD player to add more colors and sprites to the TV screen than the Mega-Drive could do by itself. The two chips also produced scaling and rotation to Sega games, a feature that the SNES was already capable of doing.

Along with the custom Mega-CD games, the unit could also play standard music CDs and the new CD+G discs (CD + Graphics). In Japan this was a big deal because it meant that gamers could play *karaoke* discs on the Mega-CD.

Some gamers couldn't wait for the American system and went out and bought the Japanese system as soon as it was available. Unfortunately for them the Japanese CD player wasn't compatible with the American Genesis console.

Although Sega definitely planned to release an American Mega-CD player sometime in 1992, the unit was not displayed at the Winter CES. The reason for this was because enough software had not yet been developed to adequately show off the machine.

In addition to the Mega-Drive and Mega-CD, Japanese consumers also were able to buy the *Wondermega*. This joint project between Sega and JVC was actually a Sega Mega-Drive with a built-in JVC CD player. Sold under the JVC label, the unit cost $620 and came with one CD that had 4 games and 4 karaoke programs on it. Sega released the same unit in April under its own label and without any software for $600. The reason both companies were coming out with identical units was because Sega was going to sell its unit in toy stores and the JVC model was going to go into audio/video stores. JVC also hinted that it might sell its Wondermega in the United States sometime in 1992 but by year's end the unit never appeared.

While Sega was strangely silent about its CD plans at the Winter CES, Nintendo sent out press releases concerning its own planned CD-ROM player for the SNES. Amazingly, the two units were very similar. Nintendo also intended for its CD player to sit directly beneath the SNES piggyback style. Like the Sega player, it would run at 12.5 MHz and be capable of scaling and rotation. Nintendo also claimed that its CD player would contain 8 megabits of RAM; 2 more megabits than the Sega had.

Nintendo worked with Philips so that its CD-ROM player would be compatible with Philips' CD-i discs. Nintendo also thought about making the system compatible with Sony's proposed Playstation. Nintendo also planned to sell its CD-ROM player for only $200; far below the $380 Mega-CD. Nintendo officially said that its player would be available by January 1993 but some sources within the company quietly insisted that the unit would be available by September 1992. The company's main

goal was to get its CD player out before Sega did.

The unofficial sources at Nintendo were wrong and September passed without the release of the CD-ROM player. Meanwhile, Sega of America released its $299 Sega-CD on October 15. Technologically, the unit was virtually the same as the Mega-CD that had been released in Japan one year earlier, although they were incompatible with each other.

Sega CD

Two of the first CD titles that were released especially for the Sega CD were *Night Trap* and *Sewer Shark*, the two titles that had been produced for Hasbro's failed Control-Vision system in 1988. It seemed that the technology that was applied to have the games work on videotape could actually work on any storage medium. Sega of America, anxious to deliver original products for its new CD system, readily released the games.

Nintendo responded to the release of the Sega CD by announcing that it was shelving its plans of selling its CD-ROM player any time soon. Rather than compete directly against Sega, Nintendo decided it wanted to plan its player around the next generation of gaming.

Nintendo's definition of the next generation was the *Super FX* (SFX) custom chip that would be built into its new cartridges beginning in February 1993. Like the Jaguar's processor, the new chip would be based on RISC technology and would display texture mapping, better shading, and a real 3D effect. Nintendo felt that its 16-bit CD-ROM player couldn't provide the new chip enough graphics power so it decided to center its CD development around a new custom 32-bit processor.

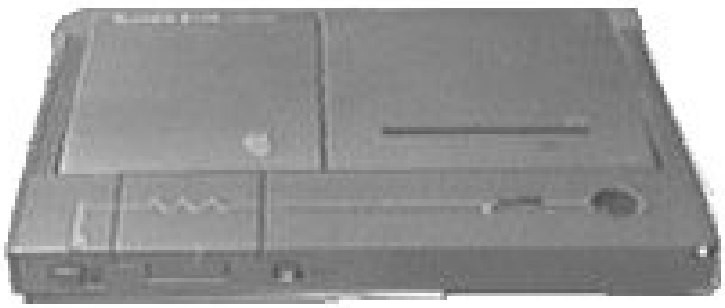
Nintendo announced in October that it was once again joining forces with Sony. Sony would manufacture a combination unit that would contain both a SNES and a CD- ROM player. Nintendo would manufacture the stand-alone CD-ROM player that would sit under the existing SNES consoles. All cartridge and CD-based games would be compatible between the Nintendo and Sony machines. In addition, Nintendo still intended for its software to be compatible with Philips' CD-i system. Nintendo now announced an August 1993 shipping date but still promised that its CD player would sell for $200.

One month later the relationship between Nintendo and Sony soured again. Although the official word was that the agreement between the two still existed, an article in *Nihon Keizai Shinbus*, Japan's leading business newspaper, seemed to state otherwise. According to the article, Sony didn't agree with Nintendo on the direction that the latter wanted to take its CD-ROM player. While Nintendo wanted the CD player to be an extension of its SNES, Sony wanted to develop an entirely new game system. The article also hinted that Sony was unhappy with Nintendo's decision to make its software compatible with Philips' multimedia system. Sony admitted that it wanted to reevaluate the industry and in the meantime it would develop software for the Sega CD. There was still a possibility that the company would go ahead and produce its own CD- ROM player.

While a war seemed to be imminent between the various companies over their CD players, another battle was slowly brewing between the two companies over their 16-bit units. During the summer both companies dropped the prices of their consoles. Nintendo lowered the cost of the SNES from $179.95 to $149.95. At the same time Sega reduced the price of the Genesis from $149.95 to $129.95. Sega's reason for decreasing the price was because it was selling such a huge number of units it was able to pass the $20 savings on to the consumers.

Surprisingly, both companies reduced the prices of their consoles even further. They both eventually offered their 16-bit systems for $99.95 but at this price the units only included one controller and no software. On top of this, Sega continued to make modifications to both its Genesis and CD player in order to make them even more competitive. The company planned a Genesis 2 and Sega CD 2 for 1993 that would be slimmer and sleeker than the current models, yet entirely compatible. Apparently, Nintendo's planned 32-bit CD-ROM player that would sell for under $200 worried Sega. The company hoped that it could scale down its own CD-ROM player enough without sacrificing any quality to match any price that Nintendo planned to offer. Sega also announced at year's end that it too was working on a 32-bit home system that would be built around a RISC processor and featured a built-in CD-ROM drive. The war was just starting to heat up.

By lowering the base prices of their 16-bit consoles, both Nintendo and Sega seemed to be following NEC's lead from 1991 when it reduced the price of the TurboGrafx-16 to $100. Despite the price decrease, NEC still failed to catch up with Nintendo and Sega in sales. In an effort to attract new customers NEC announced at the Winter CES that it was going to release a new console called the *TurboDuo* sometime in the late Summer or early Fall. The TurboDuo, which had been released as the PC Engine Duo in Japan in 1991, was simply a TurboGrafx-16 console with a built-in CD-ROM player. The CD-ROM unit had four times the memory than the stand-alone CD-ROM player that meant quicker access time for the console to read information from the CD and more graphics and sound.



NEC TurboDuo

On April 1 1992, before the TurboDuo could be released, NEC turned over the marketing of all of its videogame units to Turbo Technologies Inc. (TTI), a joint venture company between NEC and Hudson Soft, a software company.

In the late summer, TTI announced price cuts on its existing products. It reduced the TurboGrafx-16 to $69.99 and even included one game. It also lowered the TurboGrafx-CD to $149.99. The $220 combination price for both the console and CD- ROM player was well below the price that Sega wanted for its Genesis and CD player. In addition, TTI reduced the portable TurboExpress and its TV tuner to $199.99 and $59.99 respectively.

On October 10, TTI released the TurboDuo for $299.99 in the New York and Los Angeles areas. TTI promised that the rest of the country would receive the unit in early 1993. Also planned for 1993 was a peripheral that would allow gamers to use the TurboDuo's CD player as a CD-ROM drive for IBM or MAC computers.

By year's end rumors began spreading that TTI was developing a 32-bit CD- based system that was also based on a custom RISC processor. An availability date for this new system wasn't mentioned.

Despite it being an anniversary year, 1992 had its share of lawsuits by various videogaming companies. The first lawsuits came early in the year when Sega sued a software company called Accolade for infringing upon Sega's proprietary trademarks. Although Accolade was not a Sega licensee, it did produce games that were Genesis compatible. Sega charged that Accolade caused confusion in the marketplace by leading consumers into believing that its games were indeed licensed by Sega. According to Sega, the Accolade games displayed a screen that read: "**Produced By or Under License From Sega Enterprises Ltd.**" Accolade claimed that it learned how to manufacture Genesis cartridges without violating any proprietary rights on its own. The company responded that

Sega had made a change to its hardware that forced the message to appear whenever a Genesis compatible cartridge was inserted.

Accolade quickly filed a countersuit against Sega citing "*restraint of trade, trademark infringement, and unfair business practices*". Alan Miller, chairman and CEO of Accolade, charged: "Sega has consistently and unfairly pressured retailers and distributors around the world not to purchase videogame cartridges from Accolade."

At the hearing in April, the federal district court of San Francisco sided with Sega. Although Sega was granted a preliminary injunction preventing Accolade from selling any more Genesis game cartridges, the company had to post a one million dollar bond to cover Accolade's potential losses. Accolade quickly filed an appeal so it didn't have to recall the cartridges that were already in the stores.

In October the Ninth Circuit Court of Appeals sided with Accolade and dissolved the injunction. Sega could not prove that Accolade's games were "*substantially similar*" to Sega's own Genesis games, a necessary ingredient for Sega to prove any infringement. Following the decision of the Appeals Court, Accolade quickly resumed its production of Genesis software.

One day following the court's ruling in favor of Accolade, Sega filed a new petition requesting a rehearing of its original copyright infringement case.

In addition to the Accolade suit, Sega was sued by an inventor named Jan Coyle who claimed that he had developed the technology that Sega used in the Genesis to display the on-screen colors. The jury sided with Coyle on April 10. In an out-of-court settlement Sega promised to pay the inventor $43 million. In exchange for this Sega was free from any future problems with the patent.

Not all of the lawsuits that Sega was involved in went against Sega. Sega won the suit from the previous year against RazorSoft. Kyle Shelly, president of RazorSoft, admitted that his company did indeed infringe upon Sega's trademarks and copyrights when it released *Stormlord*. Following this admittance RazorSoft remained an authorized licensee of Sega.

A trial between Nintendo and Atari Corporation began in February. In this suit, Atari charged that Nintendo had illegally taken over 80% of the game market between 1986 and 1990 and this caused Atari to lose $160 million in damages. Atari claimed that Nintendo used unfair business practices to force licensees into producing software only for the NES. This just didn't hurt the competition; it destroyed it. Nintendo responded to the suit by saying that Atari was hurt by its own miscalculations and because it tried to compete cheaply. Apparently the jury agreed with Nintendo. After nine weeks, the trial ended when the jury decided that Nintendo did not harm Atari and didn't have any intent in monopolizing the US gaming market. Shortly after the verdict, the Federal Trade Commission closed its own antitrust investigation against Nintendo and didn't take any action against the company.

Nintendo wasn't as fortunate in another lawsuit. In July, the Ninth Circuit Court of Appeals sided with Lewis Galoob Toys and awarded that company the $15 million that it sought from Nintendo for lost sales of its Game Genie. Nintendo had barred the company from marketing the Game Genie from July 1990 until July 1991 when the court sided with Galoob.

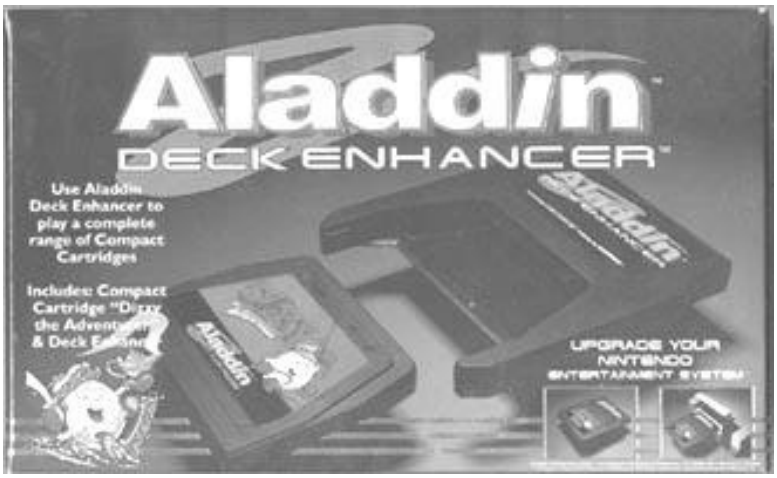
Once they had the official go ahead from the court, there was no stopping Galoob or Codemasters, the British company that developed the Game Genie. At the Winter CES the companies announced that they were coming out with a Game Genie for the Genesis. Unlike the Nintendo version, the Genesis Game Genie was fully licensed by Sega and included its seal of approval. Galoob didn't have it as easy at the Summer CES when it announced a Game Genie for the Nintendo Gameboy. Although the unit was finished in time for the Summer CES, Galoob worried that Nintendo might hold up its production with another lawsuit. By year's end, Galoob released a Game Genie for the SNES.

Spawned by the success of the Game Genie, Coast to Coast Technologies began distributing

another code altering device that had been developed in England by Datel Electronics. *The Action Replay*, not to be confused with Acemore's *Game Action Replay* for the NES, was similar to the Game Genie and available for the Genesis. One added bonus for Sega owners was that the Action Replay allowed American Genesis sets to play Japanese Mega-Drive cartridges. Unfortunately, the unit wasn't as successful as the Game Genie and Coast to Coast Technologies closed its doors by the end of the year. Datel Electronics next licensed Innovation, a Connecticut company, to distribute the Action Replay.

The Action Replay wasn't Innovation's first foray into the world of videogames. In March, the company announced that it had created a converter that allowed NES cartridges to play on the SNES. Although Innovation expected the *Super Eight Converter* to be released by the summer, the year ended without the unit showing up in stores.

In Mid-1992, Camerica, the company that originally had the North American rights to the Game Genie, announced a new device by Codemasters that it thought would take the NES world by storm. To battle against ever increasing prices of game cartridges the *Aladdin* was a $30 cartridge that contained an enhanced graphics SuperChip, a 64K graphics expansion chip and a battery to save games. To go along with the Aladdin were game chips that would cost between $15 and $20. Once the Aladdin base unit had a game chip inserted, the two behaved together like a standard game cartridge; only cheaper. Camerica hoped that the Aladdin would be on store shelves by January 1993.



Camerica Aladdin

While the Aladdin was Camerica's nineties' version of Starpath's Supercharger, Camerica's Quattro series was that company's updated version of Xonox's Double-Enders. However while the Double-Enders only contained two separate games within its cartridge shell, the Quattro cartridges contained four games. However, four games were a minuscule number compared to the number of games that other vendors were fitting into their cartridges. American Video Entertainment had a $149 cartridge that featured 30 games and Active Enterprises offered a $199 cartridge with 52 games.

Although the Multi-Game cartridges were expensive, when you broke down the price per game they turned out to be fairly inexpensive. On the other hand, a software company called Capcom produced a cartridge with only one game that it expected to retail within the $75-$85 range.

The game in question was *Street Fighter II*, the SNES translation of the most popular arcade game since *Pac-Man*. Capcom didn't just want to settle for a home translation of the game; it wanted the home version to be nearly identical to the arcade version. Soon after development on the game begun, it was clear to the designers that they couldn't fit everything in a standard 8 megabit SNES cartridge. Even a 12 megabit cartridge wouldn't have had enough room. They finally decided to use a 16 megabit cartridge, something no other company had ever tried before. Unfortunately, the extra circuit boards cost money and that was the reason for the high price of the game. Capcom was confident that despite the price *Street Fighter II* fans would go out in droves to purchase the cartridge.

Despite the overwhelming sales that most companies were enjoying, some software vendors weren't as fortunate. Two well-established software companies found themselves in bankruptcy court.

The first was Mediagenic, the parent company of Activision, the first company to publish third-party software. Mediagenic filed for Chapter 11 protection under the Bankruptcy Code early in the

year. When the Court confirmed the reorganization, Mediagenic returned to business as usual under its original name Activision.

The other software company wasn't as lucky. HAL, a software designer for the Nintendo systems, simply closed its doors during the summer. This was a result of poor videogame sales in Japan. HAL was a Japanese company with an American subsidiary and both shut down business at the same time.

One of the reasons some of the companies were experiencing poor sales was because of an inundation of counterfeit games that were being manufactured in Asia. Just like counterfeit watches and jeans, the games bore the names and copyrights of top selling games. There was very little difference between the counterfeits and the real things except that the companies who developed the real games didn't receive any compensation from the sales of the counterfeits. The problem had plagued the industry since the golden days of the Atari 2600 and cost the industry an estimated billion dollars a year. In the May 1991 issue of *Asian Sources Electronics* several Taiwanese companies admitted that they manufactured over one million illegal Nintendo cartridges every month.

To combat against the counterfeiters Congress considered a bill that would serve harsh penalties to any person caught manufacturing or distributing over fifty pieces of illegal software. They would receive up to $250,000 in fines and five years in prison.

Despite the closing of HAL and problems of some other software companies, the videogame industry as a whole seemed to be very steady. In a Christmas-time Gallup Poll to 500 children between the ages of 7 and 12, 63% of them said that they wanted a videogame system when asked what they really wanted as a gift. As a second choice, 54% of them chose a portable videogame system. Finally, as a third choice, the winner was game software according to 58% of the respondents.

Videogames weren't just popular among children. Adults, many of who had been die-hard gamefans during the original videogame golden age of the eighties, were also playing games. It wasn't unusual for commuters on trains to be playing with their Gameboys after a hard day at the office. With this in mind, a company called GEC- Marconi Inflight Systems signed a contract with United Airlines to install 6-inch diagonal video screens into the armrests of seats on all international Boeing 747's and 777's. The passengers could then play videogames or watch movies at their seat. The companies that were involved hoped that the new service would begin by early 1993.

Even the magazine editors realized that not all game players were teenagers and younger. Arnie Katz and Bill Kunkel, the two who were responsible for both *Electronic Games* and *Videogames & Computer Entertainment*, left the latter magazine in 1992 to join Decker Publications, a sister company of Sendai Publications, the publisher of *Electronic Gaming Monthly*. There they started a new magazine that they fondly called *Electronic Games*. What made the new *Electronic Games* different from other magazines on the newsstand was that it catered to older game players; those who were in college and beyond. No longer did adult gamers have to read magazines that were targeted for children in order to keep up with the industry. *Electronic Games* didn't tell readers how to beat the games but it did provide them with the insight behind those games.

Ironically, as the age bracket for games increased, Nintendo set its eyes on another type of game that appealed to all ages. In this case the game was baseball. In late December 1991, the Seattle Mariners baseball team had been put up for sale. Rather than face the possibility of having an outside buyer purchase the team and move it out of state, Hiroshi Yamauchi, owner of Nintendo Company Limited of Japan, formed an investor group called *The Baseball Club of Seattle* with several Seattle businessmen. The group offered to buy the team for $100 million. Yamauchi would own 60% of the team and the other investors would own the remainder. Protests immediately came in from around the country from outraged baseball fans who didn't want another team owned by a foreign person. It was

bad enough that two teams were owned by Canadians but at least they were still located in North America. The fans looked at Yamauchi's offer as just another way that the Japanese were taking over American businesses.

The Baseball Club of Seattle negotiated with Major League Baseball's Ownership Committee for several months. The deal was finally approved on June 30 but only after the Baseball Club of Seattle agreed to reduce Yamauchi's controlling interest to 49%. The rest of the investors then had a 51% controlling interest in the team. At least this way the majority of the team was still American owned.

Ever since Mattel offered Playcable for the Intellivision in 1980, many vendors had announced plans offering alternative methods of delivering games into homes. It was no different in 1992 when several companies announced their intentions to connect players via the phone lines and other methods.

Baton Technologies' *TelePlay* system allowed owners of either an NES or Genesis to purchase a 2400-baud modem and special software cartridges. Once both were installed players could then call up friends who had the same game cartridge and the two could play against each other. They could play even if one owned an NES and the other a Genesis. Baton also planned a *Downloadable Cartridge* that would allow gamers to download new games. However this special reusable cartridge could only store one game at a time. Baton hoped to have its system ready by the spring of 1993.

Another system that was to begin operating in the spring was the *Games Channel*. The Games Channel planned to supply games via cable into households on a pay-per-play basis. The television set would receive the games and then the player would use his telephone to play them. Although users wouldn't need a game console to play the games, the Games Channel offered something for NES and Genesis owners. A $89.99 modem called the *Super Power American Competition Cartridge* (SPAC) would plug into the game console like any standard cartridge and allow players to 'rent' games by downloading them via an 800 number. The games could then be played like any other game and would remain in the SPAC for 72 hours. The Games Channel also had plans for the SPAC to be able to dial up Compuserve and Prodigy.

A third system used radio signals to deliver games into homes. Unlike the previously named systems, the *Interactive Networ*k was already on the air in San Francisco in 1992. For a one time $200 start-up fee subscribers received a Control Unit and a rechargeable battery. The Control Unit was a hand-held device that was half the size of a lap-top computer and contained a monochrome screen and a retractable keyboard. Afterwards, the monthly subscription fee was $15 for solo play or $35 for competitive play.

Once a person subscribed, he could receive game information from FM radio signals and the Public Broadcasting System. The Control Unit would receive the information just like a radio. Once they were tuned in, subscribers could receive a wealth of games and information. Subscribers for the competitive play could also plug their Control Units into their phone lines and compete against other players who were on-line.

The Interactive Network hoped to release a Genesis-compatible Control Unit in 1993. This cartridge-sized Unit would plug into the Genesis like any other cartridge and would offer the Interactive Network's services over the television instead of the small screen that was supplied with the Control Unit.

The modems that the Interactive systems planned for the videogame consoles were similar to the modems that were available for full-fledged computers. Coincidentally, the videogame manufacturers themselves were introducing another computer peripheral to their dedicated machines: a mouse.

At its simplest, a mouse is a tiny box with a roller on its underside. By moving the mouse in different directions the user in turn moves the on-screen cursor. In a way, the mouse was similar to

the trackball controllers that had been released by Atari and Coleco in the early eighties.

Nintendo came out with its mouse first. The company released the $59.99 mouse for the SNES in October and packaged it along with a software cartridge called *Mario Paint* and a mouse pad.

Nintendo Mario Paint

The other companies quickly jumped on the bandwagon. In November, TTI quickly announced that it was in the final design stages of its own mouse. Likewise, Sega announced its mouse that would be released sometime in 1993. Sega had not yet finalized the style of the mouse and wanted to make sure that it would fit comfortably in the user's hand. The company was sparing no expense to make its mouse perfect.

Sega Menacer

A peripheral that Sega did release in 1992 was a souped-up light-gun called the *Menacer*. Looking like a futuristic bazooka, the $59.99 Menacer was completely cordless. It worked in conjunction with a separate infra-red controller that attached to the Genesis and sat on top of the TV. The Menacer came with one cartridge that contained six games.

On the portable gaming front, there was nothing new. However a rumor passed around the Winter CES that Nintendo was developing a color Gameboy. Although details were sketchy at best, sources in the know claimed that the new unit would be downwardly compatible. It would accept all Gameboy cartridges although the standard Gameboy cartridges would naturally be in black and white on the new machine. Also, to keep the cost at $99, the screen would be of lower resolution than either the Lynx or the Game Gear. There was no word when Nintendo hoped to get the unit into stores.

All in all, 1992 had been a year of promises. Although Sega did debut its CD- ROM player and TTI did release the TurboDuo, the rest of the industry just announced new products that they planned to get into stores sometime in 1993. Unfortunately, promises had been made before and promises had been broken. Ironically, Atari, the company best known for making and breaking promises, was making new ones.

Atari wasn't the only company that was promising a new game system. At the end of the year, a new company called *3DO* promised a new CD game system. Although the unit wasn't expected to be released until the fall of 1993, information regarding the new machine began appearing rather rapidly.

The 3DO was going to be the first CD-only game machine. With a 32-bit RISC processor the machine would operate at a speedy 25Mhz. Unlike other gaming machines the 3DO would process compressed data allowing the CPU to receive more data from the CD at one time thus making it even speedier than if it used conventional data.

The 3DO console would have plenty of expansion ports so it would be ready for any future technology. It would also have additional ports for players to add extra controllers or a MIDI keyboard.

The 3DO had plenty of backing. Behind it were giant corporations such as Matsushita (Panasonic), Time-Warner, and MCA. Third party software support also seemed to be in the bag as many

companies were interested in the machine. Almost 470 people attended a 3DO developer's conference to see what the machine was capable of. Fifty third-party companies had already signed up to work on the machine by the time the 3DO was officially announced.

The third decade of videogaming had begun.

CHAPTER TWENTY
1993

By 1993, videogames were creating so much excitement that it looked like the golden age all over again. Even the print media seemed to be reliving the golden age of ten years earlier. In September *Videogames & Computer Entertainment* shortened its name to *Video Games*. It then joined the year old *Electronic Games* in having the same title as a magazine from the eighties.

Panasonic REAL 3DO

Although the magazines seemed to be the same, the technology and manufacturers in 1993 were definitely different than their counterparts of a decade earlier. When the year began the videogame world was a-buzz with a number and two letters: 3DO. A videogame console first and foremost, the 3DO would also play educational software and display Kodak photos. The unit also had a port that allowed the inclusion of a computer keyboard and another port that would let several peripherals "daisy-chain" together. The console needed this second port to support the new peripherals that were being planned. Among them was a cartridge that would provide the console with the ability to display full-motion video, and 3D goggles that were similar to Sega's LCD Master System 3D glasses. Finally, the 3DO was also being designed as a TV receiver so it could later take advantage of cable interactive television when that technology was ready.

At the beginning of the year over 80 independent software companies signed on to the 3DO. The unit was so impressive that over 500 people attended a 3DO press conference at the Winter CES. Elsewhere at the show, a prototype of the console was displayed at both 3DO's and Panasonic's booth. It was at the latter's exhibit because Panasonic was going to be the first company to release the new machine. Although 3DO designed and developed the console, it licensed the machine out to other companies rather than manufacture it itself.

On May 13, Panasonic displayed the *FZ-1 REAL* (Realistic Entertainment Active Learning) 3DO player to a select group. By this time there were over 200 third-party licensees giving the 3DO more third-party software developers than any other console. Most of the group agreed that the 3DO was well worth its high $700 price. Panasonic officially debuted the REAL 3DO player at the Summer CES. Displayed along with the hardware were 35 software titles that were ready to be released. An additional 91 titles were said to be "in the works". Sanyo, which was still negotiating with 3DO, displayed a prototype 3DO player.

When Panasonic released the first 3DO player in early October, the response was less than enthusiastic. Although there were over 360 licensed developers and 110 projects in development, the combination of the $700 retail price and the scarcity of available software kept serious buyers away. 3DO executives pointed out that new items were always expensive at first but then the price eventually fell. Examples of this were the VCR and CD player which both cost over $1000 when they were first released and were drastically reduced as time went on. The 3DO was simply another electronic device in that mold.

Another problem was that most consumers had no idea what a 3DO machine was. If it was a game

machine then it was terribly overpriced compared to the other consoles on the market. If it was a multimedia machine then there was a different problem. The small percentage of consumers who were knowledgeable about multimedia machines were being lured by several non-compatible machines. Unfortunately most of the general buying public didn't have any idea what a multimedia machine even was; let alone whether they needed one or not.

While the 3DO was a multimedia machine that pretended to be a gaming machine, Atari's Jaguar was just the opposite: a gaming machine that promised to step up to full multimedia capabilities.

Atari was still secretive about its new machine prior to the Summer CES although it did proudly proclaim that third-party developers who saw both the Jaguar and the 3DO all favored its new machine. At the CES, Atari only displayed a video of the machine, preferring to debut the machine at another time.

Atari Jaguar

All speculation about the machine came to an end in mid-August when Atari finally unveiled the Jaguar at its Sunnyvale headquarters. The conference had originally been scheduled only for gaming journalists. However when Atari president Sam Tramiel learned that 3DO was spreading inaccurate information about the Jaguar to the press, he decided to open the press conference to all journalists. This worked to his advantage and Jaguar news was published in virtually every newspaper in the country.

Atari planned to release 50,000 units in New York, San Francisco, London and Paris in October with a national and European release in the Spring of 1994. The official word on the machine was that it would be cartridge-based although an optional $200 CD-ROM player would be available in the Spring of 1994. There would also be a 32-bit expansion port that would support cable and phone networks and a modem. The console would cost around $200 and come with one cartridge and a ten-button Power Pad Controller.

Shortly after the debut of the Jaguar, Atari officially announced something that had been running through the rumor mills at the CES: the company had joined forces with IBM to produce the machine. Actually Atari signed a thirty-month contract with the monolith computer company to manufacture, package, and distribute the Jaguar. This deal brought the manufacturing of videogame consoles back to the United States as the new Jaguars were being built in Charlotte, North Carolina. It also marked the first time that IBM ever manufactured a product for a company other than itself.

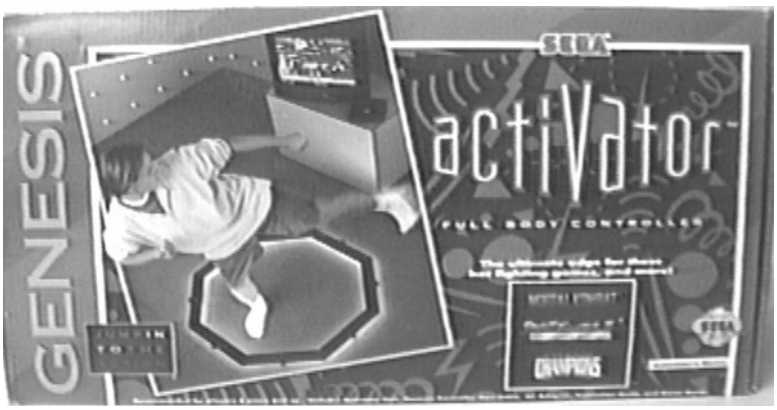
When the Jaguar had actually been released in late 1993, it was priced slightly higher than originally promised. The unit retailed for under $250 and all of the initial consoles sold out quickly. However despite the spectacular technology that Atari delivered for a reasonable cost, many journalists were still skeptical about Atari's ability to deliver software. The portable Lynx had been Atari's shining glory when it first came out in 1989 but by 1993 the lack of software made it practically a memory. Sales had been so poor that Toys R Us decided to quit selling it altogether. Atari promised that this would not be the case with the Jaguar and as if trying to prove it, released a list of over twenty third-party developers that were working on Jaguar games. The company also announced stunning peripherals for the console. One device allowed the Jaguar to act as a server and feed multi-player games to linked Lynxes. Another promised peripheral was an MPEG-2 video compression cartridge that would give the Jaguar the ability to play laser-disc quality CD movies.

Finally, the most ambitious peripheral was a virtual reality helmet.

Atari's proposed virtual reality helmet had been planned to compete against the *Sega VR*, a virtual reality helmet for the Genesis that Sega displayed at the Winter CES.

Taking the Sega LCD 3D glasses one step further, the Sega VR was a visor that contained a stereoscopic video display and stereo headphones that covered the player's ears. Between the visual and audio displays the player felt like he was completely immersed in the game. Although the gamer didn't need a TV set to use the Sega VR, he still needed to hook the unit up to a Genesis console that he communicated with via a standard controller.

While the Sega VR had the ability to make the player feel like he was in the game, another new Sega peripheral really did put the player into the game.



Sega Activator

The *Activator* was similar to Mattel's Power Glove and Broderbund's U-Force Controller, two peripherals that had been released for the NES in 1989. However, while the NES controllers could only duplicate moves that the gamer's hand made, Sega's Activator simulated action made by the player's entire body.

The Activator consisted of eight modules that interlocked together to form one octagon-shaped unit that sat on the floor. The player stood inside the center of it. When the unit was turned on, each of the eight modules sent infra-red beams up towards the ceiling. By breaking any of the infra-red beams with his hand or foot or head, the player sent signals back to the Genesis that were comparable with pressing the controller buttons.

The $79.99 Activator was released in November. Although the unit didn't come with a game of its own, it did include a booklet that revealed what moves gamers had to make in order to play the most popular games.

By itself, the Activator really was just a deluxe controller. Although the player provided the moves, he really only controlled an on-screen character. The Sega VR on the other hand let the player feel like he was actually in the game. Together, the Sega VR and the Activator provided the nucleus for an at-home virtual reality system. Unfortunately, although the Sega VR had been planned for a 1993 release, the year ended without its debut in the stores.


Sega Genesis 2 & Sega CD 2

The Activator wasn't the only new product that Sega released in 1993. In the summer the company released the new redesigned Genesis and Sega CD that it had announced in 1992. The CD player featured a lid that the gamer lifted manually to insert or remove the disk. This replaced the motorized front-loading drawer that was on the original model. The change didn't affect the quality of the player at all and helped reduce the retail price from $299 to $229. The new Sega CD sat alongside the new Genesis rather than beneath it. Sega also released an optional extender plate that would allow owners of the original Genesis to use the new CD player.

As Sega released its new slimmer Genesis systems, JVC announced its Wondermega 2. Like the original Wondermega, the new unit was essentially a Genesis unit with a built-in CD player. However like Sega's new Sega CD, the CD player on the Wondermega 2 also had a pop-up lid. The unit even

resembled the new Sega Genesis and Sega CD when they were connected together. JVC planned to sell the new unit for $545 in Japan only.

In December the word from JVC was that it was also going to sell the new Wondermega in the United States beginning around April 1994. The console would sell for $500 and be called the *X'Eye*. JVC planned to emphasize the multimedia capabilities of the X'Eye by packaging the unit with *Compton's Multimedia Encyclopedia*, a Karaoke disc, and a Sega-CD.

Although Sega and JVC were introducing new versions of the Genesis, Sega was still looking towards the future. Sega of America's CEO Tom Kalinske hadn't been impressed about Nintendo's 1992 announcement that it was working on a 32-bit game system. Kalinske responded by making it clear that 32-bit technology wasn't new to Sega and that Sega's arcade division had been developing 32-bit games for years. By the time the Summer came around Kalinske bragged that his engineers had been developing a new game system for a while and they could release it on demand if they wanted.

The *Saturn*, Sega's new CD-based machine, was being held back because Kalinske felt that it would be too expensive to market since Sega didn't want to release a CD-console that would cost more than $500. Another reason that Sega didn't want to rush the new console to market was because it wanted to promote the already available Sega-CD for the 16-bit Genesis. Sega believed that as new technology became available, the Sega-CD would only improve with time. *Cinepak*, a new technology that was already available, improved the performance of the Sega-CD in the area of full-screen full-motion video by increasing the number of on-screen colors from 64 to 512. Although Sega hadn't yet used Cinepak in any available software, it planned to use the technology in new CD titles that were in development.

The Saturn would be compatible with the current Sega-CDs. What was undecided was whether the console would be compatible with Genesis cartridges just as the Genesis had been with Master System games.

Sometime during the summer, the corporate minds at Sega of Japan realized that Sega of America couldn't release its Saturn on demand so it decided to get into the act. On September 21 the company joined forces with Hitachi to quickly manufacture the 32-bit RISC processor for the new game console. The company then announced that the Saturn would be available in Japan by the Fall of 1994 and that JVC and Yamaha would join Sega in the distribution of the console.

The Saturn was to be built around a customized 68030 processor. This was bad news for owners of the Sega-CD, which utilized a 68000 processor. The different chips made the Saturn incompatible with the 16-bit game discs. Although it was possible for Sega to include a set of 68000 chips in the Saturn that would increase the cost of the unit dramatically. However Sega definitely wanted to keep the price as low as possible so it could compete against the Jaguar and whatever Nintendo was going to come out with. Game designers on both sides of the Pacific became worried. Japanese Mega-CD companies were afraid that the Mega-CD would be dumped in favor of the new machine. American Sega-CD designers were concerned about how the American release date of mid-1995 would affect their sales. They were afraid that during the Christmas 1994 buying season consumers would forego buying any new Sega-CD systems in anticipation of the new system.

In October, Sega of Japan announced that the Saturn would include a 64-bit video-processing chip. Based on this information, the press soon began calling the Saturn a 64-bit system. To alleviate any confusion that this tag would create, Sega immediately began referring to the Saturn as a *multi-processor* system, an accurate moniker since the Saturn contained seven different processors.

All of the news about the Saturn was now coming out of Japan despite the fact that Tom Kalinske first bragged about it during the Summer. Ironically, Sega of America was now being very silent about the new console. It wanted to keep the Genesis/Sega CD market alive as long as possible.

As the year came to an end Sega remained quiet and journalists began to speculate whether the

machine even existed. However two third-party companies, Acclaim and Virgin, were already developing software for the Saturn giving credence that it was real after all.

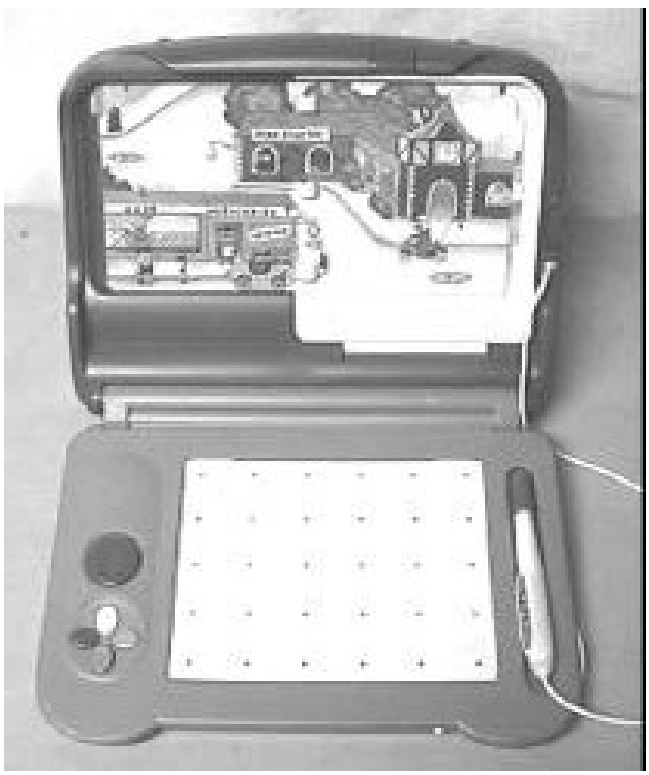
Despite its aggressive development on the Saturn, Sega continued to improve on the technology for the Genesis and Sega CD. In June, Sega announced that it would be using Ramtron International's *FRAM* (Ferroelectric Random Access Memory) chips in its games. These unique chips could store external information such as high-scores and game saves without the need for a separate lithium battery inside the cartridge shell.

Even as Sega was accepting delivery of 100,000 FRAM chips from Ramtron International, the company announced that it was developing a new chip that enhanced game speed. The chip would first be used in a game called *Virtua Racing*.

Sega Genesis CDX

In December Sega introduced a portable console that would be available in March 1994. The *Genesis CDX* was the size of a portable CD player and weighed only 1½ pounds. It featured a lift-up top so Sega-CDs could be placed onto a platter as well as a cartridge slot for Genesis games. Despite its tiny size, the unit was completely compatible with both Genesis and Sega CD software. Although Sega touted the Genesis CDX as a portable, it really wasn't when compared to the Gameboy and Game Gear. It was only portable in the sense that its small size made it easy to carry around. Since it didn't have its own monitor its only real portable use was by doubling as a portable CD player. However its $400 price tag made that use impractical.

Sega wasn't satisfied with just being a leading figure in home videogames. In early 1993 the company opened an interactive amusement center called *Metropolis* inside London's prestigious Hamley's Toy Shop. The company followed it with a stand-alone center in Bournermouth, England. On top of this, Sega of Japan planned to open 50 virtual reality theme parks by the year 2000 all over the world.


Sega Pico

In June Sega of Japan slightly forayed into the world of computers when it released *Pico*, a small computer for children aged 3 to 6. The Pico opened like a PC notebook but had to be connected to a TV set because it didn't have its own monitor. Its software looked like books that could be inserted into the computer. As the pages of the book were turned, images on the TV screen changed. The Pico also had an attached stylus that children could use to animate on-screen characters by touching their corresponding images in the book.

The $140 Pico included four software books. Additional books were in development by other software companies such as Bandai and ASCII. Sega planned to release the small computer in the United States sometime in 1994.

In 1993, Nintendo surprised everyone and revealed specs for a CD-ROM player. The SNES *ND Drive* was built around a 32-bit RISC co-processor, so-called because it

worked in tandem with the SNES' 16-bit processor. The ND Drive hooked up to the SNES via a cartridge called the *ND System Cart* that plugged into the SNES' cartridge port. The System Cart contained chips that gave the SNES the 32-bit processing capability it needed to access the CD games. It also expanded the available memory in the SNES and processed data much faster. A cord attached the cartridge to the ND Drive that was the same dimensions as the SNES. This allowed the game console to sit on top of the CD-player, much like the original Genesis that sat above the original Sega-CD.

The CDs were packaged in individual plastic caddies that kept them out of harm's way. A security device that would prevent illicit copying of the CD was built into the caddies along with 256,000 bits of memory so players could store game data. The CDs could also play on Philips' CD-i multimedia machines.

The ND Drive contained a CD-ROM decoder that was called *HANDS* (Hyper Advanced Nintendo Data Transfer System). HANDS did the work of reading the main memory and some data conversion. This freed the co-processor and allowed it to do its own work without stopping. HANDS also enhanced the SNES' audio system.

Although Nintendo didn't mention a release date, speculation was that the machine wouldn't even be shown until the 1994 Summer CES. Limited numbers of the CD-player wouldn't be released until the 1994 holiday system at the earliest.

The announcement of the ND Drive made owners of the SNES happy. After hearing in 1992 that Nintendo was abandoning its 16-bit CD-player, many owners wondered if they should have bought a Genesis that already had a CD-player. Now it appeared they were going to get a CD-player after all and it was going to be a 32-bit unit to boot!

Unfortunately their delight was short-lived. In September Nintendo made an announcement that would impair their trust in the company forever. At that time Nintendo announced that it was teaming up with Silicon Graphics, one of the world's leading visual computer technology companies, to create a new 64-bit game machine code-named *Project Reality*. Unlike previous machines that Nintendo developed and manufactured itself, Silicon Graphics would manufacture the console and Nintendo would pay a royalty for every unit sold.

The new system would feature the Nintendo designed *Reality Immersion Technology* that would allow players to become part of the games; sort of like virtual reality on a standard television set. The microprocessor in the console would have a clock speed of over 100MHz! The unit would feature real time 3D graphics, CD quality audio (although it would not incorporate a CD drive) and generate more than 100,000 polygons per second. Nintendo hoped to have the unit in stores by Christmas 1995 with a retail price under $250. The company also planned to introduce the Project Reality technology in its arcade games sometime in 1994.

Unfortunately for the owners of the SNES, not only was Project Reality going to be incompatible with any other Nintendo console, Nintendo was once again scrapping its plans for the CD-ROM drive for the SNES. Apparently Nintendo decided to sink all of its development money into Project Reality at the expense of the ND Drive. Nintendo promised that Project Reality would be compatible with any *future* projects but this of course wasn't any consolation to the 8.6 million owners of the SNES.

If there was any comfort for SNES owners it came from companies other than Nintendo. One company, Virtual Maxx, displayed a helmet at the Summer CES that it hoped would be the basis of an SNES virtual reality system. The helmet contained a tiny TV monitor that displayed the game when the helmet was plugged into the SNES. The player merely had to turn his head a certain way to control the on-screen figures. Unfortunately, like Sega's Activator, the helmet was really only an innovative controller. To have a shot as a virtual reality contender new first-person software had to be developed.

Nintendo NES 2

An English company called Hornby of England displayed an SNES peripheral that would allow the 16-bit console to play all of the NES' 8-bit cartridges. The *Superdeck* did not violate any of Nintendo's patents and Hornby expected it to be available in England by the fall for around $60. Both Camerica and Innovation showed interest in importing the device to the United States where they would sell it for $70. Unfortunately brand new NES consoles were retailing for that price so unless Hornby could somehow lower its costs, no one expected it to be a strong seller in the United States. Even if Hornby managed to lower the costs, it wouldn't have made much of a difference. At the Summer CES Nintendo announced that it was coming out with a redesigned NES 2 that would sell for under $50. Although the new unit would be sold with only one controller and no cartridges, Nintendo promised that it would be releasing more than 30 new NES cartridges during 1993. Nintendo actually shipped the new unit in the Fall.

Despite its inability to release anything new in the way of hardware, Nintendo still had a banner year in 1993. For the first time the company shipped over one million copies of a single game (*Starfox*). By the end of its fiscal year, Nintendo earned over $8 billion in sales and a net income of nearly $764 million. Even in what seemed like bad times Nintendo was still the leading videogame company in the world.

When Nintendo decided to go ahead with Project Reality, it did it at the expense of a CD-ROM player for the SNES. This severed the Nintendo/Sony relationship for good. Although the binds between the two companies had been weak at best, the bottom line was that they did have an agreement to work jointly developing a CD-ROM player. In 1992 Sony hadn't been too happy with the agreement with Nintendo and even hinted that it might go ahead with its own CD-based videogame console. In November 1993, Sony officially announced the formation of a new division called the Sony Computer Entertainment Company.

The first project by this new company was to release its new CD-ROM based game console in Japan at the end of 1994 and in the United States and Europe the following year. According to Sony the new system, code-named *PS-X*, would employ a 32-bit RISC chip and have graphic capabilities that would be able to generate 360,000 polygons per second and 16.77 million colors.

Shortly following the news of the PS-X, Sony announced that it had signed with Namco to develop software for the new system. It also said that it contacted many of the 3DO developers and several were seriously interested in creating software for the PS-X.

For most of the year the only news from TTI concerned its prevalent console, the TurboDuo. In March, TTI changed the name of the console to the *Duo* and its software to *Duo Soft* and then released the unit throughout the entire United States. As the Duo became widely available in the US, NEC Home Electronics of Japan introduced the new *Duo-R*; a less expensive version of the PC Engine Duo that was sold in Japan. By making some minor changes to the console, NEC was able to lower the price from $475 to $320. However since the Duo was already being sold for under $300 in the States, it was unlikely that the new version would reach the American shores. The Duo cost less in the United States because TTI wanted Americans to get enthusiastic about it. Since it was already very popular in Japan, TTI was able to sell it there at a higher price.

By the end of 1993 NEC and TTI joined the other console manufacturers and announced that they were coming out with a 32-bit machine. Originally dubbed the *Iron Man*, the *FX* would be a CD-only based system and would be built around a V-820 RISC processor. Like Sony's PS-X, the FX would generate 16.77 million colors and would retail for around $480. Despite its effort to get people interested in the Duo, the FX would not be compatible with the Duo at its release sometime in 1994.

Amiga CD32

Commodore, the maker of the Amiga computer, also decided to jump onto the CD-based game console bandwagon. The *Amiga CD32* was a 32-bit CD-based multimedia game machine that Commodore introduced in October and planned to release by Christmas. The 14Mhz machine was capable of displaying 256,000 colors at one time from a palette of nearly 17 million colors. With an additional planned MPEG-1 cartridge, the unit would be able to play motion pictures and photo CDs in addition to the regular game discs and audio CDs. Like the other new systems that were being planned, Commodore claimed a slew of third-party developers. However, the Amiga CD32 already had a large amount of available software titles because Commodore made the Amiga CD32 compatible with its nearly defunct CDTV multimedia system. The 3DO had virtually no software available when it came out. Another major selling point for the Amiga CD32 was its $400 price tag; $300 less than what Panasonic was selling its 3DO player for.

In 1989 an English company called Konix had tried to distribute the innovative Konix Multi-System but failed. In 1993, another English company named MSU merged with a Taiwanese company called TXC and announced plans to once again attempt to market the Konix Multi-System. However their updated version of the machine would incorporate a 32-bit processor that would run at 30Mhz and be exclusively CD-based. The company planned to sell 150,000 units in early 1994 first in England and then in the rest of Europe. No decision had been made at the time whether the machine would be available in the United States.

Pioneer, the company that kept the laserdisc industry alive by manufacturing laserdisc players when no one else bothered, decided to step into the CD-videogame arena in a different sort of way. Rather than introduce a new console, Pioneer introduced a new laserdisc player that included ports for three optional expansion modules. One module would play Sega CDs; one that would play Duo CDs; and a third would play Karaoke discs. The player itself cost $700 and each module was priced at $400 making this a very costly system. However, both Sega and TTI decided to support the system by developing games on conventional laserdiscs in addition to their standard CD games.

While some companies were getting their feet wet in the lucrative multimedia market, other companies were peddling portable wares. Although the Lynx was dying a slow and lingering death, other companies figured that there was still life in systems that could be taken anywhere.

A Hong Kong-based company called Watara decided to go after the low-end of the portable market. Their *SuperVision* was a direct competitor against the Gameboy. The SuperVision had a 2.76" X 2.76" monochrome LCD screen, clearly the largest screen of any portable system available. The screen was built into a pivoting base. This allowed a player to merely tilt the screen if he had too much glare. The buttons on the unit were larger than those on the Gameboy and spaced a little farther

apart. Features that made the Supervision similar to the Gameboy were links to connect more than one unit together and stereo sound. Despite their similarities, the two portables were not compatible.

Watara Supervision

Watara planned to release a link by August that would connect the SuperVision to a standard television set. When displayed on a color TV, the monochrome games would be in color. The SuperVision sold for $50 and included one game while additional cartridges sold for between $8 and $18. Coincidentally, around the same time Watara released the SuperVision in the United States, Nintendo reduced the price of the Gameboy to $50. Although this new low price didn't include a cartridge or video link cable, it did come with an available library of over two hundred games by Nintendo and dozens of third-party companies. Watara promised that forty cartridges would be available but none of them by third-party vendors.

As Watara tried to compete against Nintendo's low-end machine, Bandai, a Japanese electronics toy company, decided to go after the company's Super Famicom. In June Bandai displayed a portable Super Famicom that it called the *Home Entertainment Terminal* (HET). The HET had a 4 inch color LCD screen, a TV tuner, and the capability to connect with different peripherals such as a printer, modem, fax machine, and CD-ROM player. Bandai never gave a release date and many critics were skeptical if the unit would ever see the light of day. Besides, rumors began coming out of Nintendo near the end of the year that the company was planning to release its own portable SNES.

Taking Bandai's idea one step down, Innovation developed a hand-held unit that could play NES games. The *Top Guy* resembled a Game Gear but it allowed NES cartridges to be inserted through its top (hence its name). It also included a cord that could connect it to a TV set and a port that accepted NES controllers. As with the Bandai unit, there was no mention of when the unit would be available.

While Innovation wasn't in any rush to get the Top Guy into stores, it did hurry on its other product the *Pro Action Replay*. Innovation had released a Genesis version of the Game Genie competitor in 1992. In early 1993 it came out with units for the SNES and Gameboy.

Although the Pro Action Replay altered game code like the Game Genie, it worked in a very different way. Players had to input specific codes into the Game Genie in order to make it work correctly. The Pro Action Replay altered the program's code itself by searching the console's RAM for specific addresses that held different game variables. The player inputted into the Pro Action Replay the features he wanted activated and the unit changed the appropriate variables into constants.

Although the units were manufactured in England by Datel, its US distributor, Innovation, announced that beginning in the summer it would market its own version that would be called *Game Wizard*. Although the Game Wizards would be functionally identical to the Pro Action Replays, they would cost considerably less once they were manufactured in the States.

In late 1993, ads began appearing in the videogame magazines promoting a new code-altering device for the SNES called the *GameMage* by a company called Select Solutions. The ad said that the GameMage remembered codes; once entered, they never had to be entered again. Curiously, none of the magazines chose to review this unit.

As Innovation introduced its new code-altering devices, Camerica, the Canadian importer of the Game Genie, went full steam trying to push the Aladdin. The company displayed it at the Winter CES and received kudos from all the press. Unfortunately, before Camerica could release it, the company suddenly shut down. Codemasters, the British designers of the Game Genie and Aladdin announced

that it would take over Camerica's business in North America but it couldn't get the Aladdin out by Christmas 1993.

Meanwhile, CodeMasters was busy with the Game Genie. In September the company announced that it was developing a Game Genie for the Sega CD. Many people thought that this would be impossible because of the high volume of I/O that the CD-drive had to make. Briefly, the new Game Genie would catch the data sent from the Sega-CD before it could reach the Genesis at the point where the Sega CD connected to the Genesis' expansion port. Codemasters didn't say when the new Game Genie would be available since the unit was still in development.

At the same time Codemasters also announced that it was beginning production of its new *Game Genie 2*. The Game Genie 2 worked like the Pro Action Replay as it searched the console's memory for specific addresses rather than have the player input the altering codes. Although the new device could have been ready in time for Christmas, Galoob decided to hold off its distribution until 1994. The company cited that it didn't have enough time to set up its advertising or its national distribution in time for the holidays. Meanwhile, Galoob released a Game Genie for the Gameboy early in the year and followed that later with one for the Game Gear.

Many software companies weren't happy with the idea of another Game Genie. Most companies felt that the Game Genie didn't hurt their business because most of their games were sold before the codes could be released. However others claimed they lost sales because potential customers no longer found the games challenging enough after renting and solving them with Game Genies. Rumors spread that one software company, Sunsoft, "cheat-proofed" its games. Sunsoft denied these accusations.

Nobody was against the Game Genie more than Nintendo of America. In March, the company learned that the US Supreme Court rejected its appeal of the decision that allowed Galoob to sell the code-altering device in the United States. Despite this loss Nintendo still refused to admit defeat and looked for other legal ways to get out of paying the $15 million that had been awarded to Galoob.

Meanwhile Nintendo was awarded $24 million from two Taiwanese companies that were found counterfeiting Nintendo games. One of the companies, believed to be among the largest counterfeiting rings in Taiwan, was called the *Nintendo Electric Company*.

Nintendo was also a winner in a suit against Atari Games (Tengen). The US District Court in San Francisco ruled in July that Atari's games infringed on Nintendo's patents for the NES' security system. However Atari filed appeal papers that questioned the validity of Nintendo's patents and whether Atari committed *willful* infringement or not.

In November, Atari Corp. filed a lawsuit against Sega. Atari charged that Sega had infringed on Atari's patents regarding horizontally scrolling games; especially in *Sonic The Hedgehog*. Although Atari held talks with Sega regarding the problem, the company felt that the talks were going nowhere and so it had to resort to a lawsuit.

The Sega/Atari conflict came at a time just when Sega was recovering from a prior long and drawn-out lawsuit against Accolade. In March the Ninth Circuit Court of Appeals refused Sega's request for another hearing on the case. Rather than attempt to sue Accolade on other grounds the two companies finally settled out of court in May. According to the settlement, both companies agreed to pay their own court costs and Accolade became a legitimate licensee of Sega.

Accolade became a Sega licensee just when Sega was about to take part in a new venture. In May the two largest cable companies in the United States, Time-Warner and TCI, joined forces with Sega of America to form the *Sega Channel*, a cable service that was reminiscent to Mattel's old Playcable for the Intellivision. For ten dollars a month and an unspecified one-time price for a decoder that

plugged into the Genesis' cartridge port, gamers would be able to download approximately fifty games to their Genesis console via cable TV. In addition to the current games that would be updated every month, Sega of America also planned to include Japanese games that normally wouldn't be available in America. The Sega Channel would also show scenes from forthcoming games. In addition, gaming contests would be available to subscribers.

Sega originally planned to begin test-marketing the new channel in selected cities in August with the entire system going on-line by January 1994. This of course wasn't the case. In December the company announced that it had signed up with General Instruments and Scientific Atlanta to design and manufacture the equipment that was needed to deliver the games. The new schedule planned for test-marketing to begin in March 1994 with the system going nationwide by the Fall. Meanwhile in November, Sega of Japan already began its own test-marketing for a similar system. The Japanese system employed a battery-powered game receiver cartridge that could save data. Sega of Japan confirmed that if the test-marketing of nearly 500 households was successful, the system would be ready nationwide sometime in 1994 and cost users between $19 and $29 a month.

Sega also teamed up with AT&T and P.F. Magic, an interactive entertainment company, to develop games that allowed gamers to compete against one another via the phone lines. AT&T's first incursion into the videogaming industry was a Genesis peripheral called the *Edge 16*. Basically, the Edge 16 was a 4800 Baud modem that plugged into the Genesis' cartridge port; cartridges could then be plugged into another port that was built into the modem. Once connected, players could then dial up their friends on the phone and compete against each other. In a way it was like the Gameboy's Video Link as they both had to own a copy of the game cartridge.

AT&T planned to release the Edge 16 in the summer of 1994 and promised to develop interactive software in time for the unit's debut. Other software developers such as Tengen, GameTek, and of course Sega also planned software.

Once it sunk its teeth into the videogame world, there was no stopping AT&T. In September, Sierra On-Line sold AT&T its controlling interest in the *Sierra Network*, an on-line entertainment service available to PC owners. AT&T changed the name of the service to the *ImagiNation Network* and promised to upgrade it so it would also be available to 3DO (which AT&T also had a stake in) and Genesis owners via the Edge 16.

Meanwhile the Games Channel, which was introduced in 1992, hoped to get on-line nationally in the fall. Like the Sega Channel, games could be downloaded and players subscribed with a monthly fee ($10 for 20 hours or $20 for 60 hours). The Games Channel used the telephone lines to deliver the games and was available for the NES, SNES, and Genesis.

Nintendo of Japan wasn't sitting on its laurels as other companies began to start up alternate ways of distributing games into the home. In May, the company bought Japan's only satellite broadcasting company and immediately began formulating plans on how to use it for games. Nintendo planned to develop special games that would take advantage of the satellite network and allow all the gamers who were signed on to compete at one time against each other. Some ideas that were thrown around involved timed high score contests and quiz games. Of course nothing was finalized as Nintendo still wanted to do studies comparing satellite broadcasting to the standard cable and phone methods. Nonetheless if Nintendo decided to go ahead and use the satellite to deliver games, it hoped to have the system up and running by early 1994. Nintendo of Japan didn't have any plans to export the system outside of Japan and Nintendo of America didn't show any interest in it. Nevertheless, in June the *San Francisco Chronicle* published a rumor that Nintendo planned to start an interactive TV network that would feature entertainment, games, and shop-at-home services. The service was supposed to start up by the end of the year but when December 31 came around, the system was still only a rumor.

There was another way to get games into people's homes without selling them and that of course

was the rental market. Blockbuster heavily promoted the renting of games and Electronic Arts even released a Genesis game strictly for the rental trade: *John Madden Football Championship Edition*. More and more video rental outlets began carrying videogames as the lines between videogames and motion pictures diminished. Although there have been videogame tie-ins with movies ever since Atari released *Superman* for the 2600, a new videogame was introduced in 1993 that actually incorporated movie footage into the game. Virgin's *Demolition Man* for the 3DO, which was scheduled to be released in February 1994, also included special scenes that were filmed especially for the game starring the film's stars: Sylvester Stallone and Wesley Snipes.

The airlines were one place where movies were viewed so it was only natural that videogames wound up there also. In early 1993 Sega signed a deal with Matsushita to manufacture and sell videogame systems that would fit in the back of airplane seats. Meanwhile In-Flight Phone International, the company that originated Flightlink, received a hefty investment from Mercury Communications of London. In-Flight used this investment to start In-Flight Phone Europe and expand their Flightlink service to international flights going to Europe. By year's end In-Flight Phone Brazil Corporation was started up to provide Flightlink services to South American countries. More and more airlines signed up as the service expanded. In-Flight also signed a deal with Epyx to provide Epyx games on the planes. Previously the service only provided simple games such as *tic-tac-toe* and *reversi*. In addition to the videogames that cost the player a one-time charge of three dollars, In-Flight also provided phone and fax service, stock quotations, and a radio that offered news, sports and music.

Naturally, Nintendo couldn't be left out of the fledging airline gaming market. In early fall the company unveiled the *Nintendo Gateway System*, an interactive service that provided games, movies, travel information and other services to airplane passengers. Nintendo also installed the service on cruise ships and several hotels.

Ironically, as more and more airlines began carrying videogames for their passengers the FAA was deciding to ban passengers from bringing their own portable games onto planes. They believed that electronic units such as portable game machines, portable computers, and cellular phones clashed with the plane's navigational system. Eventually these systems were banned from use only during takeoffs and landings. However this would only be the beginning of the US government's attempt to control where and how videogames were played.

Ever since Steve Russell programmed *Spacewar* in 1962, videogames tended to be of a violent nature. The violence was reaffirmed in 1974 when Kee Games released *Tank* in the arcades. As the games became more and more sophisticated, the violence within them also matured. By 1993 the graphics were so detailed, even live-action in some cases, that on-screen characters actually bled when they were killed. As they had done for the previous twenty years, parents complained to the videogame companies that this violence had to stop. A USC professor named Marsha Hunt claimed that violence in videogames was more harmful to children than the violence found on TV. Parents were no longer going to buy violent games for their children. Unfortunately the only way parents could actually know if a game was violent or not was by renting it first and trying it out. There had to be a better way.

In May of 1993, Sega finally responded to the pleas of the parents and announced that beginning in August it would rate its games in a similar way that motion pictures were rated.

Sega formed an executive advisory council that worked with consumer groups to set the ratings. The games themselves were rated on their basic rules; their graphics; and their audio content.

Sega came up with three ratings: **GA** for General Audiences; **MA-13** for mature audiences with parental discretion advised; and **MA-17** for adults only and not appropriate for minors. When the

ratings were first imposed only one game, *Night Trap* received an MA-17. This was a game that Great Britain and Australia wouldn't allow imported into their countries because of its life-like violence. However, even if a game received an MA-17 rating, there weren't any laws that required store owners to enforce it. Despite the rating, anybody could still buy the game. Even Sega CEO Tom Kalinske was aware that the ratings had no legal power behind them to prohibit anyone from buying certain games. However, he hoped that people used the ratings as a guide to decide what games to purchase. Kalinske admitted that Sega was developing games to appeal to different age groups and he was particularly concerned that parents buy games appropriate for their child's age.

Sega suggested that the other videogame manufacturers should follow its lead and offer similar rating systems. Nintendo immediately condemned Sega's rating system and declared that it had only been started so Sega could justify the sales of increasingly violent games. Nintendo on the other hand didn't need a rating system because its game development guidelines already banned very violent games along with nudity, sexual violence, profanity, and drug use. Nintendo's spokespeople all claimed that every one of its games was rated **G** and appropriate for all ages.

The big test came in the late summer when software developer Acclaim released the home edition of *Mortal Kombat* for virtually all of the home gaming platforms. *Mortal Kombat* was a hit in the arcades mainly because of its realistically detailed graphics. Fighters in the game could be decapitated and blood would flow rampantly. If the home edition was anywhere as gory as the arcade one, the game would definitely be a candidate for an MA-17 under Sega's guidelines. Strangely enough, it didn't work that way.

The SNES and Gameboy editions of *Mortal Kombat* weren't as violent as the arcade version. Blood had been substituted by sweat and the most dangerous moves in the game were either removed or changed. However despite Nintendo's claim that all of its games were rated G, even the water-downed *Mortal Kombat* should have been rated PG-13 at the least.

The Sega versions of the game were a little different. Sega gave this game an MA-13 rating, which might have been accurate except for a few Easter Eggs that were thrown in. The versions of *Mortal Kombat* that were shipped for the Genesis and Game Gear were so innocent that the warriors couldn't even sweat, let alone bleed. However it was soon discovered that players could enter secret codes that would then allow the warriors to bleed freely and even get decapitated if need be; a feature that wasn't mentioned in the game manual. Videogame magazines and newspaper articles all printed the secret codes that were soon in the hands of every potential buyer. Although Sega claimed consumers should use the ratings as a guide when purchasing games, it was apparent that the games weren't rated as aggressively as they should have been.

The violence in *Mortal Kombat* may have gone too far. Before long, government officials began criticizing the amount of violence in the games and *Mortal Kombat* was a title that was always quoted. On November 15 the Attorney General of California, Dan Lungren, wrote to a number of game companies and stores and asked them to stop developing and selling any game "that portrays graphic and gratuitous violence."

Although Lungren made it clear that he was against regulating the games, he hoped that the manufacturers would use "sensible discretion" in their games. Several of his peers weren't as willing to depend on the manufacturers. Two senators, Joe Lieberman of Connecticut and Herb Kohl of Wisconsin, informed the press that they planned to introduce a bill to Congress that would force the manufacturers to adopt a rating system for their games. If their bill passed, the companies would have one year to develop an across-the-board rating system. If they couldn't do it themselves, the government would step in and do it for them. The manufacturers responded the same way they had when Sega began its own rating system. Nintendo continued to insist that a rating system wasn't needed as long as the companies were responsible for what they released. However while Nintendo

continued to claim that its games weren't violent, Sega maintained that it began rating games so violent games wouldn't fall into younger hands. Sega's position was that adults also played videogames and their gaming tastes were a lot different from what the younger kids wanted. Why should adults be restricted to games that were meant for kids?

As the year came to an end, the issue of rating videogames remained unsolved. However the battle lines had been drawn and the matter would be settled conclusively!

CHAPTER TWENTY-ONE
1994

When 1994 began, the subject of game ratings was on the minds of most people involved in the videogame industry. At the Winter Consumer's Electronics Show in Las Vegas most of the talk around the videogame exhibits centered on the subject.

At the show separate meetings were held between representatives from several hardware and software manufacturers, the Better Business Bureau, the Software Publishers Association and the Motion Pictures Association of America. The purpose of these meetings was to come up with some sort of rating standard among all of the companies before the US Government took over after its one year deadline ran out.

Until a standard was decided upon, some companies decided to adhere to their own rating criteria. In 1993 Sega had been the first to do this when the debate first flared up. In early 1994, 3DO became the second company to impose its own ratings. It decided on a four-tier rating system. Games designated with an 'E' were meant for everyone. A game that had a '12' on its box suggested parental guidance for ages 12 and under. Likewise, a '17' rating suggested parental guidance for ages 17 and under. The final rating, 'AO', was printed on boxes for games that were meant for adults only.

In March, Senators Lieberman and Kohl met with Jack Heistand Sr., a Vice-President at Electronic Arts who was also the acting chairman of the Interactive Digital Software Association (IDSA). The IDSA was a new association of videogame manufacturers that included Acclaim, Atari, Electronic Arts, Nintendo, Philips, Sega, and 3DO. Heistand presented the senators with a 13-point plan to institute an across-the-board rating system before the 1994 holiday season.

Ken Wasch, the executive director of the Software Publishers Association (SPA), also met with Senator Lieberman in the early summer to discuss the latest plans. Lieberman was against separate rating standards for different gaming consoles and ratings that were set by the software publishers themselves. He was also in favor of rating educational games.

While the Senate was busy with the idea of federally mandating the ratings of videogames, California was trying to control videogame violence at the state level. Three bills were drafted as a means to this end. One bill allowed the creation of a California Videogame Rating Administration. A second bill demanded retailers keep games with mature themes locked behind a counter. The final bill allowed victims of violent crimes to sue stores that sold violent games if it was proven that the game directly led to the violent attack.

By July the IDSA proposed the Entertainment Software Rating Board (ESRB) to rate the games. Manufacturers had to submit their games to the ESRB in order to receive a rating that was similar to the system that Sega had utilized. Large letter icons on the game boxes signified the game's rating. 'EC' stood for 'Early Childhood' and meant that the game was adequate for children aged three and up. 'K-A' stood for 'Kids To Adults' and was appropriate for children six and over. 'T' was for 'Teenager' and was for ages 13 and up. 'M' was for 'Mature' audiences 17 and over. Finally, an 'AO' rating meant that the game was for adults only. Accompanying icons would also note the game's content on violence, sex, profanity, and other factors.

Computer software developers didn't like the rating system set up by the ESRB so the SPA established the Recreational Software Advisory Council (RSAC) to rate computer games based on a manufacturer's description. The RSAC was to be composed of three groups: a Governing Board, an Advisory Board, and a Ratings Review Board. The ratings themselves would fall into five levels. The most general level would be games that were suitable for all audiences. If a game was not suitable for all audiences, an icon on the box would rate the game based on its violence, sex, and language, each

given a score from one to four.

By November both rating systems were in place yet neither was a standard. The videogame industry followed the ESRB ratings and the computer industry followed those set up by the RSAC. Retailers didn't care which system was utilized either as long as the games were rated. Although the rating system was voluntary, Toys R Us and many other stores opted to only sell rated games.

Ironically, one of the first games to be rated was *Night Trap*, the game that Sega removed from store shelves in 1993 because it had been deemed too violent. The new version of *Night Trap* was given an 'M' rating by the ESRB. The game was also re-released in the United Kingdom where it was given a '15-17' rating by the new European Leisure Software Publisher's Association. This signified that the game was not suitable for children under fifteen.

The videogame industry had put into place a rating system within the year that Congress had allotted them. Rather than be satisfied that their wishes had come true, Senators Lieberman and Kohl didn't stop. By December the two were working on plans to force game manufacturers to display the ratings in all of their TV commercials.

Although the videogame companies appeared to be working together via the IDSA, this wasn't quite the case. It turned out that at a December 1993 Senate press conference, the assembled crowd viewed a videotape that Senator Lieberman informed them was a scene from Sega's home version of *Mortal Kombat*. Actually the scene had been taken from the arcade version that was much more graphic than any of the home versions. It was later revealed that Nintendo of America had supplied the tape in an effort to show that its version of the game wasn't as violent as other versions.

Ironically, while Nintendo was trying to prove that it only produced 'innocent wholesome' games, the company sent new guidelines to software developers that surprisingly allowed violence in its games.

Sega on the other hand suddenly wanted its name associated with family entertainment so it established a new gaming label late in the year called *Deep Water*. In naming the new label Sega used the analogy that swimming children were not allowed to venture into deep water. In the same fashion they wouldn't be allowed to enter Deep Water when they selected videogames either. For this same reason, Sega chose a lurking shark as the logo for this new label. In other words, Deep Water was off limits for kids to enter.

The purpose behind Deep Water was to allow Sega to release adult-oriented videogames. All games with a rating of 'M' or 'AO' would be released under the Deep Water banner while all other games would come out under the Sega name.

While Deep Water and its swimming shark seemed mysterious to many people, something even more mysterious was lurking over at Nintendo; *Project Reality*. In February Nintendo once again said that its new unit would be cartridge-based but would include an expansion port so a CD-player could be added later if Nintendo decided to release one. The cartridges themselves would contain 100 megabytes of data. Although this was five times the amount of data that SNES cartridges were capable of storing, the retail price for the new cartridges would remain the same as the old ones. The company also admitted that several software titles for the new machine were already in development.

While the $250 home system was expected to be released sometime in 1995, the first games were to begin appearing in arcades by the end of the year. As further proof that Nintendo was serious about Project Reality it joined forces with WMS, the parent company of Williams Bally/Midway, to form a new company called Williams/Nintendo Inc. The company announced that its first arcade game would be *Killer Instinct*, a gory futuristic fighting game. The game had been developed by Rare Ltd, a British company that had signed an exclusive development deal with Nintendo. Although Rare Ltd. was relatively unknown to most people, its dealings with Nintendo went back a considerable amount of time. In 1985, Rare Ltd. had been the first company outside of Japan to develop games for the NES.

By the time summer came around, Nintendo renamed the new system *Ultra 64*. The name wasn't the only change that the unit experienced. A major development occurred when Nintendo announced that the Ultra 64 would utilize Rambus memory chips that would allow the system to run at 500Mhz, five times the originally stated clock speed. Despite this improvement Nintendo promised that the unit would still be priced at $250.

Nintendo also signed a contract with Alias Research to create 3D graphics-development tools for the Ultra 64. Previously, Alias software had been used in movies such as *Jurassic Park* and *Terminator 2*. Nintendo bought so many Alias Power/Animator licenses that it became the largest 3D development site in the world.

By the end of the year, Nintendo was still signing up new companies to work on the Ultra 64. In late December Nintendo signed GTE Interactive to 'jointly develop, market, publish and distribute videogames'. Although the two companies worked together to produce the SNES game *FX Fighter*, most analysts took notice of Nintendo's latest marriage to GTE for a different reason. GTE was the largest local telephone company in the US and it was no secret that Nintendo wanted to take part in some sort of in-home electronic delivery service. It was GTE's responsibility to accomplish this.

While Nintendo was exploring ways to get its games into homes electronically, its electronic gaming service for commercial businesses was improving. By the middle of the year the Nintendo Gateway System was available to three airlines with a total of 5000 seats. Nintendo expected that number to jump to 15,000 seats by the end of the year. In addition, approximately 10,000 hotel rooms were served by the system. That number too was expected to climb drastically thanks to a deal that Nintendo signed with COMSAT Video Enterprises. COMSAT was a company that provided movies to 170,000 hotel rooms around the United States. The deal between the two companies allowed COMSAT to offer the Nintendo Gateway System to thousands of hotel rooms. All in all Nintendo foresaw its Gateway System to be available in 100,000 hotel rooms by the end of the year.

It was important for Nintendo of America to introduce a system of getting games into homes via electronic means. In March 1994 the Sega Channel finally began testing on twelve cable systems. The political atmosphere regarding videogames was apparent with an added feature that allowed parents to block out games that were rated MA-13 or MA-17.

Since cable wasn't available in all homes, alternate ways of delivering software were developed. Work on AT&T's phone-based Edge 16 continued and AT&T announced that the modem would be available for the 3DO as well as the Genesis. Several developers such as GameTek, P.F. Magic, U.S. Gold, and Sega displayed software for the modem early in the year. An additional dozen entertainment companies pledged to support the $149 system that was now to be released in the fall of 1994. Thanks to AT&T's VoiceSpan technology, players competing in a game via the Edge 16 would also be able to hold a conversation as they played.

Around the time that the Edge 16 was to have been released, AT&T suddenly announced plans that it was dropping the unit. The company decided to focus its energies into developing new telephone technologies. However an AT&T spokesman said that it was always possible that the company might yet enter the gaming market at a later time. He also noted that the technologies behind the Edge 16 modem might be sold to another company and released to the public.

The sudden death of the Edge 16 didn't mean the end of modem-based gaming. In the early summer a company called Catapult introduced a modem for Sega and Nintendo systems.

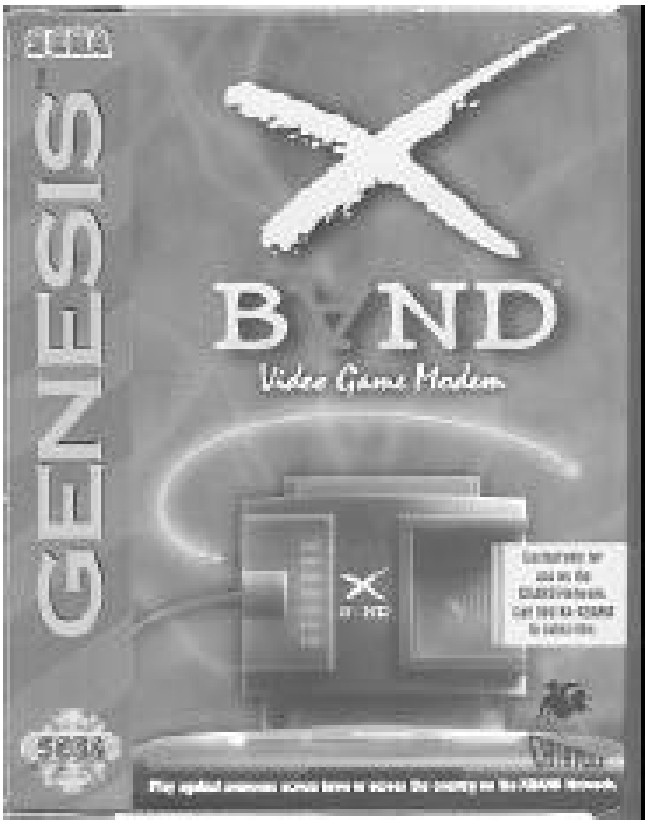
The modem, named the *Catapult* after its company, allowed gamers to choose from a local network of players to compete against. The network displayed the scores, skills and rankings of the individual players but their identities remained unknown. A player could also arrange to compete against someone outside the local calling area.

Catapult announced that the modem would cost around the same as a game cartridge and the service would cost $7.95 for 32 game plays. Each additional game play would then cost 15¢. Payment would be made via a debit card that could be inserted into the modem and parents could control the amount of time that their children spent on-line. As was the case of the Edge 16, all of the competitors in a game had to own a copy of the game cartridge.

Once on-line, users of the system could send and receive messages to each other. Because of software limitations Nintendo and Sega owners could communicate with each other but they couldn't compete in games together. The system also featured *Bandwidth*, an on-line newspaper that provided gaming, entertainment and sports news to subscribers.

The Catapult system began testing in five cities in September and the network officially went on-line on November 17. Catapult planned to release the Genesis modem by Christmas and the Nintendo modem in 1995. Shortly after AT&T withdrew the Edge-16, Sega went and licensed the Catapult for the Genesis. By this time Catapult also promised E-mail services via the Internet.

When the system was actually released at Christmas, the name of the modem was changed to the *Catapult XBand*. For many users, the XBand network was their first experience with on-line networks, something that was becoming more and more popular thanks to Compuserve, America Online, and Prodigy. However the XBand provided services that couldn't be found on its computer counterparts. XBand users wouldn't lose their connections with the network if an extension phone was picked up. Likewise, call-waiting, the bane of many on-line users, wouldn't disrupt the service either. If a call came through while someone was on-line, an on-screen message would alert the player and he would have the option of taking the call or continue playing. Finally, if the telephone cord accidentally came loose from the modem during a gaming session, the game would merely pause and wait for the connection to be restored.



Catapult XBand

Since it had E-Mail capabilities, XBand users needed a way to 'write' messages since the gaming consoles didn't have keyboards. To accomplish this, software was included with the XBand that generated an on-screen keyboard. Users had to 'point' to on-screen letters, which was a very slow and cumbersome process. Fortunately Catapult announced in late 1994 that it would release a keyboard for the XBand sometime in 1995.

In December, Nintendo announced that a Japanese radio network would begin transmitting Nintendo game previews beginning in April 1995. Subscribers to the service armed with a $140 adaptor pack would be able to download the games during a three-hour period every night.

While owners of Genesis and SNES systems were being introduced to the wonders of on-line gaming, Jaguar owners weren't being left out in the cold either. Atari announced the Jaguar Voice/Data Communicator modem in September. This peripheral allowed modem players to compete against one another over the phone lines. While playing the players would wear headsets that would allow them to talk with the person they were competing against. In addition, the headsets could also provide call-waiting tones so the players would know if another call was coming in. Unlike Catapult, which developed its own gaming network, Atari expected its games to be played over existing on-line networks. The new modem was set to retail for under $100 and Atari hoped that it would be available

in time for Christmas.

Another device that promised on-line games for the Jaguar was announced at the end of the year. The *Cat Box* from ICD Inc. was a device that allowed up to eight gamers to partake in a single game via the phone lines. Although the Cat Box wasn't a modem itself, it could be hooked up to a Hayes compatible modem.

It was important that Atari released peripherals for the Jaguar that were similar to those that were available for the older more popular machines. Atari began the year on an upbeat note as all of the 20,000 machines in the test market areas sold out in one day. Atari expected to sell 500,000 units in 1994 once the unit was distributed nationally. To keep the public enticed, Atari promised that a $200 CD player would be released sometime during the year and a virtual reality helmet would follow shortly afterwards. Atari claimed that 35 developers had been licensed to create games for the new system and three new games would be available each month beginning in April.

Unfortunately, Atari couldn't keep up with the hype that it created. By Christmas 1994 only seven Jaguar game cartridges were available. Even during the weeks leading into the holiday buying season, Atari kept proclaiming that there would be over thirty titles on store shelves in time for Christmas. Actually, by year's end only twenty games were available for the nearly 200,000 units that had been sold.

Another product that Atari kept promising was its Jaguar CD-ROM player that it said would be released in November. Unfortunately the year came to an end without any sign of the CD player on store shelves.

Had Atari released the CD-player for the Jaguar it would have become the second available videogame console that could use both cartridges and CDs. Sega, the other company that offered such a player, didn't worry about the prospective competition.

The 1993 Christmas season had been a good one for Sega. Not only did the Genesis outsell the SNES, the Game Gear's sales had increased over 200% from the year before giving it an installed base of nearly four million. Lastly, the Sega CD was in nearly one million households.

Although the Genesis outsold its competitors by almost 5-to-1, Sega didn't rest on its laurels as far as new technology was concerned.

Originally Sega planned two new 32-bit machines: the CD-based Saturn and the cartridge-based Jupiter that would have an optional CD player available for it. However Sega realized early on that it would be unwise to sell cartridges that were inferior and more expensive than their CD cousins. Sega decided to abandon the Jupiter and make the Saturn a CD-based unit with a cartridge slot that could be used to save data or for future expansion.

Even though it decided to go with the Saturn, Sega didn't want to lose the huge base of Genesis owners that it had established in the United States. Although many Genesis owners would naturally purchase the new Saturn, the majority of them wouldn't and would eventually relegate their consoles to closets as Sega stopped supporting the machine. Sega knew that it had to somehow upgrade the Genesis. One way was to incorporate the Jupiter technology and the result was the *Mars*; a 32-bit system that would sit atop the Genesis.

In mid-March Sega of America announced its plans to release the Mars, which was renamed the Genesis *Super 32-X*. The new system would plug into the Genesis cartridge slot and included two Hitachi SH2 RISC processors and a brand new video digital processor. Sega touted that the new system brought near-Saturn quality games to the Genesis. The Super 32-X provided the Genesis with faster processing speed, high-color definition, texture-mapping, enhanced scaling and rotation, improved polygon graphics and an ever-changing 3-D perspective. Existing Genesis owners would thus be able to purchase the newest games without having to purchase an entirely new system. The

new Super 32-X was to be priced at $149.99 when it reached the stores in the fall.

At the time Sega didn't mention if the new 32-bit Saturn would be compatible with the Super 32-X. Speculation was that the company would add a cartridge slot to its new CD-based machine but Sega steadfastly refused to comment.

Sega renamed the system again (*Genesis 32X*) and officially unveiled it at the Summer CES in June. Throughout the summer the major question on everyone's mind concerned what game Sega would package with the 32X. Sega assured the public that there would be one but refused to mention which game it would be. However by the end of the summer Sega began restating some crucial facts about the 32X. The list price was raised to $159 and a game cartridge would not be included. Instead the initial 32Xs would include six $10 coupons that could be used towards the future purchase of 32X software.

Sega 32X

Sega released the 32X in late November. Demand for the unit was so high that Sega couldn't keep up with it. By Christmas retailers had ordered one million units but only 350,000 had actually been shipped. After going on a round-the-clock production schedule, Sega managed to deliver a total of 600,000 units by the end of the year.

With the success of the 32X, Sega of America began releasing information about the Neptune, a new console that was planned for late 1995. The *Neptune* was a combination Genesis/32X that would retail for under $200 and would not include a CD- ROM player. Although Sega didn't comment on the issue it was speculated that the retail price of the 32X would fall under $100 once the new Neptune was released.

While Sega of America exploited the 32X to keep the 16-bit Genesis market alive, Sega of Japan was getting ready with its 32-bit console. The Saturn was heralded as the machine that would set the standards for all future home videogame consoles.

Games under development for the Saturn were displayed at the Winter CES. Although Sega revealed that the machine would be able to produce 1024 on-screen colors (the SNES could only produce 256) and that the processor would run at 24Mhz (the next fastest machine, the Neo•Geo ran at 14Mhz), the biggest questions went unanswered. Many people wondered if the machine would be compatible with the Genesis. While Sega didn't comment on this the main consensus was that it wouldn't be. In order to be compatible the Saturn would have to employ custom made chips that would drive up the price that was already set at $430. Other rumors that swept the electronic show was whether Microsoft and Sega would form a partnership. A Microsoft spokesperson confirmed that talks took place between Microsoft and Sega but the nature of the talks were undisclosed. Still, rumors persisted that not only would Microsoft design the operating system for the Saturn, it would also develop software for the new console.

While the software had been previewed at the CES in January, the hardware itself didn't make a public appearance until June 2 at the Tokyo Toy Show. Unfortunately the silver wood consoles that were on display weren't playable. Games could be played on Saturn circuit boards but they weren't finished either. However the little that was available impressed the critics. Sega of Japan assured the press that the system and software would be available in Japan in November. Fearing that it would cut into sales of the 32X, Sega of America refused to publicly comment when the Saturn would be

available in the United States. Privately they spoke of an April 1995 launch.

The Saturn was released in Japan on November 22. At that time Sega of America still didn't discuss an American debut. Although a spring 1995 date was tentatively set, Sega of America wanted to push the Saturn's American debut into the latter part of the year. This was because many of the third-party vendors would be releasing their new 32X software in the spring. Sega of America realized that the $475 Saturn wouldn't be mass-marketable like the Genesis had been so it was very anxious to support the 32X. The company wanted to direct all of its energies to the 32X to assure the public that Sega would stand by the Genesis for many years to come. Sega had good reason to continue supporting the Genesis. In 1994 the company sold nearly eight million consoles.

In a move similar to one by 3DO, Sega licensed the Saturn to three other companies (JVC, Hitachi and Yamaha) who would sell the Saturn under their own names. Hitachi also signed a deal with Sega to distribute the Saturn to electronic stores much like JVC did for the Genesis.

The completed Japanese Saturn console was gray and featured a cartridge slot, although at the time of its release, the only available Saturn cartridge was a memory cart to save games. The console also contained a five pin port that was simply labeled 'communications connector'. No one knew what this meant and very few speculated. Every system from the Atari 7800 on contained an expansion port that was never utilized. The unit was sold with *Virtua Fighter,* a hit Sega arcade game. Surprisingly the specs on the completed system were different from what Sega of America had originally announced. Due to competition from Sony, Sega unexpectedly added more dedicated processors to relieve the work load from the two CPUs. When it was released the Saturn was heralded as the best system on the market and featured an expensive television ad campaign to make sure the public knew it. Sega sold out its initial 200,000 Saturns on its first day of sale. However it was rumored that Sega had backpiled an additional 300,000 units that would be available when the Sony Playstation went on sale.

News of the Sony PS-X began to creep out in April. Sony officials announced that the unit would be released in Japan in November and then would follow in the United States and Great Britain in September 1995. They explained that the delay outside of Japan was because Sony wanted to give the developers in the foreign countries enough time to create extraordinary games.

In late May Sony announced a new name for the PS-X at a press conference held for the Japanese press. The new name was actually an old one. The system was called the *Playstation*, the same name that Sony had used when it had planned to create a videogame console in tandem with Nintendo.

Sony also demonstrated the capabilities of the Playstation at the press conference. One special feature was a serial port that allowed players to hook up two Playstations to each other. This allowed players who competed against each other to have their own monitors. There was also a parallel I/O port that critics speculated would probably be used to hook up a modem.

The most spectacular parts of the Playstation were hidden. Sony had teamed up with LSI Logic, a chip manufacturer that specialized in custom-built chips. LSI Logic designed a chip that shrunk its circuitry to 1/200 the width of a human hair. The custom chips within the Playstation featured an R3000A 32-Bit RISC CPU that was supported by three high-performance subsystems. The reduced circuitry also allowed the Playstation to require less power for it to perform faster data manipulations. This let the Playstation create sophisticated 3D geometric graphics that would rival workstations costing tens of thousands of dollars. The system could also produce full-motion video.

Like the 3DO and CD-i, the Playstation was a CD-only system. Skeptics pointed out that this was a deterrent when it was compared to the other fast machines such as the Saturn and Nintendo's mystery machine. Although CDs can store much more information than cartridges, the flip side is that data can be retrieved from a cartridge much faster. Sony assured the press that the Playstation's access time

would be near zero and without any flicker or slowdown. Even though the Playstation didn't utilize cartridges, gamers could plug in external memory cards that would allow them to save game data.

Although it was assumed that the Playstation would eventually arrive in the United States, Sony wouldn't commit itself to an actual date. Sony wanted to wait until enough software was available to make the unit attractive before it began shipping outside of Japan. In late June, Sony Computer Entertainment officially announced that the Playstation would indeed be coming to the United States. Unfortunately the closest date that they would pinpoint was 1995.

By July Sony was promising that 82 Playstation games would be released in Japan during 1995. The Sony executives had so much faith in the machine that they projected sales of 3 million units in Japan by 1996.

In mid-November, Sony announced to a huge Japanese press that the Playstation would be released in Japan with a retail price $410 on December 3 (ten days after the Saturn). Immediately available would be eight games and a mouse. The company was optimistic that an additional fifteen titles would be released before the end of the year. Sony made the decision that all of the CDs for the Playstation would be black rather than silver so they would stand out from all of the other CDs on the market.

Sony shipped the Playstation on the promised date. The company used a distribution company called HappyNet to get the machines into game stores, a market that it never had to deal with before. Only 4000 stores were able to acquire the 100,000 units that were shipped without any bundled software. They quickly limited the sales of the Playstation to one per customer. By the end of the year the war between Sega and Sony was going full gear. All of the Saturns that had been initially shipped had been sold out while a few Playstations remained on store shelves, although many critics felt that the Playstation was the superior machine. They felt that the only reason it didn't catch on as quickly as the Saturn was because it didn't have any killer software on the level of *Virtua Fighter*. Both companies remained positive that their machine would become the dominant one in the industry. It was now up to the public to decide which one it would be.

However that buying player had more systems to choose from than just the Playstation and the Saturn. After trying to develop a CD player for their Neo•Geo, SNK of Japan announced in June that it was coming out with an entirely new CD-based Neo•Geo console instead of an add-on to their existing machine. The $475 unit was set to be released in Japan before Christmas and would feature a single speed front-loading CD drive. SNK also announced that all of the cartridge-based for the original Neo•Geo would be re-released on CD. These titles would sell for $45 and new releases would retail at $80; much lower than their cartridge counterparts.

The front-loading Neo•Geo CD was actually released in Japan and England in September at a retail price of $525. Although the system sold very well, there were many complaints concerning the unit's single speed CD-drive. Unlike other games, which loaded only parts of the program into the console's RAM, the Neo•Geo CD had to load its entire contents into the Neo•Geo's RAM. If that didn't take long enough, it was further hampered by the Neo•Geo's single-speed CD player. Still, the response to the unit was favorable enough for SNK to announce that it would release a lower priced top-loading system by December 1995.

SNK of America announced that a top-loading Neo•Geo CD would arrive in the United States in the spring of 1995 where it would sell for under $400 and would include a double-speed CD-drive.

As most companies began to release CD-based consoles the company that began it all decided to call it quits. In the late spring TTI announced that it was abandoning the 16-bit market and its Duo console although it planned to keep supporting the machine with new software. A month later a new

SNK Neo•Geo CD

company called *Turbo Zone Direct* was established to market old and new software for the Duo.

Although the TurboGrafx-16 and its successors weren't popular outside of Japan, the PC Engine still enjoyed a modest popularity in its native land where it outsold the Sega MegaDrive. In November 1994, after four years of development, NEC finally released a replacement for the 16-bit machine.

The new *FX* was NEC's 32-bit CD-only console. NEC didn't expect the machine to be a major seller and anticipated selling only 50,000 units during its first year. With a selling price of $400, the FX could not play PC Engine CDs although it was compatible with NEC's PC-98 personal computer. In fact the FX could also be used as the CD- ROM drive for the PC-98 computer.

NEC didn't have any immediate plans to bring the FX to the United States after the TurboGrafx-16's poor showing. However, company spokesmen did say that they would lower the unit's base price if they later decided to sell the console in the U.S.

Sony wasn't the only non-videogame company that attempted to enter the gaming world in 1994. In the spring rumors began spreading that a major toy company was preparing to join the pack. Companies such as Mattel, Hasbro and Fisher-Price were named but the only mention of the system was that it would be 32-bit, CD-based, include a virtual reality helmet, and would cost under $500. By the end of the year the rumors were gone. Meanwhile software company Capcom released a gaming console at the end of 1994. The $350 *Capcom CPS* was sold as a home machine only in Japan and featured true arcade games. The CPS technology did reach the American shores but only in the arcades.

In September JVC introduced its Wondermega to the American shores where it was renamed the *X'Eye*. The $500 unit was a combination Genesis and Sega CD and was completely compatible with all of the Sega CDs and cartridges. JVC went one step further in an effort to entice shoppers into buying the X'Eye instead of a Sega Genesis/CD package. Each unit had a karaoke CD and a special X'Eye edition of *Compton's Multimedia Encyclopedia* bundled with it. The inclusion of these CDs was a sign that JVC wanted to market the unit as a full-fledged multimedia device and not just another videogame console.

JVC X'Eye

JVC wasn't the only company that wanted to enter the multimedia forum. Bandai, a Japanese toy company, released a full-fledged multimedia machine, the Bandai *BA- X*. The BA-X had the capability to play video CD movies, audio CDs, karaoke, and interactive videos.

The BA-X wasn't the first time that Bandai released videogame hardware. During the early eighties, Bandai sold Mattel's Intellivision, GCE's Vectrex, and Emerson's Arcadia 2001 all under its own brand name in Japan.

As Bandai delivered multimedia hardware into Japanese homes it was also developing software and getting ready to distribute another new multimedia platform: The Apple *Pippin*. Apple Computers announced its new 64-bit CD-ROM player built around a 66Mhz PowerPC 603 RISC microprocessor and MAC operating system at the end of the year. The Pippin would be compatible with MAC software and include a quadruple speed CD-ROM player. Apple also planned to release a slew of peripherals such as: a keyboard, mouse and both floppy and hard disc drives for the unit. Built into the machine would be a telephone port so players could compete against or communicate with each other via the telephone.

Apple planned to release the Pippin in Japan in the summer of 1995 for $500 and in the United States in the fall where they expected to sell it for between $300 and $500.

By the end of the year the buying public couldn't seem to make up its mind. A Japanese gaming magazine called *Famicom Tsushin* polled its 750,000 readers and asked them which machine they wanted to buy. While 22% of the readers favored the Saturn, nearly twice that amount, 41%, said they would buy the Playstation. These numbers didn't jive with the figures that were coming in from the retail stores where the Saturn, with 500,000 units sold, outnumbered the Playstation by 200,000 systems. However most of the hardware companies sold a decent amount of hardware. 3DO surprised most critics when it announced that it had over 350,000 consoles in Japanese homes. The Neo•Geo CD player sold over 100,000 units and even the brand new NEC FX, which went on sale during the last week of 1994, sold 70,000 systems before the end of the year. Only Atari did poorly. By Christmas the company sold only 2000 Jaguars in Japan. This number did nothing to help Atari achieve the two million mark that it hoped to reach in 1995.

While Jack Tramiel's Atari wasn't selling as many Jaguars as it had hoped, it was still doing better than another former Tramiel company. In late May Commodore International was forced to declare bankruptcy.

Commodore had been founded in 1958 by Tramiel, a young Holocaust survivor who had emigrated to the United States following the end of World War II. Tramiel began his company by assembling typewriters and later began manufacturing electronic calculators. In 1976, the company purchased MOS Technology, a company that had been founded by the inventor of the 6502 chip, which was later used in the early Atari and Apple computers.

Commodore had been one of the initial companies to manufacture a personal computer. The Commodore PET had first been announced in January 1976 and was released later in the year. When Apple was formed that year, Commodore tried to purchase the new company. Unfortunately for Commodore, the two companies couldn't reach an agreement. However it was this interest by Commodore that enabled Steve Jobs to pursue grand ideas for his company and he quickly sought money and people to help him make his company grow.

In the late seventies Commodore released the VIC-20 computer, which was the main competitor against the Atari 400. In 1982 Commodore followed the VIC-20 with the Commodore 64 a 64K computer that competed against the Atari 800XL. Neither computer was taken seriously and both were widely purchased as game playing machines. Of the two, the Commodore 64 reigned in sales.

In 1984 Commodore fired its founder Jack Tramiel who then purchased most of Atari from Warner Communications. Tramiel's Atari had been about to purchase the Amiga Corporation when Commodore slipped in at the last moment and bought the company itself. Atari then released the ST lines of computers that ran against the Amigas. The two companies were once again fierce competitors. Both computers gained a following in Europe. However neither one could grab a foothold in the United States where IBM dominated. Atari turned around and began marketing games again after the gaming industry rejuvenated itself. Commodore hung on as it continuously lost

money.

In 1990 Commodore's new Interactive Consumer Products division, which was headed by Nolan Bushnell, released the first home multimedia system, the *CDTV* (Commodore Dynamic Total Vision). There wasn't much interest in the system that retailed for $999. Commodore lowered the price to $599 two years later but by then the CDTV had a lot of competition and failed to catch on. In 1993 Commodore decided to enter the videogame arena with the Amiga CD[32] that was released late in the year. Despite good reviews the unit failed to catch on quickly because potential customers were confused by an avalanche of similar competing hardware such as the 3DO and the CD-i.

Once Commodore declared bankruptcy its remaining assets were handed over to a Bahamian accounting firm, Touche Ross. However nobody wanted to keep the Amiga dead and by year's end two companies declared war on each other in an effort to gain control of the once mighty corporation. The managers of Commodore's still-operating United Kingdom office wanted to purchase the remnants of the company and run it from England. Their plans included tripling the American R&D group and creating a RISC-based Amiga. However rumors spread that the UK team couldn't secure funds from the Far East putting a damper on their plans. Meanwhile the president of Miami-based CEI (Creative Equipment International) was so certain that he would get control of Commodore that he already had a manufacturing company getting ready to mass-produce new Amigas. By year's end, there wasn't any solution to who would win the right to market Commodore's properties.

1994 marked a full year that the 3DO was out on the marketplace. Panasonic, the only company that began the year with a 3DO player, announced in March that it was lowering the price of its consoles from $700 to $500. The company cited the price reduction due to "improvements in technology and an expansion of production scale resulting from the introduction of the multiplayer in Japan and Europe". Panasonic also said that it experienced a strong Christmas selling season.

In March the 3DO was released in Japan for the first time and 70,000 units were shipped to 10,000 retail outlets. By May over 120,000 consoles had been sold world-wide and the 3DO Company proudly announced that it had pressed its one millionth disc for the system. The company also announced that it had signed a deal with Toshiba to market 3DO machines. Part of the agreement gave Toshiba the right to market the 3DO in the United Kingdom. The company also planned to develop portable 3DO players that could be used in cars to provide navigational information.

Although everything appeared to be rosy for the 3DO Company, *Newsweek* magazine thought otherwise. In a June article the magazine reported that the Panasonic console was selling poorly in the United States. It also mentioned that software developer Spectrum Holobyte stopped its development on a *Star Trek: The Next Generation* 3DO game.

3DO didn't respond to the allegations. Instead the company made a public announcement in the late summer that it was planning a 64-bit 3DO that would be released sometime in 1996.

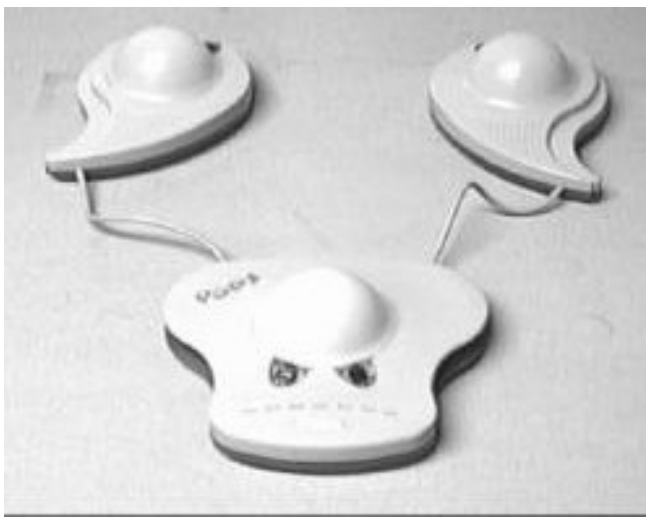
Code-named *Bulldog*, the new system would have a clock speed of 68 MHz and would be compatible with the 32-bit machine. Owners of the existing machine didn't have to worry about the new console. 3DO planned to introduce the *M2 Accelerator*, a cartridge that would boost the original machine into the same 64-bit console that was to be released later. 3DO planned to release the M2 in the fall of 1995.

In order to make sure that there would be plenty of customers who would want to purchase the M2, Panasonic once again reduced the price of the original console to $400. 3DO also actively promoted the console by going 'on tour' and displaying it at prime spots in shopping malls and college campuses. Whatever 3DO was doing, it seemed to help. While the other console manufacturers felt a decline of business during the third quarter of 1994, 3DO's sales were the best in

the company's short history. By the end of the year Goldstar joined Panasonic in marketing the 3DO in North America and 500,000 3DO consoles had been sold. Sanyo sold the system in Japan and planned to release it in the United States in 1995 along with Samsung and Toshiba. To further the appeal of the 3DO, Creative Labs released a 3DO board for PC computers. After a slow start, the 3DO finally seemed to be taking off.

Another system that started slowly was Philips' CD-i. Although the multimedia system had been around since 1991, the $499 unit failed to catch on with the buying public. Since the CD-i's inception, Philips had always resisted labeling it as a game machine. However in 1994 Philips took a good look at the industry and realized that it should have promoted the CD-i as a gaming console all along.

Philips redesigned the console so it looked like a gaming machine and lowered the price to $299. To further target the game buying public Philips began packaging a game called *Burn:Cycle* with its consoles in November. Unfortunately most critics pointed out that as a game machine the CD-i couldn't compete against the newer super machines such as the Sony Playstation or the Sega Saturn. However those machines weren't yet available so Philips executives were optimistic that they could sell one million units by the end of the year.



Sega Pods

Although it hoped to reign supreme in the videogame world with its new Saturn, Sega wasn't putting all of its eggs in one basket. Sega diversified into several venues in 1994. The first of the new enterprises was a toy division that actually began in 1993 when Sega of Japan released the Pico. In 1994, the "computer that thinks it's a toy" was released in the United States. This device hooked up to television sets and allowed children between the ages of three and seven play "multimedia learning games". Sega licensed many popular characters such as *Mickey Mouse* and *Winnie the Pooh* to help make the Pico a hit. To appease older children Sega's toy division first came out with a line of *Pocket Arcade* games, hand-held games with an LCD display that sold for $25. Sega then followed the games with *Pods*, a $50 machine that recorded player's movements and sent out sounds and flashing lights. Sega referred to Pods as "futuristic *Simons*". Sega also released 21st-century walkie-talkies in the form of *Beamers*. These palm-sized units that allowed two people to transmit up to 16 seconds worth of messages to each other from a distance of up to thirty feet. The sound memorandums were transmitted over an infrared beam and the person receiving the communication could decide to hear it immediately or to save it and listen to it later. The unit also had a light that displayed if a message was saved to remind the person that there was indeed an item waiting.

Sega also used infrared technology in its *IR7000*, an $80 pocket organizer that contained a database for addresses and phone numbers, a calculator, an alarm clock, a currency converter and a memo pad. Unlike other personal organizers on the market, the IR7000 also included a battle game that could be played alone or with someone else up to thirty feet away. Using the infrared technology players could transmit moves to each other's unit. They could also compose notes up to 381 characters long and transmit them across the room if they didn't feel like playing a game.

Personal electronics were not the only industry that Sega was venturing into. Early in the year the company signed a contract with MCA to create an entertainment attraction at MCA's Universal Studios in Hollywood. Surprisingly, on July 1 Sega opened a similar type of exhibition at Universal's competitor Walt Disney World. Sega had signed a three year contract with Disney to display 140

Sega IR7000

Genesis, Sega CD, and Game Gear products at the new *Innoventions* Area inside Epcot Center. Sega's use of Epcot Center may only have been a trial run into the theme park business. At the end of the summer the company went ahead and opened *Joyopolis*, its own theme park in Yokohama Japan.

New ventures weren't the only areas that Sega was venturing into. In 1994 the company purchased Data East Pinball Inc., the second largest manufacturer of pinball machines. Sega didn't have any plans to change the Data East name but the acquisition made them a dominant force in the arcade industry.

Despite all of the new areas that Sega was entering, the strangest and most unexpected purchase that Sega bought in 1994 was a 7½% interest in a competing videogame company.

Sega's purchase of 7½% of Atari's outstanding stock began in 1993 when Atari sued Sega for patent infringements. Sega counter-sued and the two companies squabbled into 1994. On September 28 their bickering finally came to an end when the two companies agreed to settle out of court and drop all charges against each other. Under the terms of their agreement, Sega purchased 4.5 million shares of Atari stock valued at over $40 million.

Other parts of the agreement had Sega pay Atari $50 million for non-exclusive worldwide rights to 70 of Atari's patents. The two companies also agreed to license games from each other for use on their respective machines.

Both companies admitted that they made out in the bargain. Sega had the lawsuits against it dropped and now had access to Atari's library of patents. Atari benefited because it now had an additional $90 million, a portion of which would be used in Atari's marketing budget.

Sega wasn't the only company with a stake in Atari Corp. Time-Warner, which had previously owned the entire company, still retained 25% of it. In March the conglomerate increased its stake and purchased an additional 2%. This followed an Atari announcement that the company lost $22.6 million during the fourth-quarter of 1993 which Atari attributed to the start-up costs of the Jaguar. However eight months later Atari reported a $3.9 million loss that it blamed on the costs that it needed to promote the Jaguar.

In addition to its victory against Sega, Atari Corp. also succeeded in a lawsuit against Nintendo. Atari contended that Nintendo illegally utilized its '114' patent, which covered horizontal scrolling routines. The outcome of the lawsuit allowed Nintendo to license the technology.

Atari Games also had a lawsuit pending against Nintendo over certain patent infringements but it wasn't as fortunate in its outcome as Atari Corp. had been. Lawsuits between the two companies had been scuttling back and forth for several years and by late April it appeared that the two companies had resolved their differences and settled out of court. Both companies made statements that they were glad that the lawsuits were over and that they were looking forward to working together in the future. Unfortunately it didn't end there.

Nintendo delivered the first press release, which said it received payments and licenses from Atari. Atari came back and said that it received the licenses from Nintendo. Nintendo retaliated by denying Atari's statement and claimed that Atari was trying to mislead the public. The bottom line was that the lawsuit was indeed over. Whoever came out on top was anybody's guess but both companies were winners as Tengen once again became a Nintendo licensee.

The winner and loser in another Nintendo lawsuit was more easily identifiable. In a lawsuit that had been going on since 1986, a bankrupt company called Alpex Computer Corp. was awarded a judgment against Nintendo for patent infringement in its NES and 150 of the games that were used on it. In 1977 Alpex had patented a technology for reproducing images on a programmable game system that it never sold. However the company did license this technology to Fairchild for its Channel F. The company went bankrupt in 1984 but its patents didn't expire until May 1994. Alpex claimed that Nintendo used its technology in the NES, which had first been released in 1985, and sued Nintendo for $400 million. In June a jury agreed with Alpex and in August Nintendo was ordered to pay $208 million, a figure based on all of the sales of the NES through 1992. Nintendo quickly said that it would appeal the decision since it didn't believe it was guilty of any wrong-doing. Nintendo, according to its attorneys, claimed that it did not infringe on any patents and used a different technology. It also claimed that the jury reached its verdict much too quickly to have understood all of the testimony and evidence.

Ironically Nintendo was also involved in a lawsuit by Fairchild Semiconductor, the company that had legally licensed the Alpex technology for the Channel F. Fairchild contended that Nintendo used its patented method of 'loading and locking' game cartridges into a game console. The court favored with Nintendo. Fairchild appealed the case but the Federal Appeals Court of Washington DC upheld the prior decision in favor of Nintendo.

In Los Angeles a federal judge sided with Nintendo in another patent infringement case. This one had been brought forward by an individual named Edward Gussin who claimed that his patents had been infringed by the SNES when it was using the *Mario Paint* program.

Patent infringement cases were not the only lawsuits that Nintendo was involved in. In October, Nintendo filed a suit against TSMC, Taiwan's largest chip manufacturer. Nintendo claimed that TSMC's chips were found in counterfeit SNES machines. TSMC responded that since it was only a manufacturer of chips, it had no way of knowing if the information on the chips that it manufactured violated any company's patents and copyrights.

Nintendo settled in another patent infringement lawsuit that it had against another Taiwanese company. In this case United Microelectronics Corp. (UMC) was charged with directly counterfeiting Nintendo's games. After the settlement UMC claimed that it would be more careful to avoid infringements in the future.

Sega also scored a victory in the fight against videogame counterfeiters. In this case an injunction was granted for Sega against the MAPHIA computer bulletin board that offered to download the Sega games. The injunction prohibited the electronic copying and distribution of copyrighted Sega games.

Ironically, a device that legally copied games was released in the United States. Nakitek's *GameSaver* was a cartridge that allowed SNES and Genesis players to save their spot in a game for up to thirty hours. The device could even remember the spot that was saved after the cartridge was removed from the console.

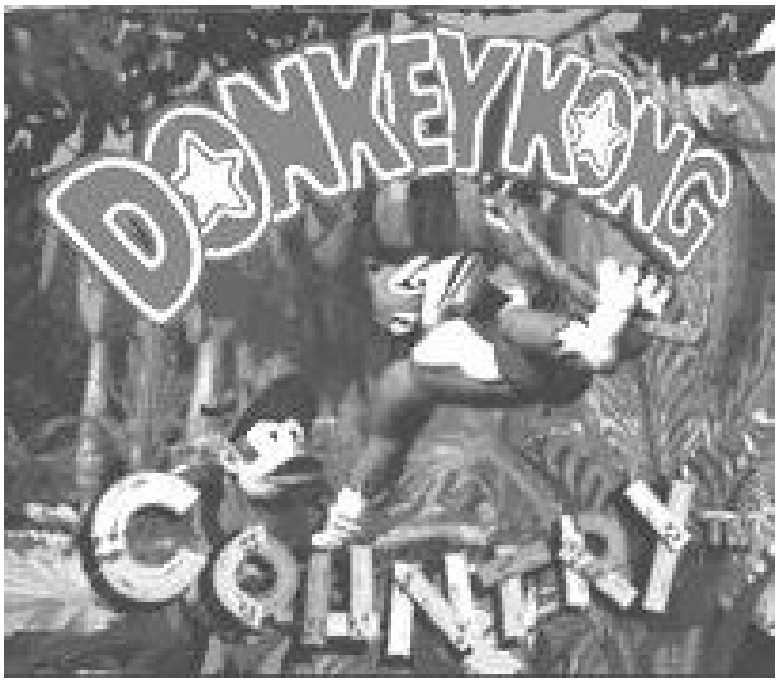
The hardware companies weren't the only companies involved in lawsuits. Another major lawsuit of 1994 involved two software companies: Capcom and Data East. Capcom claimed that Data East's *Fighter's History* game infringed on its own *Street Fighter II*'s copyrights. Capcom requested a spring injunction but it was overruled. Instead, the judge set an October 31 trial date. The judge said that Data East couldn't deny that it set out to copy the successful *Street Fighter II* when it began designing *Fighter's History*, especially when there were many similarities between the two games. Data East then tried to have the lawsuit dismissed but this was denied and in September the judge ruled that Capcom could go ahead and proceed to trial. However before the case reached a jury, the judge stated that there weren't any triable issues in the areas that Capcom claimed copyright infringement. After Data East received two partial summary judgments against Capcom the case was dismissed.

Data East was especially happy with the result because it claimed that if Capcom had won, it would have had a virtual monopoly on all fighting type videogames. Ironically it was Data East that established the fighting game genre when it released *Karate Champ* in 1984.

Acclaim was proof that Capcom didn't hold a monopoly on the fighting games. The company managed to break all records with its game *Mortal Kombat II*, the follow-up to the violent game that had sent Congress scrambling. Following its much publicized release on September 9, the game became the biggest selling game in gaming history. The game earned over $50 million within a week of its debut. *The Lion King*, the top grossing movie of the year, didn't even earn that much in its first week.

Mortal Kombat II's receipts were indeed staggering but the title would only be in the spotlight for a very short time. Although it was indeed the top selling title in gaming history, the game itself had been released for several gaming platforms. Within three months of *Mortal Kombat II*'s dazzling debut, a new cartridge would be released for only one gaming system and it too would break all records.

Although the fighting games seemed to be abounding everywhere, they weren't the only types of games that were available for the various consoles. In late November Nintendo released a different type of game that it hoped would leap to the top of the best-seller lists. The game had been designed on Silicon Graphics workstations giving it outstanding graphics and a sophisticated 3-D effect on the SNES. Nintendo also revived an old favorite to star in the game: *Donkey Kong*. The game was called *Donkey Kong Country* and Nintendo sold over 500,000 copies of it in its first week making it the fastest selling game ever. By year's end Nintendo was forecasting selling over six million copies of the game that would eventually become the best-selling title in videogame history generating over $420 million in sales.



Nintendo SNES Donkey Kong Country

Donkey Kong Country saved Nintendo from a bad year. Prior to the release of the cartridge Nintendo announced that its income for the first half of the year fell 18% from the same period a year earlier. Nintendo had blamed the drop on poor sales and a strong Japanese yen. The Christmas season didn't fare any better with some stores reporting a drop in sales by as much as 20%.

Even before the release of *Donkey Kong Country*, Nintendo made many changes in its attitude towards the public. Following 1993, a year where Sega was more popular, Nintendo realized that its name was no long synonymous with outstanding games. In late summer the company began a $10 million ad campaign that included major advertising in all of the videogame magazines as well as in newspapers and on television.

Nintendo also changed its policy with its licensed developers. Previously its attitude was that they had to follow by its rules or they could forget about manufacturing games for the NES and SNES. Now that those machines weren't number one and the developers were free to go elsewhere, Nintendo had to change its policies towards them. Nintendo began paying top dollars for outside developers and began offering incentives of up to 15% of sales to companies that could produce a top selling game for the SNES. Despite the fact that its popularity was waning, Nintendo still managed to take the lead spot in an annual ranking of excellent companies in Japan. This was Nintendo's fourth year in a

row to win this coveted position. Meanwhile its toughest competitor Sega dropped to number thirteen.

As new games such as *Donkey Kong Country* were coming out for the SNES, peripherals were being introduced for the 16-bit unit that would allow it to play cartridges designed for older systems. In the spring an English company called Fire International released a peripheral that would let NES games play on the SNES. The £39 *Tri-Star* could also play Famicom games on the SNES. The unit did fairly well in Great Britain but its success couldn't be matched when it was released in the United States in the summer. With an onslaught of new generation machines on the horizon the enthusiasm for the 8-bit machines was totally gone.

Nintendo Super Gameboy

Although players were no longer interested in playing NES games on their SNES, they were very interested in using the 16-bit machine to play their Gameboy cartridges. Nintendo released the $60 *Super Gameboy*, an SNES cartridge with a built-in Gameboy interface, in June. After plugging in any Gameboy cartridge, the games could be played in four shades of color on a TV set. Nintendo also began releasing new Gameboy cartridges that could display 256 colors through the SNES and feature stereo-symphonic sound. When played on the Gameboy the games wouldn't look any different from the older Gameboy titles that were already on the market. The first new Gameboy cartridge that Nintendo released with the Super Gameboy in mind was the original *Donkey Kong*.

Nintendo wanted to prove that there was still life in its five-year old portable unit. With over 40 million units sold around the world and over 400 cartridge titles the Gameboy was still pretty popular. In late 1994 the company announced a Color Gameboy. Unfortunately the games weren't in color as many had hoped. What was in color was the plastic casing that the Gameboy circuitry was housed in. Instead of the dull gray-white case that had been available previously, the new Gameboys were available in four colors or in clear plastic. For those who thought that the new "Play It Loud" Gameboys were too exotic for their tastes, the original Gameboy was still available.

While the Gameboy represented old technology, Nintendo was also delving into very new technology. In April the company announced that it was going to release a new 32-bit home game system in Japan that would feature virtual reality applications. Nintendo was very tight-lipped and called it by its code-name: the *VR-32*. The only thing that they said about the new unit was that it would cost under $200 and would have its own built-in monitor when they released it in the spring of 1995.

Nintendo of Japan unveiled the VR-32 on November 15 at its annual Shoshinkai trade show. At this time it was revealed that the new 32-bit virtual reality was actually a portable unit with the unimaginative name of *Virtual Boy*. The unit could operate on six AA batteries for seven hours or it could use an optional AC power pack. Like the new bigger consoles that were being announced, the Virtual Boy contained a 32-bit RISC chip. The chip operated two 'mirror-imaging' screens, each one containing red LED on a black background. Players didn't have to use 'virtual reality' glasses in order to see the 3-dimensional images. In order to maintain the 'virtual feel', Nintendo made the double-gripped controllers external from the unit. The portable also featured true stereo sound.

The Virtual Boy was the brainchild of Gumpei Yokoi, a leader of one of Nintendo's four Research & Development teams. Yokoi had the distinction of being one of Nintendo's oldest and respected engineers. He had played an important role in turning Nintendo from a maker of Hanafuda cards to a major force in electronic games. He was also responsible for the early Nintendo game watches as well as the phenomenal Gameboy. Nintendo was betting that the design team of Yokoi had

come up with another runaway blockbuster.

The Shoshinkai, where the Virtual Boy made its debut, was a yearly affair that Nintendo set up to show its distributors its new products. Rather than be wowed by the new unit, the attendees at the show were stunned and dumbfounded. They didn't know what to make of the new product: it wasn't portable; it was difficult to use; and it couldn't be used by more than one player at a time. Another complaint was similar to the one used against Atari's abandoned Cosmos unit; the 3D affect didn't add anything to the gameplay. Still, Nintendo's assured them that it would sell three million units in Japan during the Virtual Boy's first year, from April 1995 to March 1996. With the unit retailing for $207 and the cartridges going for $57, the attendees didn't actually believe in Nintendo's promises. The press was even less unkind. Calling the new unit the *Virtual Dog*, the American reporters who attended the Shoshinkai predicted a quick death for the Virtual Boy.

The technology that was used in the Virtual Boy had been developed by a Massachusetts-based company called Reflection Technologies, Inc. In late 1994 Nintendo obtained a minority interest in the company; the first time it had ever taken interest in an American company. Nintendo also acquired the exclusive worldwide videogame rights to Reflection's virtual display.

Aura Interactor

Although Nintendo had the rights to Reflection's method of virtual reality, other companies were free to ponder with their own technologies. The first virtual reality product to be announced in 1994 was the *Interactive Vest* that Aura Systems developed. The Interactive Vest wasn't virtual reality in the truest sense but it helped enhance the virtual reality experience. Worn like a real vest, it allowed the gamer to feel all of the sounds that took place in a game. Aura released the vest in the late summer with a retail price of $100.

Closer to real virtual reality was the *PDS Gamer* headset that was made by Virtual I/O. The $250 headset consisted of two LCD television panels that sat in front of the eyes. It also featured two stereo headphones that covered the ears. When a person played a game he would be away from the real world in the effect that all he could see was the screen in front of him and all he could hear were the game sounds.

Again, this wasn't a true virtual reality system but it was pretty close. Unfortunately no matter how realistic this might seem, the illusion of reality is still not complete. Suppose the person wearing the headset could see the images and hear the sounds of a roller coaster ride. There would still be indications that would remind him that he was merely sitting in a chair in a room. For example, what happens if that person turned his head? On a real roller coaster, he would see the sights of the amusement park around him instead of the track in front of him. However the guy with the headset would continue to see that track in front of him no matter which way he turned. Another problem lies in the fact that the person would not actually feel any movement. Even though it appears to him that he is moving, the chair that he is sitting in would be stationary.

Although the PDS Gamer wasn't a true virtual reality device, another device made by Virtual I/O was. *The Gamer!,* which Virtual I/O planned to release in 1995 with a $399 price tag, was a headset that used real-time head tracking to simulate a real 360 degree world. Virtual I/O promised that the new device would work on all of the game consoles.

In late 1994 Anaphase Unlimited introduced *The Glove*, which was similar to Mattel's *Power Glove*. Commands to the console were as simple as a turn of the hand. However while the Power

Glove had been strictly for one console, The Glove was available for both the SNES and the Genesis.

Around the same time that The Glove was introduced, another virtual reality device that was compatible with both the SNES and Genesis began making the rounds. The $69 *Batter Up* from Sports Sciences was a virtual reality baseball bat that plugged into the controller ports. After the on-screen player pitched the ball, the real-life player would swing the Batter Up. The bat would then figure out whether the ball had been hit or not. If it decided that the ball had indeed been hit it then calculated exactly what kind of hit had been made.

After promising a virtual reality device for the Jaguar in 1993, Atari still hadn't delivered by the end of 1994. However the company announced that it had teamed up with a British company called Virtuality to release a $200 virtual reality helmet for the Jaguar in time for Christmas 1995. Neither company released any details at the time but both were confident that the Jaguar and the virtual reality helmet would be megahits.

Although Sega had been touting a virtual reality unit for the Genesis in 1993, by 1994 the company realized that it couldn't produce the unit to its satisfaction within a realistic price margin. When Sega began backing away from its virtual reality helmet another company began talking about $250 virtual reality glasses that would interface with the Sega Channel. The glasses were created by the RPI Advanced Technology Group to aid in 3D stereo television programming. In addition to the Sega Channel, RPI also targeted their HMS-EYE glasses for TV networks such as Fox and NBC.

Sports Sciences Batter Up

Although Sega couldn't deliver virtual reality it did design a new chip called the *SVP* (Sega Virtua Processor) release new technology that made its games more exciting to play. The first game to take advantage of the new technology was *Virtua Racing*. Unfortunately the chip was very expensive and the game retailed for $100, making it the most expensive Genesis game ever. In an effort to lower the price and generate more sales, Sega introduced a modular cartridge. The idea behind the modular cartridge was simple. Since the SVP was the most expensive component in a cartridge, the consumer shouldn't have to buy it over and over again in every cartridge that he purchased. Instead, for $50 he could buy a modular cartridge that contained only the SVP chip. Later as new SVP games were developed the player could buy the $50 game cartridges and plug them into the modular cartridge. Unfortunately the new modular system wasn't available until the summer so *Virtua Racing*, which was released in the spring, couldn't come out as a modular cartridge.

Sega sought other ways to make Genesis and Game Gear software more affordable and accessible. Sega and Blockbuster Video began test marketing a new videogame rental system that was developed by Newleaf Entertainment, a joint venture between Blockbuster and IBM. Originally

designed as a method to produce music on compact discs, the Newleaf system allowed retailers to store games electronically. When someone wanted to rent a certain game the code would be downloaded into a special cartridge that could play on the Genesis or Game Gear. By utilizing this system, stores could stock every conceivable available game without sacrificing any shelf space.

Actually the Newleaf system wasn't much different than the Romox and Cumma Technology systems that had been introduced in 1983. Those systems had failed because they had been designed as an alternative to buying game cartridges and the blank cartridges cost more than the heavily discounted games. In 1994 games had cost a lot more and the system had been designed with the rental market in mind. This meant that if a person decided to keep the reprogrammable cartridge, a heavy fee would be charged to them.

Sega and Blockbuster began test-marketing the Newleaf system in ten Blockbuster stores in August. Initially the system only downloaded games made by Sega. However, it was anticipated that more and more companies would sign up to have their games included.

By 1994 the videogame rental market was a $1.5 billion dollar industry and everybody wanted to take part in it. Despite Nintendo's lawsuit against Blockbuster in 1990, the company realized that it couldn't ignore the market. In 1994, Nintendo decided to include rental stores in its distribution chain. By doing this the rental stores were entitled to participate in the same promotions that Nintendo offered the retail stores. Blockbuster and West Coast Video were among the first stores to participate in the new program.

Blockbuster's interest in videogames went beyond the rental market. In early 1994 the company spent $30 million to buy nearly 20% of Virgin Interactive Entertainment. Five months later the company picked up an additional 55% of the software company with the further ability to buy nearly another ten percent if it chose to. The remaining stock (1.5 million shares) was owned by toy company Hasbro, which had bought it right before Blockbuster's initial purchase. In September Hasbro turned around and offered its Virgin stock for 1.3 million shares of Blockbuster stock. Following this trade Blockbuster and Hasbro agreed to form an interactive partnership.

Blockbuster wasn't the only media company that was anxious to break into the booming videogame industry. After a twelve year hiatus, movie company Twentieth Century Fox decided to jump back in. The company called its new division Fox Interactive and planned to release its first games in November.

As Twentieth Century Fox Games of the Century had done in 1983, Fox Interactive planned to release games that tied in with Fox movies and TV shows. The first game, *The Pagemaster*, came out in November at the same time that its movie counterpart reached the theaters. This marked the first time that a game based on a movie was released simultaneously with the movie.

Twentieth Century Fox wasn't the only movie studio that decided to release videogames. Paramount Pictures, which had been a sister company of Sega in the early eighties, also went ahead to once again release videogame software. A third movie studio, Universal, also announced plans to do the same thing. Although Universal hadn't taken part in the initial wave of videogame mania during the eighties, its parent company MCA had planned such a venture.

Another company that decided to 'enter' the videogame business was one that had already been in the business since practically the beginning. Originally, after Warner Communications split up Atari Inc. and sold Atari Corporation to the Tramiels, the company retained its arcade division, which it renamed Atari Games. When the Nintendo NES became a big success, Warner Communications wanted to jump onto the bandwagon. Since it could only use the 'Atari' name on arcade games it created a new home videogame software division that it called Tengen. After Warner Communications and Time Inc. merged to form Time-Warner, the multimedia industry exploded and the company set up a new division called Time-Warner Interactive. In 1994 Time-Warner decided to

consolidate the three units into one group that it simply called Time-Warner Interactive. For the first time in over twenty years, the Atari name was no longer on arcade videogames.

Shortly after Time-Warner Interactive was formed, its arcade division announced that it was going to use Atari Corporation's Jaguar in its coin-op games. Following this decision all games would then be developed for both the arcade machines and the home Jaguar's. After ten years of separation, the two Ataris were once again working together.

Arcade players weren't the only new audience that were able to play Jaguar games. In May Atari licensed the Jaguar technology to a company called Sigma Designs. Sigma Designs had developed a PC card that allowed PC owners to play Jaguar games on their home computers. Although the $500 board was to be in the stores in time for Christmas, it never was released at all.

Innovation introduced a new peripheral for the SNES at the end of 1994. The Game Wizard was similar to the Game Genie in the aspect that a player could enter codes to alter games. The Game Wizard differed from the Game Genie because game players weren't forced to only use the codes that came in the unit's instruction manual. The Game Wizard allowed players to scan the game's programming to find new codes. The Game Wizard also permitted Super Famicom cartridges to play on the SNES.

Codemasters, the developers of the Game Genie, had announced a device similar to the Game Wizard at the end of 1993. The *Game Genie 2* also allowed players to find their own codes. At the time Codemasters was very optimistic that the device would be available by the end of 1994. Unfortunately Galoob, the American distributor of the Game Genie, did not share that optimism. They didn't see how the unit could be completed by the summer of 1994 in order for it to have a Christmas 1994 release. Instead, Galoob predicted that the Game Genie 2 would be available sometime in 1995.

Another 1993 announcement by Codemasters had been that it was developing a Game Genie for the Sega CD. By 1994 that project had been scrapped. The company mentioned that it might work on a Game Genie for the Sega 32X but most critics dismissed this news.

Despite the lack of new products Galoob still managed to have a good year. This was due in part to the $16 million in damages that Nintendo was forced to pay after its failed lawsuit. After receiving the settlement, Galoob turned around and lowered the prices on its various Game Genies.

Interest in videogames reached an all-time high through 1994. *Electronic Gaming Monthly* broke all records with its December issue that contained 404 pages. So much news concerning videogames was coming out that *Electronic Gaming Monthly*'s publisher, Sendai Publications, decided that one magazine a month wasn't enough to contain all of this information. For a while the publisher thought about giving the magazine a bi-weekly schedule but the problem with that was that the shelf life of each issue would only be two weeks. Instead the company decided to release an all new magazine called *EGM*^{2}. The new monthly magazine rotated a bi-weekly schedule with its sister magazine *EGM* and this way Sendai had two magazines on the shelves every month.

Most videogame magazines were still geared for teenagers and younger. Following the success of the adult-oriented *Electronic Games*, new magazines were released that attempted to go after an older audience. The first of these was *Electronic Entertainment* (*E*^{2}), which was released in January by Infotainment World, the same company that published *Gamepro*. *E*^{2} immediately gained respectability in the gaming world by providing a monthly column by Nolan Bushnell.

At the end of the year a new magazine was released by GP Publications, the publishers of *Game Players Sega-Nintendo*. The magazine was called *Next Generation* and it quickly established a niche with adult gamers. *Next Generation* featured reviews, interviews and information on the latest

technology.

The interest in videogames also spread to prime-time TV. On November 5 TBS presented *Cybermania '94: The Ultimate Gamer Awards*. Hosted by Leslie Nielsen and Jonathan Taylor Thomas, the show tried its best to imitate the highly watched award shows like the Academy and the Grammy Awards. Unfortunately the program clearly missed its mark as so-so celebrities announced the names of games that they obviously never heard of. If the show had been hosted by game programmers and executives it would have had fewer ratings but would have been more believable.

The major success of videogames and computer interactive games brought changes to the rest of the electronic industry. For the first time in over twenty years, the Electronic Industries Association (EIA) decided not to hold their annual Summer Consumer Electronic Show in Chicago. The EIA announced that the 1995 SCES would be renamed *CES Interactive* (CES-I) and would be held in Philadelphia during May 11-13. The purpose of the new name was to highlight the fact that the summer show would be meant for multimedia and videogame hardware and software only. The Winter CES would remain unchanged in Las Vegas.

Shortly following the announcement of the CES-I, IDG Communications announced that it was establishing its own electronics show in Los Angeles. The battle began when it was disclosed that the *Electronic Entertainment Expo* (E^3) would be held during the same days as the CES-I.

By September both groups claimed that their shows would take place and both boasted an impressive list of attendees. CES-I had Nintendo and Microsoft on its side while E^3 had Sega, Sony, Atari and 3DO. Other companies signed up for both shows with the intention of deciding at a later date which show they would actually attend.

In October, Nintendo announced that it was going to attend E^3 instead of the CES-I. Following Nintendo's defect, the EIA decided to scrap the CES-I, citing that it was best for the industry if there was only one show. The EIA then began its plans for the 1996 CES-I.

The year ended quieter than it began. The talks of game ratings were silenced. However, in the distance the soldiers were lining up and quietly preparing for battle. With the introduction of the Saturn and Playstation, as well as the Virtual Boy, 1995 was gearing up to be one of the most decisive years in the history of videogaming.

CHAPTER TWENTY-TWO
1995

Although new systems had been released in Japan, 1994 had produced a veritable drought for them as far as the United States was concerned. Fortunately there appeared to be a major storm on the horizon as the two major gaming companies, Nintendo and Sega, both promised new consoles in 1995. On top of this, new player Sony also intended to release its long-awaited Playstation.

1995 began like all others with the annual Winter Consumer Electronics Show in Las Vegas. It was anticipated that the Nintendo Ultra 64, the Sega Saturn, and the Sony Playstation would all make their American debuts at the Winter CES. To the surprise of all who attended, none of these machines were anywhere to be seen. Although Sega & Sony touted their new machines without actually displaying them, Nintendo was quiet about its new console. However company spokespeople did admit that the Ultra 64 was on schedule and would be launched sometime during the year.

Rather than tout the Ultra 64, Nintendo continued to push its Super NES workhorse. The company displayed new SNES software that failed to excite the media. Industry insiders predicted that 1995 would be the last hurrah for the 16-bit console and then it would follow its predecessor the NES into history. The NES itself was officially mentioned one last time at the CES as Nintendo delivered the news that it was officially retiring the machine. This meant that it wasn't going to manufacture the console any longer nor would it release any new software.

However all wasn't doom and gloom at the Nintendo booth at the Winter CES. Although the Ultra 64 wasn't shown, Nintendo used the trade show for the new Virtual Boy's American debut.

After viewing the Virtual Boy at the CES, the videogame journalists reassessed their opinions about the machine. The bottom line was that although they thought the unit was unique they couldn't see how it could compete against the forthcoming Saturn, Playstation, and Nintendo's own Ultra 64. Still Nintendo was confident that they had another winner on their hands and the date of August 14, 1995 was established as when the Virtual Boy would hit the store shelves in the United States. This would give it a month's head start before Sega's & Sony's new products were scheduled to hit the stores.

Nintendo Virtual Boy

In order to prepare for the launch of the new Virtual Boy, Nintendo had to develop new strategies for its advertising. The Virtual Boy's singular feature was its 3D screen and since a 3D image cannot be highlighted in two dimensional print advertising and television commercials, Nintendo had to find a new way for the public to learn about it. As a means to this end, Nintendo worked out a deal with Blockbuster Video. Through the end of 1995, Blockbuster would rent out the Virtual Boy unit and two games for two nights for $9.99. In addition the renters would receive a $10 coupon towards the purchase of a new Virtual Boy.

Nintendo actually released the Virtual Boy on August 21 in the United States to a less than receptive audience. Nintendo followed up its launch two weeks later with a spectacular promotion over the Labor Day weekend. The company put up tents at several Blockbuster locations around the

country and let gamers see the new product up close. Having people actually play the unit caused many to change their first impression of it. Unfortunately, the underlying problem was that at $180 it was still too expensive. Many potential buyers were hesitant to spend so much money on a new system that had little support from third party vendors.

By autumn Nintendo announced that it was going to release a new controller that would allow players to hook up two Virtual Boys and compete head-to-head. This still failed to pick up the depressed market. Nintendo followed this announcement with another stating that the price of the Virtual Boy was going to be reduced by twenty dollars. Nintendo cited that the reason for the price decrease was because the yen/dollar ratio had improved. Very few believed this story especially when some retailers were already discounting the Virtual Boy at $99 in an effort to get rid of them.

Although the Virtual Boy had its share of doomsayers, surprisingly the one feature that wasn't thrashed was the fact that games could only be displayed in two colors: red and black. Nobody was going to attack the Virtual Boy for that. After all, the Gameboy was only able to display in two colors also and it went on to sell over 16 million units in the United States alone (40 million worldwide). This was more than twice the number that the two color portables: the Sega Game Gear and the Atari Lynx sold together.

Although it had its hopes set on the Virtual Boy, Nintendo wasn't abandoning its Gameboy. At the CES the company displayed its new colorful Gameboys and announced new software. Among the games that Nintendo planned to release during the year was the classic *Space Invaders* and *Donkey Kong Land*, a Gameboy version of the most popular videogame of all time: *Donkey Kong Country*.

Sega Nomad

The Virtual Boy wasn't the only new portable unit to debut in 1995. Surprisingly, Sega also announced that it was going to release a 16-bit portable color unit. Originally code-named Venus, Sega announced that its *Nomad* would be available in early 1996 and maybe even in time for Christmas 1995. The unit would cost between $149 and $199. The most exciting aspect of the Nomad was that it would play all of the Genesis cartridges. In addition, up to four players could hook up individual Nomads and compete against each other at the same time. There were also rumors that Sega was developing a converter so the Nomad could play Game Gear games in the same fashion that the SNES played Gameboy games.

By the end of the year the Nomad was a reality with a retail price set at $200. The final unit was nearly the same size as the Game Gear and featured a 3¼ inch LCD backlit screen. The final model did not contain the promised link feature that would have allowed up to four players to compete at the same time. However, Sega included a controller that could plug into the unit for two player games. The Nomad also included an audio/video jack so that it could hook up to a monitor or television set. In many ways the Nomad was a complete substitute for the Genesis. However Sega made it clear that the Sega CD, 32X, and the SMS Power Base Converter would not work on the new portable.

Actually, the 32X wouldn't work on some Genesis machines either. After receiving numerous complaints from frustrated 32X owners who couldn't hook the unit up to older Genesis consoles, Sega published a set of simplified instructions that they hoped would make the installation easier. Unfortunately the 32X was also incompatible with some older TV sets. Sega then had to tell the owners of those TV sets that they had to go to an electronics store and buy an adapter. Needless to say

the 32X owners weren't happy with this bit of information.

Sega Neptune

32X owners also weren't happy with the software support that the 32X was receiving. Although the upgrade rocketed out of the starting gate with demand exceeding supply in 1994, the sales slowed down in 1995 as many prospective customers decided to wait for the new Saturn. With hardware sales lower than expected, the sales on the software was naturally slow also. The result of this was that many third party software companies, Capcom and Konami among them, decided to shelf their 32X projects. When summer arrived Sega denied that there was any problem with the 32X and that it would continue to support the machine. However a noticeable sign of trouble emerged when Sega announced that it was postponing the release of its Neptune console, the combination Genesis/32X player, until early 1996. Still, the company insisted that despite the slow sales, it would still be releasing plenty of new titles for the existing 32X. Sega promised that forty new games would be available in time for Christmas.

By Christmas the story changed completely. When Toys R Us, the world's biggest toy store, failed to include the 32X in its stock directory, it meant pretty much that there was no longer a market for the device. Even Tom Kalinske, president of Sega of America, admitted that the company hadn't lived up to the promises that it made to the consumers who invested in the 32X. Still the bottom line was that the 32X just wasn't profitable and Sega had a whole lot more invested in its forthcoming Saturn.

Another Sega product that was dropped in 1995 to make room for the Saturn was the Sega CD. The company actually stopped all advertisements for the Genesis add-on following Christmas 1994. Unfortunately the potential for the CD had never been realized by Sega. Many hoped that Sega would allow the Saturn to be downwardly compatible with the Sega CD but Sega refuted the idea. Sega did decide to salvage one part of the Sega CD however. They decided to use the Sega CD's packaging for the Saturn.

Although it wasn't shown on the main floor of the CES, attendees at a meeting hosted by Tom Kalinske got their first look at the American Saturn. The domestic Saturn appeared to be exactly the same as the Japanese one with one cosmetic difference: instead of gray it was black like the Genesis. Kalinske announced that the Saturn would definitely be released in the United States on September 2 1995. That day, a Saturday, was quickly dubbed "Saturn-Day". The unit would cost between $300 and $500 but that wasn't final. Sega officials were still waiting with open breaths for Sony's final announcement on how much the Playstation would cost. However with Sony and Nintendo both claiming that their new systems would cost under $250, that left the Saturn a very expensive proposition. Meanwhile Sega officials publicly announced their feelings that they didn't think Sony could maintain the under $250 price. As for the Ultra 64, it still hadn't been seen outside of Nintendo so no speculation could even be made about it.

The Saturn may have been Sega's top priority but it wasn't Sega's only priority. Sega began looking at the PC market very seriously when a company called Nvidia Corp. created a new chip that included a new graphics processing system. This, and the introduction of Windows 95, opened up an entirely new market for Sega. Previously, the Windows 3.1 operating system and the SVGA graphics systems weren't friendly towards the action oriented games that Sega was known for. With the new technology that was available, Sega decided the time was ripe to make their venture into the crowded world of computer software.

Sega quickly established its new computer software division that it called SegaSoft. In addition to

the PC and MAC games, SegaSoft was also responsible for the development of Saturn software. There was also a rumor that the group would develop Sega games for competing consoles such as the Sony Playstation. However games weren't the only things that were on the minds of the SegaSoft developers. The group was also developing computer peripherals such as a card that would allow Saturn controllers to work on PCs.

In order for its future games to be state of the art, an investment group that Sega belonged to invested several million dollars into a company called Integrated Computing Engines (ICE). ICE did research and development on computer and virtual reality technology. Sega's hope was that it could make a deal with ICE that would give it the rights to use ICE's technology in its upcoming games.

Sega also signed a deal with SNK, the manufacturer of the competing Neo•Geo system. The deal allowed the two companies to develop each other's best games for their own machine. Although many wondered what games would be swapped, neither company had any intention of officially picking the games until they met in January 1996.

Sega also signed a deal with Tiger Electronics, the toy company that had released the Tigervision videogames thirteen years earlier. Under the agreement Tiger Electronics would manufacture and distribute the Sega Toys such as the Pods and Pocket Arcade games that had been introduced by Sega in 1994. The deal did not include the Pico or the new Wonderbook, which was a portable Pico.

Outside of the videogame realm, Sega continued to develop more theme parks where its games could be showcased. Sega and MCA teamed up with the new company DreamWorks SKG to develop 150 Interactive Entertainment Centers (IEC) around the country by the year 2000. The centers would feature interactive attractions, simulators and the newest games. The first IEC was planned to open in July 1996 in Seattle, the home of Nintendo. The largest was a 50,000 square foot center that was targeted for Las Vegas. Actually Sega needed to open such a venue in order to get its newest arcade games played. New machines such as the driving simulator *Virtua Racing* cost in excess of $18,000. There was no way that a typical arcade could afford to bring in a machine at that price. Even if the machine was leased from a distributor, it was still too expensive to make a return on the investment. Although a game cost a dollar to play, the chances of it ever breaking even were very slim. The bottom line was that only an arcade owned by Sega would be able to showcase such an expensive machine.

Sega wasn't the only company that planned an interactive center. Nolan Bushnell, the founder of Atari announced plans to start E2000, a virtual entertainment center that included a futuristic restaurant, video rides, immersive theaters and interactive gaming rooms. The first E2000 was scheduled to open in northern California in September with a dozen more opening throughout 1996.

The September 2 release date was extremely important to Sega because that date was a full twenty days before Sony's targeted September 22 launch of the Playstation. After its successful 1994 launch of the Playstation in Japan, Sony began setting the stage for its North American and European releases. As time passed the hype for the Playstation continued to grow. Sony executives were so confident with the success of their new console that in early 1994 they held a press conference to explain their plans beyond the Playstation. At the conference it was revealed that Sony planned to release a Playstation Two in 1997 that would upgrade the architecture of the Playstation. Without giving away any details, a Sony spokesman hinted that the Playstation Two would be the first true gaming console that would provide a link to the Internet. The spokesman also said that Sony was also planning a Playstation Three, which was to be released in 2003. No details at all were given away concerning this console except that it would carry Sony to the year 2011.

On May 11 at the first Electronic Entertainment Expo (E^3), Steve Race, president of Sony Computer Entertainment, announced that the price for the American Playstation had dropped to $299.

At that price it would not come with a free game. Race also revealed that twenty games would be available in time for the Playstation's September release while an additional thirty titles would come out in time for Christmas.

Race also told the crowd that a unique memory card would be available in September. The memory card would plug into the front of the Playstation and let players save their games at any time.

One thing that would not be on the American Playstations would be a S-VHS video output port. Although it was available on the original Japanese Playstations, Sony announced in July that it was removing the port from the newer machines. In Japan, this reflected in a ¥10,000 price decrease thanks to reduced costs. Since Sony already offered an optional S-VHS cable, anyone who really wanted the S-VHS port could buy the cable separately.

The reason Sony did this was to avoid a legal conflict with the International Trade Commission (ITC). Atari's Sam Tramiel contended that Sony was going to infringe on ITC rules by 'dumping' the Playstation at $299 in the United States. Dumping was the term for selling products in one country with a price that was significantly different than what it sold for in another country. Japanese consumers were less concerned about price and more interested in quality so electronics were able to sell for more in Japan. In the United States the consumers were cost conscious. Tramiel argued that by selling the Playstation at $299 Sony would lose money on each console sold but it would then make it back from software sales.

The new Playstations that lacked the S-video output sold in Japan for $320. Sony was now able to get away with selling the Playstation for $299 in the United States without breaking any laws.

Although his speech was very upbeat and positive, Race was shaken by news that he learned only a few hours earlier. The news came in the form of a surprise announcement by Sega President Tom Kalinske. Kalinske had told the E^3 crowd that the previously announced September 2 release date for the Saturn had simply been a decoy to throw Sony off. To everyone's surprise the Saturn was being released in limited supplies to four retail chains that very day. Within a few days 30,000 Saturns had been released to Toys R Us, Electronics Boutique, Babbage's and Software Etc. Each system carried a $399 retail price and was packed with *Virtua Fighter*. Ten additional games were available at the time of the Saturn's release.

Sega Saturn

Like its Japanese counterpart, the American Saturn had a cartridge slot even though Sega didn't have any plans to create any cartridge-based games. Instead, the company was working on a card to play video CDs on the Saturn. The card could be plugged into a port in the back of the Saturn while the cartridge would contain the programming that allowed the Saturn to access the video information from the CDs. Meanwhile, Datel Electronics came out with a practical use for the cartridge slot. Its Universal Adaptor allowed any Saturn CD to play on any Saturn, no matter where in the world it was purchased. This was a godsend for people who purchased the Japanese Saturn during the months prior to when the console was released in the United States.

Sega again jumped the gun on Sony by releasing the Saturn in Europe in July. By that time Sega had already sold more than 100,000 consoles in the United States.

Speculation quickly arose whether Sony would push ahead the release date of the Playstation. Critics pointed out that Sega had to rush the Saturn to market since it was costing over $100 more

than the projected price of the Playstation. Many wondered what Sega would do once the Playstation was actually released. Price cuts were out of the question since the stores were paying Sega $399 for each Saturn and then selling them at cost just to make money on the software.

Further speculation about Sony began on August 7 when the company announced that Steve Race resigned after disagreements with other Sony divisions concerning the long-term pricing of the Playstation. He was quickly replaced by Martin Homlish who had been a vice-president in another Sony division.

The change in leadership did nothing to sway Sony's decision on whether to release the Playstation early or not. Rather than release the Playstation early, Sony started up a pre-registration service in mid-August and promised those who signed up that they would have a Playstation waiting for them on September 9. In addition, all those who registered in advance would receive a free developer's demo CD.

Sony followed its original game plan and released the American Playstation on September 9. Although the unit cost $100 less than the Saturn it was packaged with a 12 game demonstration disc rather than a playable game. However Sony decided at the last minute to also sell Playstations that came with the pack-in game *Ridge Racer* for $349.

Sony Playstation

Sony had presold 100,000 systems during the three weeks before the Playstation's launch, which was roughly the same amount of Saturns that Sega sold during its four month head start. Still this wasn't a reason for Sony executives to jump with joy. As Chip Herman, Sony's VP of marketing pointed out: the summer months were historically slow in the videogame industry. Coupled with that was the fact that the Saturn had initially only been available in limited markets. The actual selling season was about to start with Christmas less than four months away and the real war between the two systems was about to begin.

By November sales figures were beginning to show which system was preferred by the consumers. Sega announced that it had sold 120,000 Saturns after six months. However that number didn't come near Sony's claim of selling 200,000 Playstations in a little over two months. Sega, obviously worried with these figures, dropped the price of the Saturn to $299, the same price as the Playstation. In addition, the company began a massive television campaign to advertise the system.

Another problem that Sega was facing was its lack of great games for the Saturn. This changed in November when Sega released the Saturn versions of its arcade blockbusters *Virtua Fighter 2* and *Sega Rally*. Unfortunately, games like these took developers nearly two years to create while equivalent games for the Playstation were taking only six months.

Meanwhile Sega began to make its intentions for the Saturn known. In the works was a peripheral that would link the Saturn to the Internet and cost around $150. Further down the road was a 64-bit console that was code-named the *Eclipse*. The new system, which was scheduled to appear in 1998, would incorporate DVD (Digital Video Disc) technology and be compatible with the current audio CDs and CD-ROMs. Of more importance to Saturn owners, the Eclipse would be downwardly compatible with that system as well. Of course this all assumed that the Saturn would survive its war against the Playstation.

As Sega and Sony fought to dominate the 32-bit market it was easy to forget that there was another

32-bit system for sale: the 3DO, which was unfortunately going through tough times. From the beginning the 3DO suffered from all different problems. When it was first released it suffered from an identity crisis. Was it a multimedia device or a gaming machine? The 3DO Company decided to market it as a game console with multimedia capabilities. Another problem occurred because the console was just too expensive. Sega, Sony and Nintendo could sell their consoles at a loss with the knowledge that they would make their money back through software. Panasonic and Goldstar were unable to do this because they didn't produce any software. When the two companies found other ways to streamline their manufacturing costs and pass the savings on to the consumers, Sega and Sony began to assault the media with their wonderful forthcoming machines. Still, the 3DO persevered and by 1995 over a half million consoles had been sold around the world under various brand names. When Goldstar changed its name to LG Technologies and introduced its 3DO in the United States in June, it offered a $50 rebate on each unit, effectively lowering the price of the console to $299. LG Technologies soon repriced the console to $299 and Panasonic immediately followed suit. Sales for the unit went up and in some stores the 3DOs outsold the new Saturn.

The 3DO Company didn't plan to leave all of those buyers in the lurch as the supposedly better systems came out from Nintendo and Sega. During the first half of 1995 the 3DO Company kept promising that its M2, the upgrade that would make the 3DO ten times as powerful as the Saturn or Playstation, was on schedule and would be available by the end of the year.

The 3DO Company released specs for the M2 and they were truly spectacular. The 64-bit system would have ten custom coprocessors as well as a 528 Megabyte per second CPU. It could generate one million polygons per second (the Playstation produced up to 90,000 polygons per second).

The 3DO Company claimed that the M2 would be the world's first true 64-bit 3D machine. The hardware had the ability to generate 3D graphics, which was accomplished by software in the competing systems. The M2 would also include MPEG-1 video compression that would allow it to play full-motion digital video. The hardware itself would also have slots for memory cards so players could save games.

Despite all of the hype the competing manufacturers weren't worried about the M2. They all figured that the success of the M2 would boil down to two points: the number of available good games and the price. While the exact retail price for the M2 would be set by Panasonic and Goldstar, most analysts agreed that it would have to be in the same area as the prices of the existing systems. The buzz was that the M2 add-on would cost between $149 and $200. With Nintendo claiming that the Ultra 64 would be under $250, it was hard to see where the 3DO/M2 combination could fit in.

By the end of the summer the M2 was pushed back to an early 1996 release and many wondered if it would see the light of day at all. Meanwhile The 3DO Company looked into other areas such as software design and the Internet. 3DO Company executives claimed that the M2 would always be the top priority for the company but they still had to look into other avenues. By early November the world learned that this statement turned out to be pretty false. By this time even though the company claimed that the M2 would be its highest priority, everybody in videogaming knew that it was no longer true. The 3DO Company no longer had any interest in the M2. They sold the technology to Matsushita, the parent company of Panasonic, for $100 million. Following the sale, the 3DO Company in essence became a software company.

Following the sale Matsushita claimed that it was going ahead with its M2 technology and the new hardware would be available by autumn 1996. Still, the videogame analysts wondered exactly what Matsushita's plans were. Although they were certain that the company would go ahead and release the M2 as promised, they wondered how Matsushita would do it. There were two common scenarios that could take place. The first scenario had Matsushita using the M2 as its launching vehicle for its new DVD technology. More probable was the second scenario where Matsushita would license the

technology out to other manufacturers just as the 3DO Company had done. However by the end of 1995, nobody had an concrete answer.

Unfortunately, Goldstar didn't fare well from this sale. For Goldstar to release the M2 Accelerator for its 3DO machine, it would have to get a license from Matsushita. Meanwhile, the company continued to sell its 32-bit 3DO consoles. By the end of the year Goldstar lowered the price of the system to $199. Even though Goldstar claimed that it had streamlined its manufacturing process, Sega and Sony were quick to claim that Goldstar just wanted to dump the consoles.

Although Sega and Nintendo both released new portable units, these were just frosting on the cake. Behind the scenes both companies, along with Sony, were putting all their energy into their new consoles.

In the beginning of the 1995, Nintendo's Ultra 64 was pretty much still a rumor. No one outside of the company had ever seen it. The talk was that because it was going to be cartridge based, it could never compete price-wise against the CD-based 32-bit systems from Sega and Sony.

Meanwhile, as they continued to spar against each another, both Sega and Sony were still looking over their shoulders to see what Nintendo was doing. To their dismay Nintendo revealed very little.

By late March the word was that the system was completed and that it would be displayed in May at the E3 trade show in Los Angeles. The first word was that the system would be released in the United States on Labor Day (September 4) but that date was quickly changed to the day after Thanksgiving: November 24. The console would sell for under $250.

On May 5 an official word came from Nintendo concerning the release date. The news was told by Nintendo of America head Howard Lincoln who announced that the Ultra 64 was being delayed until April 1996 and would thus miss the 1995 Christmas season. Lincoln said that the reason behind the delay was to give the software developers additional time to bring out the best games possible. However rumors persisted that the Ultra 64 was being delayed due to orders from Japan so that the new console could make its official debut at the annual Shoshinkai show and then go on sale on December 1. Despite the changes in the release date, the under $250 price remained. Nintendo also meted out another Ultra 64 tidbit concerning the controllers. Without actually showing them, Nintendo announced that the controller for the new system would be revolutionary as it had been specifically designed for 3D games.

The Ultra 64 development systems finally reached the developers in early August. Unfortunately, the software companies didn't know exactly what their status was. Three companies: Acclaim, Virgin, and Williams, were officially deemed game publishers by Nintendo. Most of the remaining software developers were hesitant to develop anything until they knew exactly who would be publishing their games. Nintendo was tight-lipped about most subjects. Even the developers themselves had to be quiet. Written into their licensing agreement with Nintendo was a clause that prohibited the actual developers from discussing any details from unannounced projects with anyone outside the development team, including other company employees.

One of the secrets concerning the Ultra 64 was finally revealed in late October and that was the mystery of the controller. While the controller featured a cross-button and fire buttons that were similar to the NES controllers, the Ultra 64 controller also featured an analog joystick. With the exception of the paddle controllers from the early days of videogames, all controllers that were packaged with systems were digital. This meant that only two states could existed: on and off. The problem with digital controllers was that the player didn't have full control of what happened on the screen. Although a player could move an onscreen character by pressing a joypad in a certain direction, the computer always decided exactly how far that character would move. With an analog controller the on-screen character could move with precision exactly as far as the player wanted him

to move.

The back of the controller contained a slot but Nintendo didn't explain the purpose of it. Speculation was that a memory card would insert in the slot to save games or certain controller moves.

The Ultra 64 featured four controller ports allowing up to four players to compete together without the need of an expansion module. This was the first time that a system had four built-in controller ports since the Atari 5200. In addition, Nintendo planned to sell extra controllers in designer colors.

As Nintendo released pictures of the controller for the new system, it also announced that it was changing the name of the system again. Nintendo had intended to call the Japanese version the Ultra Famicom. However the word "*Ultra*" had already been trademarked in Japan. Hence the new name for the system in Japan would be the Nintendo[64]. Meanwhile Nintendo of America still called the American system the Ultra 64.

Nintendo64

As predicted the Nintendo[64] made its debut at the annual Japanese Shoshinkai show. Along with the system were two playable games and several more were shown on a videotape. At a press conference Nintendo head Hiroshi Yamauchi stated that the release dates for the system had been pushed back due to a lack of ready-to-ship games. The Japanese release date had been changed to April 21, 1996 and the US release date was pushed back to September 1996. Many analysts and developers doubted that Nintendo would ever meet the proposed shipping date. One of the playable games that was on display at the show was *Super Mario[64]*. The game was only 50% completed and it had taken its designers eighteen months to reach that point! The experts agreed that for Nintendo to meet its April 21 deadline, the other half of the game would have to be finished by mid-February, less than two months away.

However Nintendo didn't appear to be worried about the date. One thing that Nintendo didn't deny was the rumor that the company had been quietly manufacturing the systems since September and that they were sitting in a warehouse all boxed and ready to go.

The biggest complaint about the Nintendo[64] was the fact that it was cartridge based. Many analysts questioned this decision citing that cartridges cost more than three times as much as CDs to produce. Others worried that developers wouldn't be anxious to develop new games for cartridges since they became accustomed to creating CD games that had virtually unlimited memory restrictions. Still, Nintendo remained positive about the cartridges and pointed out that by eliminating a CD player, they were able to keep the retail price of the Ultra 64 below $250, a price point that they had been promising throughout the system's entire life cycle. To the surprise of many skeptics, the game cartridges were expected to retail for only $60-70, the same price that the SNES cartridges were selling at. Nintendo reasoned that as long as the games were original and fun, there would be a ready market for them no matter how much they cost.

The Ultra 64 included an expansion port but Nintendo assured everyone that it wouldn't be for a CD upgrade. Instead, Nintendo was developing the Magni-Disc, a magnetic disk drive that was different than those that were already on the market for computers. Nintendo was hoping to have this peripheral for sale by the end of 1996.

With all the press going to Nintendo, Sega and Sony, it was easy to forget that there were other

videogame consoles either planned or already on the market. Among this pack of hardware manufacturers was Atari and its Jaguar.

Atari claimed that it sold between 150,000 and 200,000 Jaguar consoles by the end of 1994. However the bottom line was that the eighteen month head-start that Atari had on the other companies by releasing its 64-bit system in late 1993 did little to win it any popularity. The initial cartridges were scarce and not very good. In addition Atari announced products but didn't get them to market when they were promised. Although most of the companies were guilty of this practice, Atari seemed to lead the pack.

In an effort to popularize the Jaguar, Atari dug deep into its past to produce a slew a brand new games. The '2000' series were games from the eighties that had been updated for the nineties. Among the titles promised were *Tempest 2000*, *Defender 2000*, and *Breakout 2000*. When *Tempest 2000* was released it was hailed as the best game for the Jaguar. In an effort to farther entice consumers into buying the Jaguar, Atari lowered the price of the console to $149 in the late summer.

Atari Jaguar CD

As the world waited for the release of the Playstation and Saturn, Atari announced new products that would enhance the Jaguar. In the forefront was the Jaguar CD. Originally promised for late 1994, the release date was changed many times during 1995. First a May date was set and then it was changed to June. The $200 unit was actually released on September 15, six days following the release of the Sony Playstation.

There were several reasons why the Jaguar CD was delayed so many times. One reason was because there hadn't been enough Jaguars sold. In order to sell the CD player at an attractive price, Atari had to sell them in quantity. Atari also hoped that the constant press announcements concerning the Jaguar CD would entice people into buying it but that didn't work.

Manufactured by Philips, the CD player fit into the Jaguar's cartridge slot and had its own slot that cartridges could be inserted into. As it had done with the 7800 Atari also promised a cartridge that would save game scores. Atari also planned an MPEG video cartridge in 1995 that would allow Jaguar owners to play full motion video movies. Built into the CD player was a program called the Virtual Light Machine that produced startling on-screen light effects that were in sync with the music from audio CDs.

Even before Atari released the CD drive for the Jaguar, it was already making plans for the JagDuo, a combination Jaguar/CD player. Atari hoped to release the new unit in the fall of 1995 for $350 but failed to so. By that time both the Saturn and Playstation had been released at lower prices.

Atari also planned a Virtual Reality headset that was developed by the London-based company Virtuality. Virtuality had become well-known in the area of virtual reality entertainment and Atari helped fund the company to bring its knowledge to the Jaguar. Atari expected the $200 unit to be on sale in time for Christmas. Unfortunately the system had more than its share of critics. Many doubted that Atari could release the VR unit for under $300, let alone $200. The skeptics were further fueled by a stunt that Atari pulled at the E3 convention. Although Atari demonstrated a working unit at the trade show, the model that was displayed was actually Virtuality's arcade system boxed in Jaguar housing.

Despite the deception most members of the press marveled at the virtual reality system. The Jaguar itself was written up as a great buy for its price. Things were beginning to look rosy for Atari.

However, no matter how great a system might be, there had to be great software available for the system to survive. Unfortunately this wasn't the case with the Jaguar. Great games were few and far between. The majority of games that were released appeared to be rushed and buggy.

When Atari released the Lynx, it had been hailed as the best portable system. Unfortunately it quickly lost its popularity when Atari failed to release great games that were on par with those being released for the Sega Game Gear and the monochrome Nintendo Gameboy. Once Atari failed to support the machine, it quickly died. Now it appeared that Atari was repeating history with the Jaguar.

Near the end of 1995 Atari announced that it was laying off twenty employees. However the company was quick to state that those laid-off had all been assigned to three projects that were being scrapped. Many wondered how Atari could scrap three titles when there was such a scarcity of games being released in the first place. On top of that, Atari cut all of its ties with Virtuality. This meant that the one glowing spot in the Jaguar's lineup, the virtual reality project, was dead.

Following this fiasco Atari announced that it was going to develop games for the PC and other consoles such as the Saturn and the Playstation. This seemed like deja vu to many longtime gamers who remembered the Atarisoft label from the original Atari in 1983. The press wondered if Atari was abandoning the Jaguar but Atari quickly stated that it made more sense to cover all of its bases and that the Jaguar was still the best bargain for the buck.

Atari's doomed virtual reality system was not the only virtual reality system that died in 1995. Hasbro, one of the world's largest toy companies, had been secretly working on a virtual reality console since 1992. The system, codenamed *Toaster*, had been scheduled to appear on store shelves during the first half of 1996 and was said to be as powerful as the Ultra 64 and comparable in price. Abrams/Gentile Entertainments, the company behind the Mattel Power Glove for the NES, was putting together a new Power Glove for the Toaster. The Toaster was also said to have microphones built into the headsets and have Internet capabilities. Many videogame insiders were very excited about the machine. Unfortunately in September Hasbro announced that it was scrapping its plans for the virtual reality device after sinking $59 million in development since 1992. The company cited that the chips cost too much to allow a reasonable market price.

Although the Toaster Power Glove died along with the system it was meant to support, a different type of glove controller did appear in the autumn. The *Game Glove* from Anaphase Unlimited was a standard work glove with cords that attached to the game console. By moving their fingers players could control the action on the screen. Unlike previous glove controllers, the $90 Game Glove was generic, meaning that it could work with any game console. Only the cords that connected the glove to the console were different and players could buy the cords for their specific machine. At its launch there were cords for the SNES, Saturn and Playstation and Ultra 64 cords were said to be in development.

Another new virtual controller that was announced in 1995 was the *Bird* from VIR Systems. This remote controller resembled a small pistol that simply sat in a player's hand. It sensed every movement and then relayed the information back to the game console via an infrared link. Although the device was displayed at the Winter CES, there weren't any immediate plans for its release in the United States. VIR Systems was based in Australia and didn't even have an office set up in the United States. However the company did plan to license its sensing technology to other manufacturers.

Sega, which had been promising a virtual reality system for the Genesis since early 1994, quietly killed the project without much of an explanation. However Sega officials soon began talking about a virtual reality system for the Saturn that would be released either in late 1995 or early 1996. They were going to use the same technology that was used for the Genesis system and modify it for the Saturn.

Virtual I/O, the company that developed the virtual reality glasses for Sega, was also working on a standard virtual reality headset that would be compatible with all of the videogame consoles. At the end of 1995, Virtual I/O began having talks with Sony to develop a video headset exclusively for the Playstation. While this headset wouldn't incorporate virtual reality technology, it would give gamers the impression that they were playing videogames on an 80 inch screen. Virtual I/O only acknowledged that talks had indeed taken place and that the company would be releasing something before April 1996.

One 'Virtual Reality' device did reach the marketplace in time for Christmas. Tiger Electronics' *R-Zone* was a programmable system that attached to a player's head and projected red-shaded images onto a plastic screen that sat in front of the player's eyes. While the games were low-quality, so was the price of the unit. The R-Zone cost only $30.

Tiger Electronics R-Zone

Ironically, as Atari began having an unclear future, Commodore, the former company of Jack Tramiel, began to look as if might have one.

In April, a German company called Escom bought the Commodore name and patents in a bankruptcy auction for $10 million. At a press conference an Escom spokesperson said that the company planned to revive Commodore's entire line including the Amiga. However Commodore and Amiga would become two distinct entities with separate product lines. The Commodore name would be affixed to PC clones while a new subsidiary, Amiga Technologies, would be created to handle the Amiga line. The company also signed a deal with a Chinese company to build low-costs Amigas and Commodore 64s for sale in China.

In the early eighties, Atari's computer division competed primarily against two other companies: Commodore and Apple. Unfortunately for Atari its 800 was seen as an expensive gaming console from a game company while the computers from Commodore and Apple were serious computers from serious computer companies. Ironically, with the buyout of Commodore by Escom, the three companies were again in business in 1995. Atari was now solely a game company with a console that was a videogame console that utilized both cartridges and CD-ROMs. Commodore was still a computer company but before its bankruptcy it had released the Amiga CD^{32}, a game console that was built around the Amiga computer. Now it was Apple's turn to join the fray. At the end of 1994 the company had announced that it was going to release the Pippin, a CD-ROM player that would be built around the PowerPC 603 chip and utilize the MAC operating system. By early 1995, the company better defined its plans.

Apple was going to market the Pippin in the same fashion that the 3DO Company sold its 3DO console: by licensing out the technology to other companies who would then manufacturer it. Unlike the 3DO, there was already a large amount of software available since PowerPC software was compatible with the Pippin. In addition, Mac software that wasn't compatible with the PowerPC could be converted in less than two hours. Interestingly, the Pippin hardware would not contain its operating system. Instead, the operating system would be included on every CD-ROM that was released. By

doing this developers would be able to 'tweak' the operating system to fit their own special needs.

From the beginning Apple had a licensing partner: Bandai, who was ready to release the Pippin as the Bandai Power Player. Although Bandai had released the BA- X, which had failed when it was released in Japan, Bandai was willing to ignore the past. The company had big plans for the Power Player. It was going to market peripherals like a keyboard and a hard drive, essentially turning the Power Player into a MAC computer with 2 Meg of RAM (although more memory could be added). To keep the Power Player unique from the MAC, Bandai planned to offer a Geoport, a modem device that would allow players to interact together from different places. Bandai was also toying with the idea of using the Geoport to let the Power Player hook up with an online service.

Throughout 1995 Bandai spoke of a Christmas release for the Power Player in Japan. However by year's end the dates changed and Bandai cited a March 1996 release date. Although Bandai didn't announce any plans on releasing the Power Player in the United States there were rumors that the system would be test rented in five American cities. Meanwhile Apple announced that it had signed up two more companies to manufacture the Pippin in Japan.

Like the Atari Jaguar, the SNK Neo•Geo was a cartridge-based system that was to have a CD peripheral released. Although that had been the original intent, the SNK engineers couldn't build a practical CD peripheral and instead decided to rebuild the entire console as a CD-based machine. They also planned to re-release on CD all of their games that had already been available on expensive cartridges. The cartridges had been expensive because the games they contained were the same exact games that were in the arcades and contained nearly 300 megabits of code. While so much memory in a cartridge was expensive, it only represented a fraction of the available memory that could be stored on a CD that could be manufactured very inexpensively. SNK promised that the CD games would be exactly the same as the cartridge ones but there were slight differences. Because of memory restrictions, the soundtracks to the games had to be redone.

The unit was released in Japan and England in 1994 and SNK planned to sell it in the United States in the spring of 1995. A double-speed drive was planned for the United States because the single-speed drive that was released overseas received too many complaints concerning load times. Although the games took some time to load on the double-speed drive also, SNK reciprocated this by providing small on-screen entertainment while the main game was loading.

When the spring of 1995 arrived, SNK changed the release date to the autumn. Along with the new console SNK planned to have seventy CDs immediately available. Although the machine was supposed to be an exact duplication of the earlier cartridge-based machine, this wasn't exactly true. The new model didn't have a memory card slot so games that were saved on the cartridge model or the arcades couldn't be brought into the new model.

When the autumn arrived the Neo•Geo CD once again did not. A spokesperson for SNK said that plans for the new console were still not determined and reasons for the delay were not given. However the word soon came out that the problem lay in the fact that SNK had produced too many single-speed drives for the Japanese market that were now sitting idly in a warehouse. SNK of Japan wanted to release those units in the United States while SNK of America was strictly against it. However the cost to convert these single-speed drives into double-speed drives was more expensive than SNK had originally thought. In the end, SNK of Japan won out and a new release date of January 1996 was set for a single-speed American Neo•Geo CD-ROM drive. Once all the single-speed drives were sold, SNK would then make a decision on the drive speed of all subsequent models.

Actually the entire issue on whether SNK was going to release a single or double speed drive may have been moot. While the marketing people at SNK decided what to do with the Neo•Geo CD drives, the company was completing a 32-bit arcade system that they planned to release as a home system in

1996. If they did go ahead the new system would completely render the 24-bit Neo•Geo obsolete, double-speed CD-ROM or not.

Although NEC managed to release its FX CD console in Japan at the end of 1994, sales during 1995 had been relatively poor. While NEC hadn't anticipated the FX to be a major seller in Japan, it never expected the console to behave as poorly as it did. NEC's original intent was to release the FX in the United States only if it sold moderately well in Japan first. Since it didn't, the FX looked unlikely to arrive in the U.S.

Another CD-based system that looked on the verge of collapse was Philips' CD-i multimedia system. Although Philips originally intended to sell the CD-i as a complete multimedia system as opposed to a videogame system, the marketplace didn't seem ready for such a device. The console wasn't even on display at the Philips E^3 booth and no plans for an upgrade were announced, leading to the assumption that Philips was going to ax it. Still, the company had warehouses full of unsold consoles that it wanted to unload so in the summer Philips began promoting the CD-i as a gaming console with nearly 200 titles available.

Rather than concentrate on the CD-i, the company's Philips Media division began translating its CD-i games to play on PCs and the Sega Saturn. In July the division purchased 20% of Infogrames, the largest videogame developer in France. To the world it looked like Philips was abandoning it hardware and gearing itself up to become a major presence in the software market.

Strangely enough Philips announced in late summer that it was releasing a modem for the CD-i. Although the company didn't have any CD-i related applications on the Internet, it promised that there would be many by the time of the modem's release in late 1995. Philips planned to release the modem first in Great Britain and then in the rest of Europe. The United States would follow Europe but no actual time-table was announced.

Although the Internet had been around in one form or another since 1969, it wasn't until 1995 that the vast majority of computer users were able to access it. This was because the main online services such as America Online, Compuserve and Prodigy finally linked to the World Wide Web. Unfortunately the videogame consoles still didn't have any Internet access. However as it had been doing ever since Ralph Baer decided he wanted videogames to be delivered via cable, the videogame companies still sought a way to transmit games directly into homes.

Sega was ahead of the other companies with its Sega Channel. By the beginning of 1995 the new online service was finished with its beta testing and was firmly in place on over eighty cable systems nationwide. By year's end the system was so successful that it expanded into Canada.

The Sega Channel was very similar to the Intellivision's long-forgotten Playcable. As with the former system subscribers to the service received a special adaptor that plugged into the Genesis' cartridge slot. Sega Channel subscribers then had access to fifty games a month that could be downloaded to their Genesis in less than a minute. The game would then remain in the Genesis' memory until either the unit was turned off or until another game was downloaded.

The Sega Channel offered more than just Sega games. The station licensed games from third party vendors such as Electronic Arts and Konami. Some games, such as *Ozone Kid*, were only available to subscribers while other games like *Super Street Fighter* had to have several characters removed so it could fit in the adaptor's RAM. The Sega Channel was also looking to include games that were completed but never released.

In addition to providing games, The Sega Channel also provided hints on how to get through a game. An online Game Guide listed all of the available games as well as passwords and codes. An

online News Link gave subscribers information concerning gaming contests and gaming news.

In early autumn The Sega Channel offered a new $2.95 service called Express Games that allowed subscribers to have access to the newest games on the market. Those who subscribed to Express Games could call a toll free number and order for two days a new game that wasn't available to other Sega Channel subscribers.

The Sega Channel wasn't the only way that Genesis owners could get games online. The other way was through the Catapult XBand modem. While the Sega Channel delivered games via cable, the XBand allowed gamers in two different locations to compete against one another over the phone lines.

In July the two companies decided to join forces. Beginning in August, the XBand modem was linked to the Sega Channel adaptor. Of the fifty games that were available through the Sega Channel, the top five to ten were set up for remote play via the XBand. The basic monthly fee for Sega Channel, which cost approximately $13 a month, included twenty connections to the XBand Network. An added bonus allowed users to send E-Mail to each other. However E-Mail was only the tip of the Internet iceberg. Catapult hoped to have World Wide Web access via the XBand Network by November.

Unfortunately that goal was never met by the end of 1995. While Sega released the Saturn in the United States it sort of took the spotlight off of the 16-bit Genesis. Although the Sega Channel was still popular, many wondered how it would survive once the next generation machines grew popular. Many speculated whether the Saturn would embrace the Sega Channel but most videogame analysts doubted if that would happen. The games for the Saturn were just too large to download quickly.

Sega of Japan found another solution for hooking the Saturn online. At year's end the company announced that in April 1996 it would be releasing peripherals that would get the Saturn onto the Internet. The peripherals would include a modem and keyboard and would cost around $200. The company was also planning to move the Saturn beyond videogames. At year's end the company signed a deal with automaker Nissan to place Saturns in 3000 Nissan dealerships. The systems would play interactive Video CDs that would display car information. In addition, the Saturns would link up with Nissan's home page on the World Wide Web.

While Sega of America definitely didn't have plans to place the Saturn in car dealerships, it was also skeptical about whether the Internet Connection was feasible in the United States. The company decided to take a wait and see attitude and see how the market fared before it went ahead and released the device.

While Sega was delivering games via cable and phone lines, Nintendo found another source to deliver games in people's homes: satellites. Nintendo of Japan signed a contract with St. Giga, a Japanese satellite channel, to broadcast games to the Super Famicom beginning on April 24. Not everybody who owned a Super Famicom would be able to join the service. First of all, a person had subscribe to St. Giga's Broadcast Satellite (BS) system and have a BS tuner and satellite dish. He would then have to purchase a $200 Satellaview system from Nintendo via mail order. The Satellaview unit sat under the Super Famicom in the same fashion that the original Sega CD sat under the Genesis. A BS-X Special Broadcast Cassette was plugged into the cartridge slot to provide decoding software.

Once everything was set up the user could download games that were broadcast by Nintendo nightly between 4 & 7 PM. Games would be channeled through the BS-X Cassette, which contained 256K of memory, to save games. Consumers could also purchase an optional memory cartridge that plugged into the BS-X and provided an additional 1 MB of memory.

Although the Nintendo Satellite system was launched in Japan, its prospects in the United States weren't as likely. Although SNES owners didn't have a way to receive a host of online games, they

Nintendo Satellaview

had another option that at least allowed them to play some games online against players in other locations.

In mid-June Catapult released the XBand modem for the SNES in five test market cities. The system was so popular in the five cities that the SNES XBand went nationwide in September.

The SNES model sported new features over the Genesis one such as the ability to practice a game while waiting for an opponent and the ability by the user to switch between local and long distance access. Testers of the new modem liked these new features so much that Catapult planned to upgrade them into the Genesis model also. This was a fairly simple process since new operating system code could be downloaded into an XBand and saved within the modem's battery powered RAM.

Catapult also teamed up with MCI and offered a new "XBand Nationwide" program that allowed long distance gaming for the relatively low price of $3.95 an hour.

Once the Nintendo^{64} was released in Japan, Catapult began working on an XBand modem for the 64-bit console. However Nintendo of Japan was also looking at a way to link the new console up to a network. Nintendo teamed up with two software companies, Square of Japan and Just System Corp, to develop a peripheral that would give the Nintendo^{64} full network capabilities. By year's end the alliance didn't come up with much other than a basic plan on where they wanted to head. They felt they could develop a network where gamers could compete against one another in interactive games. The network could then expand into home shopping and home banking. The team even thought about using the Catapult XBand as a way of getting onto the network but by year's end the entire project was still too much in its infancy to speculate anything.

Whether Catapult fit into Nintendo of Japan's plans or not, the Japanese were serious about its intent to get online. At the end of year the company began having discussions with Netscape Communications, the world leader in World Wide Web browsers. While Nintendo's partnership with Square of Japan and Just System Corp was to build a private online network, the talks with Netscape seemed to show that Nintendo was willing to hook the Nintendo^{64} with the mother of all networks, the Internet. As usual Nintendo downplayed the talks and merely said that as of the end of the year a deal had not yet been made.

Besides forming partnerships with individual companies, Nintendo was also busy investing in them. In May the company acquired 25% of the software development company Rare. This marked the first time that Nintendo ever invested in a non-Japanese development company but Rare had a good working relationship with Nintendo for over a decade. In 1984 Rare began developing programming tools for the then brand new NES. It followed this by becoming the first company outside of Japan to be licensed to develop NES software. Rare also developed Nintendo compatible games for other third party companies such as Acclaim and Konami. In 1992 the company started an arcade division and was responsible for such arcade hits as *Battletoads* and *Killer Instinct*.

Rare became best known in 1994 when it developed the SNES megahit *Donkey Kong Country* using Advanced Computer Modeling, its exclusive 3D technology. By mid-1995 the game sold 7.4 million copies world wide and was the most successful videogame in history. Meanwhile in 1995, the two companies were looking to outdo the record set by *Donkey Kong Country*. In September, Nintendo released an SNES version of *Killer Instinct*, which went on to sell over 150,000 copies in less than two months, making it the fastest selling game of 1995.

Despite its minor lawsuit skirmishes, 1995 was a banner year for Nintendo overall. In October the company sold its one billionth videogame cartridge. Nearly half of those sales were for the NES while 27% were for the SNES and 23% were for the Gameboy. Japanese consumers purchased 44% of the cartridges and Americans bought 42% with the remaining 14% distributed around the world. Nintendo farther broke down the figures by saying that it sold three games per second for twelve years!

Although Nintendo's figures were extraordinary, they could have been better. Unfortunately Nintendo, like the other videogame manufacturers, lost billions of dollars of revenue to counterfeit games. At the Winter CES in January it was brought to Nintendo's attention that counterfeit copies of *Donkey Kong Country* were being distributed. After an investigation Nintendo of America determined that Samsung Electronics, a major supplier of ROM chips, was producing the chips with the counterfeit software on it and then shipping them to China to two pirate operations that were owned and operated by the Chinese government.

Nintendo, which used Samsung to supply its ROM chips, shut down all of its associations with the Korean company. Naturally Samsung declared its innocence although the counterfeit software was indeed stamped into the ROM chips by Samsung. However, as pointed out by a Samsung executive, Nintendo's action against Samsung was the same as a company taking action against a computer diskette manufacturer because counterfeit programs were found on the diskette.

In its suit Nintendo of America sought to destroy all of the counterfeit software; have Samsung provide information on the counterfeiting network; have more safeguards to prevent this from happening in the future; and most of all provide Nintendo with monetary compensation for the lost sales valued to be in the billions.

Samsung immediately filed a countersuit against Nintendo citing that the Japanese company defamed its good name. Samsung also wanted monetary compensation as well as an injunction against Nintendo's lawsuit.

Samsung said that it had a history of fighting piracy and even discussed with Nintendo about ways it could be prevented. One way to do it was by monitoring the code that was sent by Samsung's clients to be burned into the ROM chips. Sega of America, another Samsung client, provided Samsung with a program that screened the ROM chips for any Sega code. Nintendo of Japan was agreeable with this method but Nintendo of America was not. Instead, Nintendo of America wanted Samsung to shut down the manufacturing of all of its ROM chips and to provide Nintendo with information about all of its clients. Samsung refused.

Nintendo of America of course had a different story. According to Nintendo it agreed with the screening process but it wanted the screening to be done by an independent third party. Samsung refused.

Suddenly in April it was all over. After negotiating, the two companies announced that the suit was over and Samsung could once again resume etching ROM chips with software. Both companies declined to discuss the case any further although conceded that Samsung was not the source of the counterfeiting.

Nintendo wasn't alone when it came to counterfeiting. In the spring counterfeit Sega hardware and software was confiscated during a raid in Beijing China. The counterfeiters had planned to sell the pirated goods in China and Russia.

While Nintendo and Sega were the victims in the counterfeiting schemes, both companies were found guilty of monopolistic practices in a British lawsuit. The Monopolies and Mergers Commission came to the conclusion that both Nintendo and Sega were purposely restricting the number of titles that a third party could come out with. This allowed them to control the price of the games as well as limit the amount of software that was available to the consumers. The Monopolies

and Mergers Commission recommended for the practice to be stopped so greater competition could appear in the marketplace.

Videogame counterfeiting wasn't limited to the Far East. Shawn J. Freeman of Arizona was arrested at the Winter CES for attempting to steal a preproduction copy of Nintendo's *StarFox 2*. Freeman, who was charged with felony grand larceny, allegedly planned to pirate the game.

The news of the arrest at the CES was downplayed by the news of the show itself. The 1995 Winter CES was the great CES. At one time the CES was an event that no electronic company could afford to miss. However it was the Summer CES that always attracted the bigger crowds in anticipation of Christmas buying. Beginning in 1995 there was no Summer CES.

In the battle of the massive electronic shows, the infant Electronic Entertainment Expo (E^3) won. Unlike the CES that focused on all sorts of electronic equipment, E^3, as its name implied, focused solely on games. The show, which ran from May 11 to May 13 in Los Angeles was a smashing success for all who attended.

Although E^3 was so successful, the Electronic Industries Association (EIA), which sponsored the CES, wasn't deterred. The organization planned the 1996 Winter CES as usual and a new CES was planned for Orlando in May 1996. However the Winter CES received a blow when Nintendo announced that it would not be attending the 1996 Winter CES. Even though other manufacturers didn't immediately follow Nintendo's lead, it was assumed that by the time the Winter CES arrived the other major players would also be absent.

The videogame industry was in a slump during the first half of 1995. Toys R Us announced that its overall sales were down ten percent and attributed this decline to poor videogame sales. However the toy store giant was optimistic about the second half of the year as the new 32-bit consoles made their presence. As it turned out Toys R Us was correct and the latter portion of 1995 fared much better than it had begun. All in all 1995 had been a good year for most of the software companies in general and more companies planned to jump onto the bandwagon. In a bit of deja vu Mattel announced that it was once again entering the videogame foray with its new Mattel Media division. The most successful company was Acclaim, which had posted revenues that were more than a $100 million from the previous year. Unfortunately every company didn't enjoy a profitable year. Sunsoft was hit by major layoffs that affected most of its staff, leaving mostly high-level executives. While all games in development were put on hold, a Sunsoft spokesman assured that the company was not going out of business and would once again release games once the industry had been re-evaluated.

While the software business was generally doing well, the business of software enhancements wasn't as lucrative as it had been in previous years. With the Sega 32X out of the running Codemasters never released its 32X Game Genie that it had been rumored to be developing. A Game Genie for the Saturn or Playstation didn't even reach the rumor stage and it was doubtful that one would ever be released.

As Codemasters was strangely silent, more activity was going on at Datel, the makers of the Pro Action Replay. In September the company released the *Ultimate Game Buster Action Replay* (UGBAR) for the Playstation. The UGBAR was a standard Playstation memory card with fifteen slots that contained cheats for several games. If a player loaded a particular game that was supported by the UGBAR, he would then receive optional onscreen instructions on how to load the cheats.

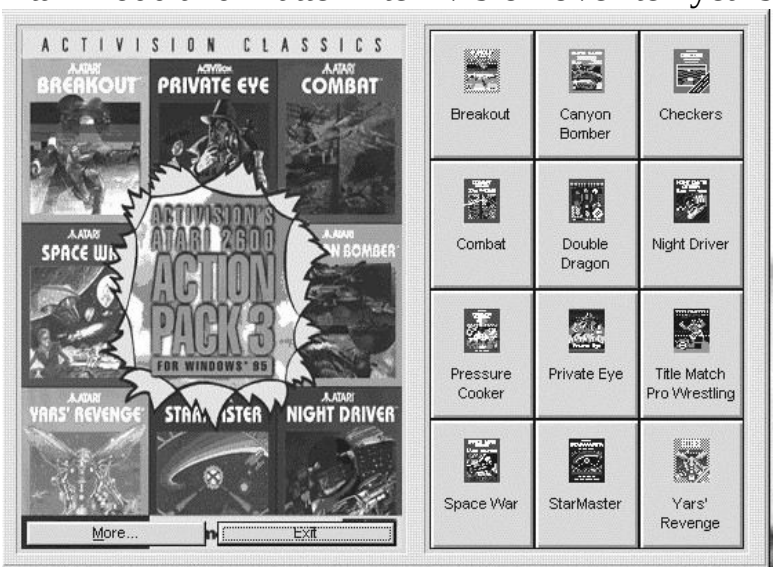
At year's end Datel joined forces with InterAct Accessories to produce a Pro Action Replay for the Saturn and Playstation, as well as the Ultra 64 when that system became available. The new unit was called the *Game Shark* and it worked with game codes in the same fashion as the previous Pro Action Replay. Although Datel already had a Pro Action Replay for the Saturn that was only available through mail order, it was going to be replaced by the Game Shark in January 1996 when the new unit

was scheduled to be released.

As the games became more sophisticated with the advances in the hardware, many critics argued that the new games were pretty to look at but had no substance. Another problem was that it seemed as if all the new games were merely rehashes of old ones. To drive in this point one only had to point to Atari whose best game, *Tempest 2000*, was merely an update of an old classic game from the early eighties.

However Atari wasn't the only company with links to the past. One company that had been around since 1981 also decided to release its classic games to a new generation of gamers.

Actually, Activision's first classic re-release was buried within a brand new game. *Pitfall: The Mayan Adventure* was an updated version of the classic *Pitfall!* for the SNES and the Genesis. However, somewhere hidden in the new game was the original *Pitfall!* exactly as it played on the Atari 2600 and Mattel Intellivision over ten years earlier.



Activision Atari 2600 Action Pack 3

Activision followed this with the release of three *Atari 2600 Action Packs*. These collections for PCs and MACs contained most of the Activision 2600 games including *Pitfall!*. The third collection even included some classic Atari games. In addition to the games, the packages contained on-screen histories of the individual games. The reviews for the collections were practically unanimous. While the games were graphically simple, they were fun to play.

SoundX & Edtris 2600

While a new generation of gamers were introduced to the Atari 2600 games via their computers, hundreds of gamers who still used their 2600 consoles were thrilled to discover that two new 2600 programs were released for the eighteen year old system. Programmed by Ed Federmeyer and released on cartridge by Randy Crihfield, *SoundX* was a sound generator that displayed the sound capabilities of the 2600. The second cartridge was based on the game *Tetris*, which had never been released for the 2600. Federmeyer called it *Edtris 2600*.

As classic games began to take on a new life, a classic magazine wasn't. Actually, the magazine was one that shared its name with the very first videogame magazine: *Electronic Games*. As the editorial page of the July issue stated, it was the 'End of an Era'. In August *Electronic Games* was reincarnated as *Fusion*, a magazine that was to focus on all aspects of electronic entertainment such as virtual reality and the Internet. Actually *Electronic Games* had been doing this but the title of the magazine had been a misnomer, thus the change.

Another magazine went through a less obvious title change. *Game Players Sega-Nintendo*, which many thought was a magazine that focused strictly on Sega and Nintendo, dropped the two company names from its title.

While the purpose of any magazine is to entertain and report the news, one magazine, *Diehard Gamefan*, lost any credibility that it might have had after a very offensive review was published in the September issue. The review was for *College Football USA '96*, a Genesis game from Electronic

Arts. Unfortunately the text was the farthest thing from a review. Instead there was an offensive and unintelligent attack against the Japanese. An apology immediately appeared on the editorial page of the October issue with a renunciation claiming that the magazine had been sabotaged. Whatever happened, the issue quickly quieted down until it was at last forgotten.

1995 had been a rollercoaster of a year that had been dominated by the battle between Sega and Sony. However, although the skirmishes between the two companies didn't produce an out and out winner, they were just a prologue to what was in store in 1996, the year that the sleeping giant was about to once again awake.

CHAPTER TWENTY-THREE
1996

As the world prepared for the onslaught of Nintendo with its Ultra 64, 1996 began with business as usual for both Sega and Sony. What this meant was that the two companies were constantly outdoing each other with their sales numbers for 1995. Sega reported that it had sold 400,000 Saturns in North America since May 1995. Sony then outdid it by reporting sales of 800,000 Playstations since September. Sega of America took action by immediately lowering the price of the Saturn to $249, fifty dollars lower than the price of the Playstation.

While the Playstation was the clear leader in the United States, the opposite was true in Japan so Sega naturally put greater emphasis on that country's figures. Despite the better sales in Japan, Sega of Japan announced in March that it would drop the price of the Japanese Saturn to $199. This would make the Saturn more affordable against the $250 Ultra 64. Many wondered how Sega could do this since the Saturn had originally been designed to retail at $400! Sega supplied the answer in April by announcing a new Saturn that would cost $100 less to manufacture.

Surprisingly, although the sales of the American Saturn lagged behind the Playstation, Sega of America didn't lower the price of its Saturns any farther to match that of the Japanese. Many critics felt that it was inevitable for the console to drop even farther. Sony obviously felt it was going to happen also and surprised everyone at the first day of the Electronic Entertainment Expo (E3) on May 16 by announcing that it was immediately lowering the price of the Playstation to $199. The next day Sega announced that it was dropping the price of the Saturn to $199 to match the Playstation.

Both systems experienced sales increases once their prices dropped to under $200 but the Playstation outsold the Saturn. One reason for this was due to a deal that Sony signed with Kay-Bee Toys and Circuit City. The deal made the Playstation the exclusive 32-bit system for sale in those stores. Naturally this had a negative impact on Sega as it blocked the Saturn from being available in over 1500 stores.

Although Sega didn't point any fingers, someone had to take the fall for the Saturn's poor showing in the United States. On July 15, Tom Kalinske, the CEO of Sega of America, announced his resignation from the company effective on October 1. All sides maintained that Kalinske wasn't forced out of his position and he even remained on Sega's board of directors. Kalinske was replaced by Shoichiro Irimajiri, a former CEO for Honda of America who had been with Sega of America since 1993. Sega of America also received new people from other videogame companies as Ted Hoff, previously the CEO of North American Operations with Atari, became the executive vice-president in charge of sales and marketing. Sega's new executive vice-president of product development was Bernie Stolar who had been formerly with Sony and was a major player in the launch of the Playstation.

Stolar wasn't the only executive to leave Sony, a company that also seemed to going through major personnel changes. Martin Homlish resigned as president of Sony Computer Entertainment of America early in the year. He had held that position for only five months after replacing Steve Race, the former head of Sony Computer Entertainment of America. Although Homlish left the computer division, he still stayed with Sony in a different capacity. Homlish was replaced by Shigeo Maruyama who also retained his former position as executive vice-president of Sony Computer Entertainment of Japan. At the same time as Homlish's departure, Olaf Olaffson, a Sony technologist who had fought with Steve Race to keep the Playstation's initial price at $299, also moved to another division within Sony.

In August Sony Computer Entertainment of America went through more personnel changes as it

removed all of its executive vice-presidents. Among them was Jim Whims of sales and Angelo Pezzani of legal affairs. While many critics viewed this managerial overhaul as an advanced tactic by Sony to prepare for its forthcoming war with Nintendo, several Sony insiders admitted that this type of reshuffling with normal within the Sony empire.

Despite all of the personnel changes within Sony Computer Entertainment of America, the company had a very good year. By all measures the Playstation was a success. In one year the company went from a zero market share to having the world's best-selling next-generation system. Very few industry people had any bad things to say about the way Sony did business. One of the reasons that developers liked the system so much was because it was easy to work with. Sony supplied hundreds of libraries that contained programming subroutines for the developers to use in their own code. However because games were easier to program, Sony placed restrictions on what type of games could be released. It would have been very difficult for a company to get a license to write a two dimensional game. Most agreed that if the company loosened its restrictions that it had over its licensees, the Playstation would be unbeatable.

The Playstation was so easy to program that Sony released the *Yaroze*, a special Playstation that allowed even novices to program it.

Released in late 1996 in Japan and set to follow in the United States during the first quarter of 1997, the Yaroze (which means 'let's do it') was a standard Sony Playstation that came with a serial cable that attached it to a PC or MAC and a CD that included programming libraries, a C compiler and many more development tools. Using these tools ordinary gamers could program games on their computers that could play on their Playstations.

By purchasing the Yaroze, which was expected to cost $750 in the United States, owners would also have access to a Website that would allow them upload and download software. This would allow them to make their games accessible to other Yaroze owners and allow them to play games by others, giving them a virtually unlimited library of games. On top of that, Sony itself was taking an interest in the games that the novices created. Owners of the Yaroze had to give Sony the first right of refusal to any games that they might create. If anything spectacular came along, Sony had the right to market it.

While gamers on both sides of the Pacific were in love with their Playstations, the titles that they had to choose from were different in Japan and North America. Most games were developed in Japan first and released in North America months later. Also, as was the case of the systems before it, the Japanese software wasn't compatible with the American Playstations. However American users discovered a special disc swapping technique that allowed them to play Japanese games on older Playstations. To accommodate those players that wanted to purchase the Japanese games, Electronics Boutique began a pilot program to sell two Japanese titles, *Ridge Racer Revolution* and *Battle Arena Toshinden 2* in its American stores, despite the tag that the games were labeled: "**For Sale and Use only in Japan**". The Japanese disks retailed for $89 each and the stores reported that they sold out as soon as they were available. Unfortunately the plan to sell the Japanese games domestically came to a halt a month after it began after Sony pressured Electronics Boutique into disbanding the practice. Sony itself had been pressured by third party company Takara who had scheduled to release *Battle Arena Toshinden 2* in North America.

The Playstation became so popular that Sony arranged a trade show around it. The Playstation Expo was held in Japan in November, shortly before Nintendo's Shoshinkai from which it was patterned. Although it was a trade show, it was open to the general public for three days. Gamers stood in line for nearly two hours to get into the exhibit. All in all over 70,000 visitors attended the exposition for the chance to see new Playstation software and hardware.

One piece of hardware that was going to be available was a new Playstation model altogether. While the old and new units resembled each other externally, the newer one contained fewer parts that

allowed Sony to increase its manufacturing output by thirty percent.

Sony also announced that it was going to release a special white version of the Playstation in Taiwan, South Korea and Singapore. While the machine was completely compatible with the existing Playstation, it had the extra attraction of being able to play full motion MPEG CDs, which were very popular in these countries. Sony planned to sell these white systems for $279. Although the system was specifically made for the Asian countries, Sony looked into the prospect of selling a limited number of them in the United States.

Despite the overwhelming success of the Playstation over the Saturn, Sony executives knew that they couldn't sit back and enjoy their victory. They still had Nintendo to contend with and they knew that the competition would be fierce. Throughout the entire year, even before its release, the Nintendo Ultra 64 was the top story of 1996.

News concerning the Ultra 64 began early in the year when Nintendo announced that the system was going to be called the Nintendo 64 (N^{64}) everywhere in the world. While the 'Ultra' trademark was not a problem outside of Japan, the consensus among the powers that be at Nintendo decided that they wanted to have a single product with a single name and logo worldwide. Ironically, while Nintendo was stressing a single unity, it was going the opposite direction in its release dates. Originally Nintendo intended to release the N^{64} worldwide on April 21, 1996. By February the company's marketing people realized that it just wasn't feasible to go ahead with this plan. To do so, would have strained Nintendo's distribution system. Although all countries would receive shipments, they would be in too limited a supply for most people to get one. Instead, Nintendo decided to just release the N^{64} in Japan on April 21. The United States would get its first shipments on September 30 and Europe and the rest of the world would receive their systems sometime in the autumn.

Although the reason behind the delay was plausible many critics were skeptical about it being the truth. Rumors still persisted that Nintendo had been manufacturing the systems since September 1995 and that they were sitting in a warehouse. Many suspected that the reason Nintendo wasn't in a hurry to release the consoles was because there was a dearth of software to accompany them. While this wouldn't necessarily trouble the Japanese consumers, American buyers expected a wealth of titles to be available with a new system.

Knowing that Americans would be very disappointed with this setback, Nintendo placed a full page ad in USA Today that explained that the system would be delayed until September 30 but assured potential buyers that it would be well worth the wait. Such an unusual ad more than committed Nintendo for that date in the United States.

Unfortunately such a commitment wasn't made in Japan. Although Nintendo assured everyone that the console would indeed be released there on April 21, that launch date became an impossibility due to an unexpected shortage of semiconductors. Of the 500,000 N^{64}s that were planned, only 200,000 could be available on April 21 so Nintendo pushed back Japan's release date to June 23.

For those who prepared to wait, Nintendo promised but nothing but great things for the N^{64}. While Nintendo had received a lot of flack for not including a CD-ROM with the N^{64}, Nintendo hoped to rectify the problem by announcing a magnetic disk drive and memory expansion pack that it expected to release in 1997.

The disk drive, which was called both the 64DD and the 'bulky drive', would allow players to save and customize games. The information would be stored on a magnetic disk that would be slightly larger than a 3½ computer disk. The disk could be inserted through a slot in the front of the drive and would hold 64 megabytes of data. The unit itself would sit under the N^{64} in the same way that the original Sega CD sat beneath the Genesis. The memory expansion would come in the way of a RAM

pack that would be sold with the bulky drive and would insert into the N64's memory expansion slot. It would then give the N64 four megabytes of main memory, which could be used by cartridges, disk, or a combination of both. Nintendo announced that one of the first games that would use the new technology would be an N64 version of *The Legend of Zelda*.

These were important announcements for Nintendo. The critics were still skeptical about Nintendo's decision to put games on cartridge. Although Nintendo continued to contend that the access time for cartridges was much faster than it was for CDs, a CD could still contain eighty times as much data as an N64 cartridge. In addition there was another reason why most people felt that CDs were the way to go. They were cheaper and quicker to produce than cartridges. Sega and Sony were able to produce new games in smaller quantities knowing that if the games became hits they could quickly produce more copies. That wasn't the case with cartridges. If Nintendo produced too few of a given title, it would take weeks for that supply to be replenished.

The bulky drive and the memory pack looked like a compromise between the two technologies. Although the new Nintendo disks wouldn't be as indestructible as standard CDs nor contain as much memory, they would be writable, which would put it ahead of the competition that only had read-only software.

In April Nintendo began announcing how the N64 would be packaged. For $250 the consumer would receive a console, a gray controller, and an AC adaptor. A game would not be included. The mention that the controller was gray was of some importance because Nintendo planned to market the controllers separately for $25 each in designer colors such as black, blue, green, gray, red and yellow.

The N64 made its American debut at the Electronic Entertainment Expo (E3) in May. Visitors to the Nintendo booth were taken on a tour that showed them all of the playable games. The consensus among the visitors was that Nintendo had another hit on its hands and *Super Mario64* was the hands-down favorite game. Although many had hoped to get a glimpse of the bulky drive, they were informed that the storage device wouldn't be unveiled until the Japanese Shoshinkai show in November. Still Nintendo revealed that the device would be based on optical technology rather than magnetic and it was going to cost less than had earlier been expected. However, while Nintendo insisted at E3 that the bulky drive was going to ship on time in early 1997, within a few weeks that date was pushed back to the autumn of 1997.

Nintendo Super Mario64

One date that had already been pushed back was the release date in Japan. During the week preceding the new June 23 launch date, Nintendo began supplying retailers with N64 kiosks that allowed potential customers to demo the new machine and *Super Mario64*. Lines immediately began forming while neighboring Sony and Sega kiosks were empty. Everyone wanted to try what *Next Generation* magazine called *the greatest videogame ever made*. Most people were floored by *Super Mario64* but the ever-present skeptics reminded game magazines that *Super Mario64* had been in development for over 2½ years. Most games would not be in development for as long and naturally wouldn't be as good. Still, *Super Mario64* was the first game that people saw and it showcased the capabilities of the N64 perfectly.

On June 23 Nintendo released 300,000 N64s in Japan. Eighty percent of the machines had already been presold and few retailers received any systems that they could sell to people who didn't preorder

it. The few stores that did have extra systems to sell were swamped by people. Laox, a Japanese retailer, had 300 systems to sell. By 2 AM on the morning of June 23 thirty people were already camped out in front of the store so they could purchase the system when the store first opened. As the morning progressed the line just kept getting longer. The store finally opened an hour early and all of the consoles were sold quickly. While Laox was almost unique because it had N64s that it could sell, lines formed at most stores as people waited just so they could pick up the N64 that they had ordered in advance.

The initial 300,000 units sold out in one day and Nintendo followed that with a delivery of another 200,000 units on June 26. That shipment also sold out in one day. A third delivery of 200,000 was shipped on June 30 and Nintendo shipped an additional million during July and August. After that it geared up for the American release.

In most cases people also purchased a *Super Mario64* cartridge to go with the machine. Of course there were only three titles available so it wasn't hard for most people to decide what software they wanted to buy. While Americans still had to wait an additional three months for the release of the N64 in the United States, several enterprising retailers decided to import the Japanese model into the United States. The consumers who couldn't wait until the end of September were able to purchase a Japanese model with *Super Mario64* and *Pilot Wings64* for only $750!

One month before the North American N64's scheduled September 30 release, Nintendo made two announcements concerning the launch of the new machine. First, because the 30th fell on a Monday, Nintendo decided to push the release date ahead one day to the 29th so children (and adults) wouldn't cut school (or work) in order to get their hands on a console.

The other good news from Nintendo concerned the retail price of the machine. During the entire life cycle of the N64 Nintendo contended that the price of the N64 would be under $250. In most cases when a company uses the marketing term 'under', they usually mean it's going to be a penny less than the stated price. Most magazines stated that the N64 would cost $249.99 in North America and Nintendo never disputed the price. However when Nintendo officially announced the N64's list price as $199 most critics were surprised. Certainly this price was under $250 but the critics began analyzing why Nintendo was setting that price.

Most believed that Nintendo was running scared and lowered the price at the last minute. In Japan, despite the best launch in history for a system, sales for new N64s were beginning to slacken. Most analysts attributed to the lack of new software titles. Many believed that Nintendo lowered the price to $199 so the N64 could be price competitive against the Saturn and Playstation, which were also selling at that price. The truth was that it was Nintendo's intention all along to release the console at under $200 although it didn't report this publicly. They finally announced it at the last moment so Sega and Sony wouldn't have enough time to form a counter-attack with the pricing of their own systems.

As promised the N64 was finally released on North American shores on September 29. Actually, the system was released unofficially on September 24, five days early. In order for all stores to have their consoles ready to sell on the 29th, Nintendo had to naturally begin shipping the N64s to the store days earlier. Although Nintendo had requested that retailers not sell their supplies until the 29th, anxious storeowners began selling them as soon as they had them in stock. As word spread that some stores were selling the consoles early, other stores began doing the same. Once the dam burst there was no holding the water back and Nintendo finally gave an official nod to the retailers to release their inventory on the 25th, four days early. As was the case in Japan, the 500,000 units that were released were all gobbled up from preorders. However unlike the Japanese launch where only three games were offered, Americans were only able to purchase *Super Mario64* and *Pilot Wings64* along with the console. A third title that was supposed to be available immediately, *Cruis 'n USA*, was the

only one of the three that was developed by a third party. It seemed that Nintendo wasn't happy with the finished game and forced Williams to go back and revamp it. As if to compensate for the lack of titles, the American *Super Mario64* had some small enhancements such as extra voices and sounds over the Japanese version.

While nobody was able to predict how the N64 would fare against the Playstation and the Saturn in the long run, many comparative sales figures were being offered. While Nintendo was able to sell 500,000 N64s in one day, it took Sega nearly a year to sell as many Saturns and Sony approximately three months to sell the same number.

Of course Nintendo sold that number through preorders but it's safe to say that Nintendo would have sold that many consoles in a considerable amount of time even if it didn't take advanced orders. Still, the same two questions kept reappearing: could Nintendo make it with a lack of software and could its cartridges compete against CDs? Nintendo thought it knew the answers to both questions. As for the lack of software, Nintendo was quick to point out that it was interested in quality, not quantity. As far as the cartridges vs the CDs, well *Super Mario64* told it all. The game was extensive, beautiful to look at, fun, and it played seamlessly without any wasted loading time.

The demand for the N64 in America was so great that Nintendo decided to change its plans in order to accommodate the hoards of potential buyers who wanted a console but were unable to purchase one. Initially Nintendo only planned to ship 600,000 N64s to North America during the console's first year. However because of the overwhelming demand for the 64-bit game machine, Nintendo decided to up that number to 1.2 million. Because Nintendo couldn't increase its production facilities, the additional consoles had to come from another source. Nintendo decided to reapploy 300,000 units that had originally been targeted for Japan and send them to North America even though it was selling 100,000 consoles a week there. The remaining 300,000 came from a different stockpile that had originally been assigned for distribution in Europe near the end of 1996. So it could accommodate the American buyers Nintendo changed the release date of the European N64 to sometime in 1997.

Although the sales for the N64 and *Super Mario64* were at record levels, not everyone was able to get one. Fortunately people were able to get a taste of the new console from rental stores. The Video Software Dealers Association reported that *Super Mario64* generated $52,000 in rental fees during its first week of release. On the average, one copy of *Super Mario64* was being rented every minute for an entire week straight!

By all accounts the N64 was a winner. Statistics showed that the system accounted for 51% of all videogame consoles sold during the month of September, despite the fact that the N64 wasn't released until the last week of the month.

With the launch of the N64 behind it in Japan and North America Nintendo focused itself on the future. In November the company held its annual Shoshinkai show, which focused on the peripherals and software for the N64. A total of 38 games in various forms of development were displayed. Nintendo also displayed its highly touted 64DD and had *Super Mario64* playing on it to show that the loading time for the disc drive was minimal when compared to the cartridge.

Another new peripheral was also shown at Shoshinkai. The $14 Jolt Pack plugged into the memory cart slot beneath the controller and allowed the controller to vibrate along with the action on the screen. Nintendo also promised other types of controller enhancement packs in the future such as one that would convert the controller into a light gun.

As its 64-bit console quickly caught on, Nintendo began planning to close shop on its 16-bit SNES. Surprisingly the 16-bit systems and software sold better than expected during the Christmas

1995 season. This was attributed to the fact that many holiday shoppers found the 32-bit systems to be too expensive. Together, Nintendo and Sega sold four million 16-bit consoles, four times the amount of 32-bit systems that were sold. Both Nintendo and Sega were caught off guard and simply didn't have enough 16-bit systems to fill the demand. Both companies claimed that they could have sold an additional 200,000 16-bit consoles if they had been prepared. Unfortunately for both companies, this better than expected surge wasn't the norm. Sales for both the SNES and Genesis dropped pitifully in 1995 from prior years signaling that their time was nearing a close. Nintendo prepared for this early in the year by announcing that it would cut the price of the Super Famicom and its software by 23% just so they would be cheaper than the forthcoming N^{64} games. Nintendo also decided to cut Super Famicom licensing fees by 30%. Nintendo didn't extend this price decrease to the United States however because the retail price of the SNES was lower in the US than in Japan.

Nintendo also came up with another idea to extend the life of the aging Super Famicom. In a move that was reminiscent to those that were announced by Cumma Technology and Romox in 1983, Nintendo announced that it joined with Lawson Inc, a firm that operated 6000 Japanese convenience stores, to deliver Super Famicom games onto blank cartridges. The blank cartridges would retail for around $50 each and the cost to load any of the 1300 Super Famicom games onto it would run between $10 and $40.

Although Sega's Genesis enjoyed an unexpected healthy Christmas season, its peripherals weren't as successful. Following the Christmas holidays Sega officially announced that it was going to cease production of both the Sega CD and the 32X so it could better concentrate on its other lines: the Saturn, Genesis and Pico. The two systems were immediately discounted with the 32X eventually priced at $19.99 and the Sega CD at $49.99. The software for the two systems were also discounted heavily.

Despite the surprising sales of the Genesis, the lower than expected Saturn sales forced Sega of America to layoff ten percent of its 400 person staff at the beginning of February.

Sega was not the only videogame company that was having problems and laying off employees. Atari, which cut the price on the Jaguar to $99 right before the Christmas 1995 holiday, struggled to keep its credibility. Following the layoffs of twenty essential Jaguar game designers, Atari announced that development for Jaguar games would continue as usual. When Ted Hoff, Atari's CEO of North American Operations, left the company on January 18 to join Sega of America, he remarked that he couldn't see how Atari could function in the game business in the state that it was in. Atari dismissed his statements by saying that they were in the game business long before Hoff joined the company and they could continue well enough without him. While sources within the company indicated that the Jaguar was no longer being manufactured, Atari's official position was that it was still going to support the Jaguar and Atari Interactive, its new line of computer software that had been released in January. However financial papers that were released to stockholders confirmed that new Jaguars hadn't been manufactured since the summer of 1995.

Following this statement from Atari there was an eerie silence from the company, reminiscent to the early days after Jack Tramiel took over the company in 1984. Soon reports were coming out of Sunnyvale that the company was operating on a skeleton staff and was about to exit from the videogame business. The company didn't release any statement to refute this.

On February 13 it was announced that Atari merged with JTS Corp., a manufacturer of computer hard drives. Although Atari injected JTS with $25 million, the videogame company became a mere subsidiary of the disk drive company with Jack Tramiel gaining a seat on JTS' board of directors. The prospects on the future of Atari and its products were very grim because Atari had laid off all of its developers (as well as most of its staff). Multimedia Wire reported that Atari was trying to license

its products to other manufacturers. Although no one came out and said it directly, it looked for sure like Atari was indeed abandoning the business that it had established twenty-four years earlier.

Before Atari merged with JTS, Time-Warner owned 13% of the company. Time-Warner also owned the arcade company Atari Games. In March as most people began to accept the fact that Atari Corp. was really gone from the home videogame landscape, Time-Warner announced its intentions to abandon the arcade videogame business by selling its Atari Games arcade division of Time-Warner Interactive. WMS Industries immediately jumped in and bought the arcade company and made it a separate arcade division under the WMS umbrella. In a way it was ironic that Atari the arcade company lived on while Atari the home videogame company faded away since the company had originally begun as an arcade company.

Had it not been for the collapse of Atari, very few would have paid attention to the Jaguar's demise. However the Jaguar was not the only console that died in 1996.

Following the Christmas 1995 price slash of its 3DO player to $199, Goldstar decided to exit from the game business. It cited that at $199 it lost $100 on every 3DO player that it sold. That wouldn't have been so bad if it had been able to make money on its 3DO software. However Goldstar claimed it was unable to do this because it entered the software market late and the other companies had an important head-start on it.

Another main reason that Goldstar decided to quit the 3DO business was due to the sale of the M2 technology to Matsushita. The initial word from Matsushita was that the M2 upgrade would not be compatible with the Goldstar machine. Panasonic, the division of Matsushita that manufactured the 3DO, announced a drop in the price of its 3DO player to $199 to match Goldstar. Unfortunately most critics viewed this price decrease by Panasonic as a sign that they were planning on dumping the 32-bit player also. By April 1996, sales for the 3DO players were well behind those of the Playstation and Saturn. Developers for 3DO games saw the writing on the wall and stopped developing games for the system. Even Studio 3DO, the software division of the 3DO Company announced that it wouldn't develop any more games for the system that it developed in the first place. The only company that continued to release 3DO software was Panasonic itself. The final nail in the 3DO's coffin came at the end of 1996 when Electronics Boutique began selling off its stock of Panasonic 3DO players for $99. The end of the 3DO had come and now Panasonic and Matsushita were able to direct all of their energy to the development of the M2.

Through 1996 the M2 project became one of the most secretive systems ever. Early in the year it was reported by the Japanese newspaper *Yomiuri Shimbun* that Sega and Matsushita were joining forces but neither company confirmed this. Actually the rumors that Sega wanted to be involved in the M2 went back before Matsushita acquired the rights to it. According to the rumor Sega and the 3DO Company reached an agreement where Sega would use the M2 technology. The 3DO Company wanted to publicize this information right away hoping that the news would generate interest in its staggering stock. Sega on the other hand didn't want the news to be made public until after Christmas so the holiday sales of the Saturn wouldn't be jeopardized. Apparently the two companies couldn't agree on anything else either and the talks broke off allowing Matsushita to claim the prize.

As reported by *Yomiuri Shimbun*, Sega wanted to join forces with Matsushita to create a new M2-based 64-bit game console that would compete directly against the N^{64}. Both companies denied this although it was revealed that Sega of Japan had possession of a prototype M2 system for 'feasibility studies'. Most critics believed that the talks were heading in the direction where Matsushita would manufacture the new 64-bit console and Sega would sell it under its own name. However by the summer, these talks, which weren't taking place officially, were stopped by Sega. It seemed that Sega wanted to be the sole marketer of the M2 console while Matsushita foresaw a 3DO type game console

that would be sold by many companies. The other reason for the breakdown in the talks was because the Sega technicians weren't really impressed with the M2 technology.

Whether the talks with Sega and Matsushita were true or not, Matsushita did indeed have discussions with Konami for the use of the M2 technology. In February the two companies signed a deal whereby Konami would use the technology for its arcade games. These games in turn would be converted to the home M2 console. Konami expected to have its first M2 game available in the arcades by the end of the year.

By the time the summer came there was little news from Matsushita concerning the M2. Panasonic ceased developing games for the new platform although Studio 3DO and Interplay continued to do so. However just as people were beginning to lose hope of the M2 ever seeing the light of day, Matsushita suddenly announced the system's specifications.

The word out of Tokyo was that the M2 was going to incorporate two of the 3DO Company's custom chips instead of one. This would give the M2 the power to generate over one million polygons a second, more than double that of the Playstation. The system would also include a 4x speed CD-ROM player.

However this news also brought considerable questions that were not rectified. First of all, while the official line from Panasonic was that there would be an M2 upgrade for the 3DO player, many wondered how this could now be accomplished due to the new system having the 4x-speed CD-ROM player and the two custom chips. This led to another point. The cost of the chips were $150 each yet Matsushita was determined that the M2 console wouldn't cost more than $300. Most critics assumed that the M2 would also feature DVD technology and there wasn't any way that *that* could be released for under $500. Matsushita wouldn't explain how it was going to achieve its low price point but many speculated that the company was going to simply sit back and wait for the costs of the chips to plummet. But the question was how long could the company afford to sit back if it indeed was going to take the sit and wait attitude. Interplay, which had been developing an M2 game called *Clayfighter 3*, couldn't afford to wait any longer and switched gears and devote all of its energies into developing N^{64} software.

While Interplay decided to exit from the M2 development team, Matsushita created a new division called Panasonic Wondertainment to pick up the slack. By the end of the summer Matsushita announced that it was going to display up to seventy of the consoles at the E3 in Tokyo in the autumn. Matsushita planned to release the console in Japan during the spring of 1997 and in the United States during the following autumn. The company expected to sell three million M2 consoles during its first year. Of course it was just a pipe dream.

E3 came and went and Matsushita did not display the M2 consoles like it had planned. While Matsushita reaffirmed the fact that the new system would be initially shipped during the first half of 1997 many industry insiders took that word with a grain of salt. Nobody knew whether the company's word was good or not as it finally announced that the new 64-bit system would not be compatible with the 3DO as had been promised all along. Still, very few doubted that the console would arrive at all. Everyone knew that the world's largest consumer electronics company wouldn't make a $100 million investment and then decide to abandon it.

The M2 was not the only upgrade that seemed to be perpetually forthcoming. SNK's Neo•Geo CD drive was another system that always seemed to be making the news. In early 1996 the company announced that it had decided to go ahead and release its double-speed CD-ROM player in Japan. One of SNK's concerns had always been the cost of such a drive but by 1996 the price of double-speed drives had dropped dramatically. Another reason SNK had waited so long to release the double-speed model was because it wanted to clear its inventory of all the single speed consoles. Meanwhile, the

single-speed players were finally released in the United States. SNK didn't announce whether the new double-speed model would appear domestically when the original stock ran out.

Meanwhile the future of the Neo•Geo in any country was beginning to look hazy. The Neo•Geo, which had always been more expensive than other systems, was able to play arcade quality games. However as the new 32 and 64-bit systems came out, the dividing line between arcade and home games became narrower. Perhaps seeing the writing on the wall, SNK returned to doing what it had done before it introduced the Neo•Geo: developing games for competing systems. Among the titles that SNK planned for the Saturn and Playstation was *King of Fighters '95*. On the Saturn version, the game utilized both a CD and a cartridge. By mid-year SNK developed a cartridge that boosted the Saturn's memory by 1 meg and reduced the game's loading time. The downside was that this memory cartridge only worked with games that were specifically designed for it.

With all the work that SNK was doing for the Playstation and the Saturn many analysts wondered what it meant for the future of the Neo•Geo. However SNK continued to support its own player throughout 1996.

In the late summer Philips officially announced that it was abandoning its CD-i after losing over a billion dollars on the system since 1991. Philips downplayed the announcement by stating that it would incorporate the CD-i into its new forthcoming DVD system.

From its inception, one of the problems with the CD-i was the fact that Philips didn't want to label it as a game machine. By typecasting it as a 'multimedia device' Philips lost out on many consumers who merely wanted to purchase a videogame console.

As Philips closed up shop on its multimedia system, Apple Computers was eager to fill its place. As Bandai was about to release the Apple-developed Pippin in Japan, many wondered exactly what the Pippin was. Even Bandai couldn't determine exactly what the Pippin's function was and gave the system several different names. First it labeled the Pippin as a game machine by calling it the *Power Player*. The second title had the curious name of *@World*, which focused on the Internet capabilities within the machine. Bandai finally settled on the name *Atmark*, which referred to the '@' symbol in Internet addresses.

Bandai Atmark

While the Atmark was built around the same PowerPC 603 chips as the Macintosh computers, it lacked graphics dedicated chips like those that were found in the Playstation and Saturn. Although the Atmark could still play decent games, Apple fell short of calling the system a gaming console. Instead the company pointed out that it also could access the Internet and play multimedia CD-ROMs. While all of these features were already available on computers costing thousands of dollars, the Atmark would cost less than $600 and hook up to a standard television set. Apple hoped that it would eventually become a standard appliance in all homes. Of course Philips had hoped the same thing for the CD-i.

The Atmark went on sale in Japan in March for $648. The system came with a 14.4-baud modem, a game-system type controller and four software CDs. An optional keyboard was also available. Because it utilized a Macintosh processor, the software could actually play on a MAC. Bandai didn't have any plans to release it in North America or Europe until September 1997 and hoped that it could price it at under $500. While that price was still pretty steep for a game machine, Bandai hoped to target households that wanted Internet access without the expense of getting a computer.

Bandai and Apple weren't the only companies that were looking at ways to get people onto the Internet without forcing them to purchase expensive computers. One of the first companies to actually get such a product into stores was Philips, which in late summer released a $329 box that hooked up to standard television sets and provided World Wide Web and E-Mail capabilities. Sony followed Philips a month later by releasing a similar $350 Internet box that could hook up to a television.

In both cases the Internet box hooked up to the TV via the standard audio/video or RF connections. The box also hooked up to a phone jack to actually send and receive the information to the Internet via its high-speed internal modem. After dialing, the box connected with an Internet service provider called WebTV.

While WebTV was the first company that provided Internet connections to the TV top Internet boxes other companies were quick to join the fray. Netscape, the company that provided the number one Web Browser for computer users, quickly formed a new company called Navio Communications to utilize the Netscape browser for emerging platforms other than standard computers. Nintendo, Sony and Sega all signed up although nobody was sure exactly how Navio would accomplish its goal. Nintendo hoped to use an Internet gateway with its forthcoming 64DD storage drive. What Nintendo wanted to do was either include a modem chip within the storage device or to include expansion ports in the 64DD that would permit a modem at a later time.

While Sony released its WebTV Internet box as a stand-alone unit, it had no plans to build the technology into its Playstations. Its goal was to provide Internet access to everyone, not just videogame owners. Sega decided to go another route.

Sega of Japan surprised everyone and released Netlink, an Internet add-on for the Saturn, in April. Existing Saturn owners were able to purchase the Netlink for $150. The system consisted of a 14.4 baud modem cartridge that plugged into the Saturn and featured a slot where special Sega credit cards, which were needed to set up Internet provider accounts, could be inserted. A CD that contained the Web browser software was also provided. The Saturn controller was used to move an arrow around an on-screen keyboard to input data. For those who found this method too tedious, an optional physical keyboard was also available.

Unfortunately, the system was designed with the idea of merely browsing the Web or sending E-Mail. Little provisions were provided for receiving and saving data. The Saturn only allowed 500K of RAM to store downloaded data and of course this data was lost the moment the power was turned off. Although Sega mentioned that a storage device was forthcoming, specifications and release dates were very sketchy. In addition, the absence of a printer meant that all E-Mail had to be read from the television screen. This led to another problem. The computer Internet browsers were designed to display text and graphics on high-resolution computer monitors. Designers of videogame browsers had to contend with the fact that the console might be hooked up to a low-resolution TV set. A browser called Planet Web was designed for the Saturn so the display would look good on any TV or monitor.

Sega of America released the Netlink in October for $200. The American system was virtually identical to the Japanese except that it came with a 28.8 modem that did not have a credit card slot. Sega hoped to sell 100,000 Netlinks in time for Christmas. In order to make the idea of surfing the Internet even more desirable, Sega planned a number of online games that would allow gamers from around the world to compete against each other in real time.

The design of the modem that the Saturn used to dial up to the Internet was a team effort by Sega and two other companies: Nisho Iwai and Catapult. Because of Catapult's involvement, it had been widely assumed that the XBand Network would be utilized for the Saturn's venture into online gaming. Unlike the 16-bit version of XBand where gamers could compete against players with the same console, the Saturn version allowed players to compete across platform lines. Unfortunately not

all games could be played from different platforms. The software had to be custom-written so the different platforms could read it.

One of the new platforms that Catapult was designing its network for was the PC. In addition to games the XBand PC also offered chat rooms and other online conveniences that were found on other services such as America Online.

While the XBand and Netlink were modems that plugged into the cartridge slots of the consoles, one company looked at a way to turn an N64 game cartridge itself into a modem. Seta, a Japanese designer of N64 strategic games, released a chess game called *Morita Shogi64*. What separated this game from all others was that the cartridge itself contained a telephone jack so gamers could compete with each another via the phone lines.

Sega Netlink

Because it was a chess game there wasn't any noticeable delay that was associated with online gaming. An action game with constant movement wouldn't hold up as well as a strategy game so the question of whether the technology would be used in other games was up in the air. Furthermore the game was released in Japan only and the likelihood of it ever reaching the United States was next to nothing.

The home consoles were not the only systems that were going to benefit from being hooked up to the Internet. Arcade game developers were also eyeing the Internet. On August 22 Aristo International displayed its first arcade games that incorporated Internet technology.

Aristo's plan was to become a leader in the out-of-home Internet market and it had the personnel behind it to so. While Aristo was a name that very few people had ever heard of it had as its Director of Strategic Planning someone who was well known to all in the videogaming community: Nolan Bushnell.

Aristo developed a line of arcade sports machines called TeamNet where teams of four players at one location competed against other teams at other locations via the Internet. The first four *TeamNet* games that were available were hockey, air hockey, soccer and football. Aristo also released a series of arcade games that were designed for one person to interact online. The *TouchNet* machines offered solitaire games as well as chat rooms and was targeted for bars and restaurants as well as standard videogame arcades.

While the Aristo games were targeted to adult audiences, another company planned to enter the arcade arena with videogames designed for children. The company was Mattel Media, a new division of Mattel. Mattel Media planned to produce PC and arcade games that were based on its well-known toys such as Hot Wheels.

Although new companies entering the arcade foray were always welcome, the truth was that the arcade industry was going through a very unstable time. Taito, the company that had produced *Space Invaders*, announced early in the year that it was closing its United States offices although its Japanese offices would remain open. Taito immediately signed a contract with Acclaim to produce home versions of Taito's new games but it didn't have a company that would import its new arcade titles into the U.S.

Another arcade company, American Laser Games, also announced that it was leaving the arcade business so it could devote its energies to producing Saturn and Playstation games. Unfortunately that

news was too optimistic. By year's end even the home division was doing poorly and American Laser Games switched gears once again by concentrating solely on computer games for girls.

Videogame companies weren't the only arcade companies that were suffering. In late summer the news was announced that Gottlieb was closing its doors. Although Gottlieb had had videogame hits such as *Q*Bert*, its reputation as a pinball company went back decades. One of the reasons for the closing was due to an extreme fall in pinball sales. With the closure of Gottlieb, this left Williams as the sole pinball company.

Fortunately the entire industry was not falling on hard times and many companies were beginning to prosper again. Several Japanese companies all reported that they were doing better in 1996 than in prior years. Sega's coin-op sales were up 29.1% worldwide while Namco's were up 31.2%. Although Tecmo was still in the red in 1996, its overall losses were lower than they had in years that preceded it. Jaleco Limited and Konami on the other hand reported profits for fiscal 1995 after several money losing years. Things were going so well for Konami that the company was able to sign a deal with Matsushita to developed M2-based arcade games.

Another company that was doing well with its arcade games was Data East. Unfortunately the same couldn't be said about Data East's home division. Late in 1996 the company announced that it was closing its home game division in the United States.

Data East wasn't the only company that was getting out of the home videogame business. Square of Japan, while still maintaining a US office in Los Angeles, announced in late spring that it was closing the doors of its Squaresoft USA division, which had been based in Redmond Washington. This news was followed a month later by the announcement that JVC was closing its software development division. Mindscape followed with similar news late in the year. Although the veteran software company wasn't going to close its doors, it did lay-off twelve of its game designers in an effort to cut costs.

Acclaim also found a way to shave costs. After a 40% drop in sales for its cartridge-based games, the company decided to leave the cartridge-based 16-bit business and concentrate solely on CD-based games and N^{64} cartridge games. Unfortunately the decision to abandon cartridge games for all other systems didn't turn Acclaim's fortunes around quickly enough. The company had to lay-off nearly seventy employees in the autumn in an effort to cut costs. None of the persons laid-off were involved in game design and Acclaim downplayed the news by announcing that thirty new games would be available in the coming months.

There was yet one more company that announced that it was going to leave the software business but the reasons had nothing to do with financial problems. That company was Sony.

In May 1993 Sony purchased a British software company called Psygnosis for less than $30 million. The company quickly changed its name to Sony Interactive and released software for the Genesis. When Sony began working on the Playstation. Psygnosis, switched gears and began developing Playstation games exclusively. It produced hit games such as *Wipeout* and *Destruction Derby*, which were only available for the Playstation.

In early 1996 Psygnosis announced that it was going to begin releasing games for the Saturn as well as any other popular console. Critics began questioning why Sony went ahead with this move when the Playstation had a winning advantage with its exclusive games. However the popular thought was that Psygnosis would release the Playstation version of a game before those for competing systems thus allowing Sony to maintain its exclusive edge. Still there was speculation that there was more to the Psygnosis contract than Sony had been aware of when it first purchased the company.

In late May it became apparent that Sony was not happy with the move by Psygnosis to offer games for the Saturn. At this time the company announced that it was putting the software company up for bids. Before long bids came in from the top software companies such as Acclaim and Electronic

Arts.

While initial reports proclaimed that the bidding had reached $300 million, this wasn't quite the truth. Actually Sony was seeking $300 million for the company and nobody was willing to pay that much. In the end Sony decided not to sell Psygnosis after all and the software company was free to release competing software like it planned.

While Sega seemed to cringe upon the fact that Psygnosis was going to manufacture Saturn games, the same thing was happening over at the Sega camp as SegaSoft announced it was going to produce Playstation games. While Sega of America officials were concerned with this, SegaSoft officials announced that they were independent from the other company and could produce software for any system that they wanted. An investigation by *Next Generation* seemed to have proved this statement correct. It revealed that SegaSoft was only 40% owned by Sega and the remaining 60% belonged to CSK Corporation. SegaSoft had a responsibility to all of its stockholders to make money any way possible.

However further investigation by *Next Generation* discovered more. It seemed that Sega itself had been purchased by CSK in 1984 so SegaSoft's independence from Sega wasn't as independent as its executives wanted people to believe.

As SegaSoft entered Playstation territory many people felt that Sega was abandoning the Saturn in favor of safer ports. However the Saturn enjoyed healthy sales in Japan and Europe so Sega wasn't about to jump ship on its console. In addition, Sega wasn't going to allow any of its exclusive games to be available on the Playstation.

If anyone really was worried that Sega was abandoning its Saturn, all they had to do was check into a Japanese hotel and turn on the TV. In the summer Sega and Toshiba joined together to bring Saturn games into hotel rooms. Sega announced that seven Saturn titles would be available initially and 40 more would follow.

The deal with Toshiba was proof that Sega was branching into newer territories. However while Sega examined new areas that were related to its home videogame division, there were several divisions of the company that existed for reasons other than videogames. The Sega Foundation, for instance, donated $250,000 to start a new multimedia learning center in Los Angeles. The money was used to buy computers that would give underprivileged people exposure to the Internet and other high-tech applications.

Sega continued with its plans to develop interactive theme parks with MCA and DreamWorks SKG. The company announced that the entertainment centers would fall under a new division called Sega Gameworks.

The Sega Gameworks theme parks were based on the Joyopolis theme park in Tokyo. Sega also built similar parks in London and Toronto under the Segaworld name. The parks weren't merely a vessel for Sega to unveil new expensive arcade games.

London's Segaworld featured six virtual reality rides that cost Sega nearly one billion dollars to develop. Unlike rides at Disneyworld and other theme parks, Segaworld's rides were all interactive and unique and the company promised that no two visits to an attraction would ever be the same. On several of the rides visitors got to wear Mega Visor Displays that projected a virtual reality image to the wearer. The display changed as the wearer looked in different directions.

Sega scheduled to build the first Sega Gameworks parks in the US in late 1996 in Seattle and Las Vegas. However Americans received their first glimpse of what Sega Gameworks had to offer early in the year when Sega opened its Sega City center in Irvine California. While Sega City didn't offer the rides that would be available in the larger parks, it did offer state-of-the-art 'deluxe' arcade machines. While most of the games were known to most frequent arcaders, they were presented in

new and exciting ways. For instance gamers playing *Sega Rally* could sit in an imitation racing car that would tilt and shake according to what was happening on-screen. In addition Sega City was not restricted to carrying only Sega arcade machines. The management was free to bring in arcade games from all manufacturers as long as they were popular. What made Sega City accepted by parents was the fact that it didn't resemble a standard arcade. The place was well lit and 'Game Specialists' monitored the floor to make sure gamers understood the games that they were playing.

As it continued to diversify, Sega announced in the summer that Sega Gameworks joined up with the Cineplex Odeon movie chain to open a string of entertainment centers called *Cinescape* that would adjoin the movie theaters. The Cinescape centers would feature state-of-the art arcade games, Internet stations, and bars and restaurants. The Cinescape centers would be based in Canada and the first one wasn't scheduled to open until the year 2000.

Sega's diversification wasn't limited to arcades and theme parks. In October Sega of Japan released the *Digio*, a digital camera that was priced at $270, $100 less than its nearest competitors. The images that were taken on the camera were available immediately by downloading them to a computer where they could be manipulated and printed. For those who didn't own a computer, Sega planned to set up service areas in its arcades and theme parks where the downloading and printing could be done.

Another new product that Sega planned to release in Asia was a stand-alone called TV-Mail. With this console young children could write and draw on the TV screen as well as send and receive E-mail and faxes.

The Sega Gameworks theme parks were great places to showcase brand new arcade games but many people still yearned for the old classic games that were slowly disappearing from arcades. The National Videogame and Coin-Op Museum in St. Louis seemed like the ideal place for people to find the machines that they were nostalgic for. Unfortunately, after five years the museum closed its doors in 1996 due to a lack of money and a lack of general interest in the exhibit.

While the museum was a good idea, there was one basic problem with it. It was located in St Louis and few people were willing to travel to that city just to see videogame history. People, on the other hand, would go to an exhibit on videogames if it traveled to their locality instead. Thus was the concept behind the Electronics Conservancy's *Videotopia*.

Videotopia was a traveling museum exhibit that opened at the Carnegie Science Center in Pittsburgh on June 15 (exactly five years after the National Videogame and Coin-Op Museum opened) for a three month run. With Nolan Bushnell and Eugene Jarvis (the creator of *Defender*) among its list of advisors, the exhibit's "Ultimate Arcade" displayed all of the classic arcade machines from *Computer Space* and *Pong* to new emerging classics like *Alpine Racer* and *Daytona USA*. All were available for play. Each machine was captioned with its particular history along with American events that were happening at the time.

Videotopia not only provided a place where people could play games, it also served to educate people about videogames. One exhibit displayed the technology behind videogame controllers. There was also a playable *Pole Position II* that had much of its cabinet replaced by Plexiglas so visitors could view the inside of an arcade machine. Scattered around the exhibit were "Power-Up Stations" where visitors could be questioned about videogame history and correct responses would be rewarded with game tokens.

Videotopia featured more than the arcade side of the industry. Most of the home game consoles from the Odyssey through the Virtual Boy were on display alongside their individual printed histories.

Among the coin-op and home consoles Videotopia also devoted space to the stand-alone systems: the Lynx and the Gameboy. While the Lynx died with the rest of Atari, Nintendo's Gameboy was still going strong, seven years after it was first introduced. Since the days of the Intellivision, manufacturers had released streamlined versions of their popular older systems. The re-released systems usually contained fewer components than the originals, rendering them cheaper to manufacture and sell, and adding some extra time to the system's life. Nintendo itself had done this when it released the inexpensive NES 2 in 1993. In 1996 Nintendo decided to re-release the Gameboy. However what made this re-release different from those in the past was the fact that the newly released Gameboy was better than the original.

Nintendo Gameboy & Gameboy Pocket

The new *Gameboy Pocket* was much slimmer than the original, just a little bit thicker than the cartridge that fit into it. Although the screen on the new machine was the same size as the original, it too was redesigned and was easier on the eyes. It also consumed less power. The Gameboy Pocket only needed two AAA batteries whereas the original needed four AA batteries. Nintendo released the new Gameboy Pocket in the United States in November with a retail price of $59.99.

Even though Nintendo had enough faith in the Gameboy to release a newly designed version, the company was also developing a system that would replace it. Nintendo was quiet at first but rumors began leaking in March that Nintendo was working on Project Atlantis, a color handheld system that wasn't going to be compatible with any other system. News was soon released that a British company called Advanced RISC Machines (ARM) had been contracted by Nintendo to develop the system. Among the requirements was a special chip that would give batteries a thirty hour life-span.

At first Nintendo had hoped to release the new portable with a 3 by 2 inch LCD color screen in at least one territory by the end of the year. However that date changed by the end of the summer when it became apparent to Nintendo that the Gameboy Pocket was selling better than had been anticipated. Nintendo decided to push back the color portable until the Gameboy Pocket's sales began to slow down. Nintendo estimated that this could take as long as two years. A new tentative date for the color portable was set for Christmas 1997. Meanwhile at least one specification was changed along with the new release date. The battery life of the machine was down to eight hours.

While the Nintendo color portable was delayed, Tiger Electronics went ahead and released a portable color unit that sold for only $29.99. Actually the system that Tiger released was similar to the R-Zone projector that it released in 1995. The Super Screen was a hand-held unit that used the same cartridges as the R-Zone but displayed them on a large magnified screen. Tiger also announced a model called the Data Zone that would combine the Super Screen with a data organizer.

The success of the Gameboy Pocket was a refreshing surprise to the Nintendo executives who merely wanted to give fresh life to the ancient portable. They needed this success to compensate for the failure of their other stand-alone unit.

The Virtual Boy had been released in late 1995 to an unenthusiastic marketplace. Many of those who did buy the stand-alone unit suffered from headaches following a gaming session. Parents were reluctant to purchase a system that came with a warning to keep it away from children under seven

because it could cause eyestrain. Others didn't like the unit because of the lack of combative game play. It wasn't fun playing a game that no one else could see.

Nintendo decided to give the Virtual Boy a second chance in early 1996. The company began a new ad campaign to promote the unit and released two new cartridges: a three dimensional bowling game and *3D Tetris*. Neither of these titles managed to excite the public. By the autumn the interest in the Virtual Boy was so low that Blockbuster began selling its supply of used rental Virtual Boy consoles for $30 each and software for $10. Only die-hard videogame collectors seemed to be interested in the unit at that price.

Tiger Electronics Super Screen

Nintendo blamed the failure of the Virtual Boy on its inventor Gumpei Yokoi. While other company executives had been doubtful about the Virtual Boy from the beginning, Yokoi had been optimistic about the system's prospects and his assurances were all Nintendo had needed to go ahead with the project. Nintendo can't be faulted for listening to Yokoi who had been a designer with the company for nearly thirty years. Yokoi's greatest achievement was the Gameboy, which sold over 48 million units around the world. Unfortunately when profits are the bottom line executives have short memories. When the Virtual Boy failed to sell more than 50,000 units it was Yokoi who had to bear the blame. In September he left Nintendo in disgrace and went to start his own R&D company, which had nothing to do with videogames at all.

By year's end Nintendo admitted that it had made a mistake and announced that it was ending all development and marketing support for the Virtual Boy.

In spite of its name, the Virtual Boy didn't make the user feel like he was totally immersed in the video world. Despite the failure of the Virtual Boy, other companies continued to market virtual glasses that really weren't that much different from the Virtual Boy.


Virtual I/O Virtual i-Glasses

Virtual I/O announced its $399 Virtual TV early in the year. The Virtual TV was a headset that when worn, displayed a TV image in front of the wearer's eyes and gave the wearer the impression that he was viewing a large 62 inch television from eleven feet away. The headset, which also had two built-in stereo speakers, could hook up to any video unit that had audio/video outputs. Like the Virtual Boy, the Virtual TV wasn't true virtual reality since it did not feature a tracking system that caused the video image to shift when the wearer turned his head. However, Virtual I/O did market a $799 headset for PC computers called the Virtual i-Glasses, which was capable of head tracking.

In the early summer Virtual I/O also announced that it planned to release a headset similar to the Virtual TV exclusively for the Playstation. Sony

seemed to be interested in the unit enough that it was going to license the headset and market it under its own name. Unfortunately both companies were mute about the subject for the remainder of the year.

Virtuality was another company that marketed a virtual headset that was similar to the Virtual TV. Atari had planned to license the technology and release it under the Jaguar VR name in 1995. Unfortunately Atari had severed the deal. In its place Takara, a major Japanese toy company, jumped in and planned to release the headset in Japan for $360. Like the Virtual TV, the model that Takara planned to market did not feature a tracking control although Virtuality announced that it would be feasible to release a higher priced model equipped with a tracking system in the near future.

Atari Jaguar VR

Namco signed a deal with Virtuality to create a new virtual reality arcade game based on the old arcade classic: *Pac-Man*. The new game, *Pac-Man VR*, placed the player in the guise of Pac-Man as he navigated the maze from a first-person perspective. The game also allowed up to four players to participate at one time by giving them the ability to see and talk to one another as they went through the maze scooping up power pills and avoiding ghosts.

As Virtuality was bringing an old classic back to arcades in a new way, other companies were releasing the old classic arcade games for new formats. Following the success of Activision's 1995 *Atari 2600 Action Packs* several other companies began releasing compilations of classic arcade games.

Williams released its *Williams Arcade Classics* early in the year. Among the six games that were included in this collection were *Defender* and *Joust*. What made this collection particularly interesting was that the games used the original program code and ran through an emulator so they could play on different gaming platforms. Besides being available for the PC and the MAC, *Williams Arcade Classics* was also released for the 16 and 32-bit game consoles.

In addition to games, the CD versions of *Williams Arcade Classics* also included histories of the games that were featured. Unlike the text history that was included on the Activision CDs, *Williams Arcade Classics* contained multimedia interviews with the designers as well as photos of early game designs.

Midway, the sister company of Williams, released a Playstation CD that spotlighted on Atari's classic arcade games. *Arcade's Greatest Hits: The Atari Collection* contained six of Atari's most famous arcade games such as *Asteroids* and *Tempest*. In the spirit of *Williams Arcade Classics* the games on the disc featured the original code that ran through an emulator. It too contained the multimedia histories of the games.

Midway, which had released *Pac-Man* in the United States, did not release a version of that game for the home market. Instead that game was released

for the Playstation from Namco itself under the title *Namco's Museum Volume 1*. This disc contained seven games but no interviews with the game designers. Unfortunately little thought of the American audience was put into the CD when it was released in the United States. The marquees on several of the featured machines were displayed in Japanese.

Williams Arcade Classics

The major gaming companies were not the only ones who were releasing CD compilations of classic games. In mid 1996 a limited CD called *Stella Gets A New Brain* was released via mail order only.

Stella Gets A New Brain was a compilation of all of the Starpath games that had originally been available on cassette tape for the Starpath Supercharger during the early eighties. The CD was put together by Cyberpunks, a group of four classic gaming fans. The group secured the rights of all thirteen Starpath games from Bridgestone Multimedia, the company that owned the rights to them. However their contract with Bridgestone Multimedia only allowed them to produce a limited number of the CDs on a non-profit basis. They also managed to secure rights to include an unreleased Atari game called *Polo*.

CyberPunk's Stella Gets A New Brain

While many were retreating to what seemed like the innocent videogames of the early eighties, the controversy over the violent games of the nineties continued. At the end of 1996, Senators Joe Lieberman and Herb Kohl, the forces behind the videogame ratings, met with the press. The timing of the press conference coincided with the first anniversary of the rating systems and the two Senators were eager to let the world know how they felt about them.

All in all, the Senators were happy with how the videogame industry enacted. Using standard report card grading the Senators gave the system an 'A'. Most of the software that was produced after 1993 prominently displayed the ESRB rating code. The Senators also gave the videogame manufacturers an 'A' for their complete cooperation in establishing the codes.

The Senators were less happy with the computer game developers that used the IDSA rating codes. The Senators felt that the IDSA ratings were more difficult to understand and gave it a grade of 'B-'.

Retailers received a 'C' from the Senators for their lack of cooperation. Of nine retailers that were visited, only Toys R Us agreed to ban unrated computer games. Furthermore the Senators discovered that store clerks were unfamiliar with the rating codes and could not explain what the ratings meant when they were asked about them.

On the whole the Senators were satisfied with the way the home videogame industry responded to the ratings. The Senators were less than enthusiastic about the lack of ratings in the arcade industry and awarded a 'D' to both the arcade game manufacturers and the arcade owners. Unfortunately, arcade games didn't come in cardboard boxes that the ratings could be printed on. Arcade trade groups printed up rating stickers to distribute to arcade owners to put on the machines on a voluntary basis. The US game companies called for more permanent ratings and appealed to the Japanese manufacturers to include on-screen ratings in the game's attract mode.

While the Americans were concerned about violence that was attributed to violent games, the Japanese released a 1994 study that showed that videogames were unhealthy for other reasons. The study's organizers interviewed 5400 junior high school students and learned that 30 percent of the students who played videogames eventually developed health problems such as dizziness or stiff

shoulders. The industry reacted by saying that gamers should take frequent breaks while playing.

One way gamers could spend less time on a game was by completing it faster. One way to do this was by cheating. Although Codemasters, no longer produced the Game Genie, other companies quickly stepped in with their own versions of the game altering device.

The Game Guru was a 3DO CD that featured codes for 39 games. The games had to be first saved within the 3DO's internal memory before the Game Guru could be used against them. However once the games were saved the Game Guru attached the cheat codes right onto the saved code.

3DO owners weren't the only 32-bit gamers who benefited from game altering devices. The Game Shark from STD was available for both the Saturn and Playstation. Unlike the earlier Game Genies, long strings of codes didn't have to be entered into the device. Players just had to enter the code once and the Game Shark saved it for them. In addition, the Game Shark was sold with cheat codes already loaded. Once the Game Shark was inserted into the game console (the cartridge port on the Saturn and the I/O port on the Playstation) it bypassed the system's normal start-up procedures. Players could then access a menu from where they could choose the code that they wished to use.

Unlike the Game Genies, which existed only to alter code, the Game Shark could also double as a game saver. Since the Game Shark utilized flash memory it didn't need a battery to save the games. Thus there wasn't any danger of ever losing the saved information.

When the original Game Genie was released, Nintendo had fought hard to stop the sale of the code altering device. Originally Nintendo won the suit and Galoob, the American distributor, received a restraining order to prevent it from selling the unit in the United States. After appealing the verdict and winning Galoob had been given the right to sell the Game Genie.

In 1996 Nintendo learned what it was like to appeal a verdict against it and turn it around in its favor.

The lawsuit that Nintendo appealed had been filed in 1994 by a defunct company called Alpex Computer Corp. The company had claimed that Nintendo had used its graphics creating technology in the NES since 1985 and sued the Japanese company for $400 million. The court agreed with Alpex and Nintendo was ordered to pay $208 million. Nintendo immediately filed for an appeal. In late 1996 the appeals court sided with Nintendo thus clearing the Japanese company from having to make any settlement.

It was fortunate for Nintendo that it didn't lose any money in the lawsuit because it was losing a lot of money in another area. According to a report by the IDSA software companies lost $2.5 billion dollars on account of game piracy. Half of that amount was lost by Nintendo alone.

The turbulent state of the videogame industry was reflected in the videogame magazines, which went through a major overhaul when publishing giant Ziff-Davis purchased the Sendai magazines. *EGM*^{2}, which had originally been launched because there was just too much videogame news to fit in a monthly issue, became a strategy magazine. *Fusion*, the magazine that was the incarnate of *Electronic Games*, had not been well-received by the videogaming readers. It became *Intelligent Gamer*, a totally new magazine that was well-written and interesting even to adult readers. Unfortunately that wasn't enough to attract readers and *Intelligent Gamer* ceased publication at the end of the year with the January 1997 issue.

Intelligent Gamer was similar in content to *Ultimate Gamer*, a magazine that was put out by L.F.P. That magazine ceased publishing with the January 1996 issue. L.F.P. was the company that had started the second wave of videogame magazines when it published *Videogames & Computer Entertainment*

in 1988. That magazine became *VideoGames*. In 1996 *VideoGames* was also purchased by Ziff-Davis, which immediately put it to rest with the August 1996 issue.

1996 was a year that belonged to no videogame company in particular. Classic gamers would remember it as the one when Atari died. Newer gamers would remember it as the year when the N^{64} was finally released in the United States. It was also the year when newcomer Sony established itself as a serious videogame company while the veteran Sega began to show that it wasn't perfect. As the year came to a close the three companies continued to battle but no company could claim that it had a commanding lead over the others.

That would have to wait for 1997.

CHAPTER TWENTY-FOUR
1997

After 1996 ended without a definite leader in the videogame console war, the situation didn't change during the first few months of 1997. Depending upon which company's statistics one wished to follow, both the Sony Playstation and the Nintendo 64 (N^{64}) were in the lead. What wasn't disputed was the fact that the Sega Saturn was clearly trailing the pack. Although Nintendo and Sega were both claiming approximately 1.7 million consoles sold at the end of 1996, the Sega numbers reflected a console that had been around for eighteen months. Nintendo had achieved nearly identical sales figures in only three months.

Nintendo claimed that the demand for the N^{64} had been so high that it could have sold almost a million more consoles if it had been able to manufacture them. N^{64} software was also in very high demand and titles that hadn't even received good reviews were scarce on store shelves.

Although Nintendo couldn't get ahead of Sony with its numbers by year's end, the N^{64} did establish itself as the fastest selling videogame console of all time. Sony, which had a full year's head start to sell its Playstation, announced an American base of 3.2 million consoles. One million of these Playstations were sold during the 1996 Christmas season. Playstation software also sold at a remarkable rate with the average consumer buying five games for every console sold. Hiroshi Yamauchi, Nintendo's president, merely shrugged at Sony's success and declared that most of Sony's games were "silly and boring".

Yamauchi's comments may have been made out of frustration and jealousy. Shortly following the holiday season, N^{64} software developer Enix announced that it was going to release its widely anticipated role-playing game *Dragon Quest VII* for the Playstation, instead of the N^{64}, which had previously been announced. This was a great blow for Nintendo, which didn't have a major role-playing title. Enix, which continued to remain an N^{64} developer, announced the change for purely economic reasons. The Playstation offered a larger market and CDs were cheaper to mass-produce than cartridges.

After Christmas the real truth behind the numbers began to emerge. Statistics showed that the N^{64} had the potential to be the winner in the videogame wars. However, Because Sony had a two year head start, the company naturally had more consoles in homes than Nintendo overall. However the figures showed that Nintendo was on its way to catch up. While Sony was selling the Playstation at an average of 195,000 units a month, Nintendo was well on its way by selling 383,000 consoles a month. Sega was in a distant third and was only selling 77,000 Saturns a month, igniting frequent questions concerning the future of the console. Despite these numbers, each company, including Sega, was optimistic about its future.

The first blow in the videogame war of 1997 occurred on February 21 when Nintendo of Japan announced that it would drop the price of the Japanese N^{64} to $137 on March 14. The US N^{64} wouldn't be affected by the price adjustment because it was selling in record-breaking numbers.

As most analysts expected, Sony quickly followed suit and on February 27 it announced its own price decreases for the Playstation. Sony intended to immediately lower the price of the United Kingdom and Australian Playstations to $200. However this was only the beginning. Sony Computer Entertainment of America shocked the gaming world a week later on March 3 when it announced that in addition to lowering the price of the US Playstation to $149, it would also drop the price of new software to $49.99. To make the system even more irresistible, Sony introduced a line of 'Greatest Hits' games, which consisted of titles that had sold more than 150,000 copies and were on store

shelves for over a year. The 'Greatest Hits' games would sell for $24.99.

The immediacy of Sony's price decrease came totally unexpected to both Sega and Nintendo. George Harrison, Nintendo of America's vice-president of marketing, initially proclaimed that Sony's price drop didn't faze his company in the slightest and that Nintendo of America had no plans of doing likewise. According to Harrison Nintendo had been expecting the price drop from Sony eventually since the N^{64} had been outselling the Playstation every month since its introduction.

Three days after Harrison's confirmation that Nintendo wasn't scared of Sony, the Tokyo newspaper *Mainichi Shumbus* quoted Nintendo of Japan head Hiroshi Yamauchi who said that Nintendo would indeed drop fifty dollars from the price of the N^{64} by the end of March. Yamauchi explained that Nintendo could do this because of lower costs associated with the mass production of the N^{64}. Despite Yamauchi's promises, Nintendo of America reaffirmed its earlier statement that the N^{64} would remain at $199 while the company took a 'wait and see' attitude. It even went as far to state that the announcement by Yamauchi had been mistranslated in the United States.

Whether it had been mistranslated or not, the newspaper had reported accurately. On March 17 Nintendo of America lowered the price of its N^{64} to $150.

Sega of America decided that it wouldn't follow Sony and Nintendo and drop the Saturn's price even though Sega subsidiaries in the United Kingdom and Australia had done so. Sega of America believed that the long-term success of the Saturn depended upon quality software; not the price of the hardware. Despite this optimism, most videogame critics believed that Sega of America would eventually have to lower the price of its console. They were proven correct when Sega of America finally announced a $150 price for the Saturn on June 3, two weeks before E^3 opened. While the $150 console wouldn't come with a game, there was a new $170 package that would include one pack-in game. Another price decrease were given to the Netlink, which was cut by $100. Sega also took a cue from Sony and lowered the price of its software so that no new game would cost over $50. Finally, even the price of the Genesis was lowered by $20!

Sega's new price points put new life into the floundering system. However, while most analysts agreed that Sega had done the right thing by lowering the prices, it was much too late in the game to make a difference. Sega had a lot of catching up to do.

By the end of the summer, things looked even bleaker for Sega of America. Sony began signing exclusive contracts with companies that previously designed games for both systems. Shiny signed first and began designing its game *Wild 9s* exclusively for the Playstation. Sony also approached Eidos. Even though Eidos' *Tomb Raider* had been the best selling Saturn game of all time, its sales figures couldn't come close to the Playstation version. Sega's executives didn't worry about the exclusive Sony games. As far as they were concerned any hit game from Sega's arcade division was an exclusive for the Saturn.

Ironically Sega of America's woes were not apparent in Japan where the Saturn sold in great numbers. The system was so popular that Sega of Japan announced that it intended to sell exclusive Saturn software through vending machines at Japan's largest convenience store. The first would be *Digital Dance Mix*, which would feature 3D animations and hit songs by a Japanese singer named Namie Amuro.

As the companies battled in the marketplace to claim the lowest price and most numbers sold, rumors of powerful new consoles to replace the existing inexpensive ones began to emerge. The word from the Sony spies implied that the company was planning a new 64-bit powerhouse with additional RAM that would employ an R4000 chip and a DVD player and still be compatible with the existing Playstation. Although Sony itself didn't deny the rumors, unofficial sources within the

company maintained that the Playstation2 probably wouldn't see the light of day until sometime in 1998. While the unconfirmed Playstation2 was still a year or more in the future, a rumor also circulated that said some of the specifications for the new console, such as additional RAM, were being reworked into the existing Playstation. Again, Sony didn't sanction the rumor that said the new Playstations would hit Japan in the summer and arrive in the US a few months later. New Playstations actually were released on November 13 in Japan only. While completely compatible with the existing Playstation the new model featured Soundscope, an enhancement that was similar to the Jaguar's Virtual Light Machine.

Sony also released its $750 specialty console, the Yaroze, in the United States. The Yaroze allowed users to design Playstation compatible games on their home computers. It was also capable of playing Playstation games from around the world. Regular Playstation consoles could only accept foreign discs after a special chip was inserted; a process that voided the Playstation's warranty.

Rumors also originated at Sega concerning a 64-bit console with a built-in modem and a six-or eight-speed CD-ROM drive. Many analysts began predicting early in the year that Sega would forego the Saturn in favor of this rumored console but Sega put the rumor to rest by stating they wouldn't release a new console in 1997 and that they would 'stand by the Saturn' by producing less software. What this paradox meant was that Sega intended to release a small number of high quality games instead of a large number of mediocre ones. Sega also promised more original titles instead of arcade standbys.

Despite Sega's denials, it was confirmed in March that Lockheed Martin had submitted several plans for a new Sega console throughout 1996. In the end Sega decided to design its own console, code-named Black Belt, which would be built around a 3Dfx Interactive Voodoo Graphics subsystem. This news had leaked out because 3Dfx Interactive filed to go public and in its IPO (Intent of Public Offering) it had to divulge all of its ongoing projects. One detail that turned up in the IPO was the mention of an agreement between 3Dfx Interactive and Sega where 3Dfx Interactive was to develop a 'semiconductor 3D graphics accelerator' for Sega's forthcoming game console.

3Dfx Interactive's Voodoo Graphics was a product that had become very popular to PC gamers. Sega's new console would feature a modified version with a 128-bit architecture that 3Dfx Interactive touted as very developer friendly. The console would be powered by Hitachi's new SH-4 processor, which had been designed especially with videogames in mind. The SH4, which wasn't even on the market yet, promised to have a speed of 200 MHz and the ability to compute 350 million instructions per second. While the new console would be more powerful than the N^{64}, it would still only have a 32-bit processor. Like the Saturn, the Black Belt would use a CD-ROM drive but Sega didn't have any plans to make it DVD compatible.

In addition to the Voodoo Graphics subsystem, the new system would also borrow something else from the computer world. Thanks to an agreement between Sega and Microsoft, rumor had it that the giant software company would provide some portions of the Black Belt's operating system.

While the Black Belt sounded like it would be a worthy successor to the Saturn, it turned out to be a project that Sega of America was developing independent from its parent, Sega of Japan. Normally this wouldn't have been so terrible. However in this case it was problematic because Sega of Japan was also working on a replacement to the Saturn. Sega of Japan's new console was called the Dural and it utilized a PowerVR chip from NEC, which was a competitor of 3Dfx Interactive. The PowerVR chip wasn't as powerful as the Voodoo Graphics but PowerVR had a new technology called Highlander, which was five times faster, waiting in the wings.

Sega of Japan was caught in a dilemma. While both chipsets were excellent, Sega could only use one and had to decide which one it would finally use. The Japanese design team threatened to quit the

company if the PowerVR technology wasn't used and Hitachi allegedly offered Sega money if the videogame company went ahead and utilized its chip. While Sega never admitted that this was the case, it did go ahead with the Dural system that its Japanese team developed. Following this decision, most of the American design team immediately quit the company in retaliation and quickly found jobs elsewhere.

Greg Ballard, head of 3Dfx Interactive, admitted that he was disappointed with Sega's decision. However, he downplayed the incident and claimed that Sega would have only represented ten percent of the company's overall projected 1988 revenue. Anyway, Sega of America still planned to pay 3Dfx Interactive to continue developing the technology for its own use. By doing this Sega could retain the rights to the technology and prevent other companies from utilizing it, including Sony, which expressed interest in it. Sega of America even invested in 3Dfx Interactive.

By year's end Greg Ballard's company filed a breach of contract lawsuit against Sega. The lawsuit contended that Sega deceived 3Dfx Interactive by becoming an investor and learning its proprietary secrets. Sega responded by saying that it invested in many companies and in all cases, it never disclosed any proprietary information. The lawsuit was also against NEC, which, 3Dfx Interactive contended, interfered with the contract that it had with Sega.

Once Sega of Japan went ahead with the Dural, it began releasing public information about the new console, which it planned to have in stores by late 1998. Powered by Hitachi's 200 MHz SH4 chip, the Dural would produce graphics at an astounding 1.5 million polygons per second thanks to NEC's PowerVR chip. Yamaha would design a sound chip that could produce 64 different voices at one time. While the Dural would incorporate standard CD-ROMs, the special dual-speed drive would also be able to read data from unique Dural discs that could hold one gig of information.

All of the work that Sega of America put into the Black Belt had not been lost. The rumored Microsoft operating system became a reality for the Dural. In September, the Japanese newspaper *Nihon Keizai Shinbus* announced officially that Microsoft would provide a Windows CE operating system. Such an operating system would make it easy for programmers to port computer games over to the console and vice versa. This also allowed third party software companies to immediately begin designing games for the Dural, since games that ran on a Pentium II PC would also run on the Dural. Sega, learning from its past mistakes, was very determined to offer a system that was 'designer friendly'. The Saturn, which had been a very difficult system to program, had lagged terribly in popularity while the top-selling Playstation was a developer's dream. The designers of the Dural knew that this wasn't just coincidence.

By the end of the year Sega made one final change to its Dural specifications. It shed the name Dural and came up with Katana, a Japanese word for sword. Sega's aim was to release the Katana in the United States by October 1998 with a $199 retail price. The company was certain that it fixed all of the mistakes that it made with the Saturn, a system that most critics believed would go the way of the Sega CD and the 32X during 1998.

Meanwhile, until Sega released its new machine, it had to deal with the ramifications of the Saturn's poor retail performance. In the fall several distributors received letters from Sega of America stating that they would no longer be part of Sega's distribution network. Sega claimed that only ten distributors, five percent of its overall network, were removed as Sega sought to reallocate its services in a cost saving measure.

By year's end, the Saturn held less than 2% of the console market share. This was down from the 20% that it held the year before. Rumors of a massive layoff at Sega of America's California headquarters affecting 80% of the staff managed to sour an already dismal Christmas season. Sega officials denied any knowledge of such a layoff.

Sega of America wasn't the only division of Sega that was experiencing problems. The Sega

Channel announced in November that it would cease broadcasting in June 1998. This came as a surprise since the year began on a healthy note with the service announcing in January that it was increasing the number of available games from 50 to 70 and new games would be updated biweekly instead of monthly. The service had also signed up with Disney Interactive to offer Genesis games that weren't even available in the stores. Unfortunately, the Sega Channel never really caught on with the majority of Genesis owners. Less than 1% of the twenty millions Genesis households subscribed with the service. As the Genesis moved closer to extinction with the success of the Playstation and N^{64}, the subscription base for the Sega Channel kept decreasing.

The demise of the Sega Channel wasn't of particular concern to Sega of Japan since it was more interested in services for Saturn owners. The company had great plans for the Saturn's Netlink service when 1997 began. Sega of Japan announced in January that it joined forces with Nippon Telegraph and Telephone to come up with a videophone called the SS Phoenix. The SS Phoenix was a unit that plugged into the Saturn's cartridge port and contained a microphone and camera. It also connected to a standard telephone line. Once the unit was set up it allowed users to call up other SS Phoenix owners and let them see each other on the TV screen as they talked. Sega planned to release the unit for under $400 in Japan only.

While Sega of America didn't plan any devices like the SS Phoenix, it finally announced the release of several Netlink games. The Netlink used Catapult's XBand technology, and Sega touted that the gaming service would be similar to use. A gamer would log onto the Internet and use a Netlink service called the Netlink Zone to find other online competitors. When a player was found both would have to log off the Internet and then one player would have to directly call the other. Both would also have to own a copy of a Netlink compatible game. Unfortunately this method was deceiving because players assumed that they could compete over the Internet when in fact players were simply calling direct and incurring long distances charges if the calls weren't local. The odds of finding a local competitor were slim since Sega only sold 15,000 Netlink units by mid-1997. However the company hoped that by offering the new Netlink compatible games many more people would go out and purchase the unit. Sega even offered a special price. At E^3 the company announced that it would release a Netlink Bundle that would come with a Web Browser and Netlink versions of *Virtual On* and *Sega Rally* for only $100.

While E^3 was used as the launch point for the new Netlink Bundle, Sega apparently revealed too much of its plans at the massive electronic show. Bernie Stolar, the CEO of Sega's North American Consumer Business Operations, announced in an E^3 interview with *Electronic Gaming Monthly*, that the 'Saturn was not in (Sega's) future'. This statement implied that Sega of America would be devoting all of its emphasis on its next system, which wouldn't be available for at least another eighteen months. This statement irked Victor Ireland, president of one of Sega's biggest software developers, Working Designs. Ireland contended that Stolar's statement would in effect kill the Saturn market in North America.

Ireland had other gripes with Sega of America. Although Working Designs was one of Sega's staunchest supporters, their booth at E^3 was outside of Sega's perimeters and buried deep in the back of the exhibit hall where very few attendees ventured. Ireland decided to quit supporting the Saturn, even though Working Designs and Sega of America had a decent relationship going back to the early days of the Sega CD.

Sega of America felt that the deserting of Working Designs wouldn't be felt. Ironically, the majority of the games that Working Designs had released for the American Saturn were conversions of Japanese games licensed from Sega of Japan. Sega of America felt that another company would simply take Working Designs' place and convert Japanese games for the American market. They

couldn't be more wrong.

Working Designs was not the only company that defected from Saturn development. In a bold move that more or less signaled the inevitable death of the Saturn, SegaSoft announced early in the year that it would limit its development of Saturn games and concentrate on online PC games. With this announcement the Sega division laid-off ten percent of its employees.

Other software companies were also suffering from layoffs. After releasing seventy people in 1996 in an effort to save costs, Acclaim experienced a minor success in 1997 when it released *Turok: Dinosaur Hunter* for the N^{64}. Unfortunately the cartridge wasn't enough to keep the software company from spiraling downwards and 115 more jobs had to be cut in May.

GTE Interactive decided to exit from the software market in early spring to concentrate on its core business of telecommunications. While it had never been a major player in the videogame arena, GTE Interactive's exit from the industry meant the layoffs of approximately eighty employees.

Capcom found itself in trouble because it hadn't been granted permission to release games. Capcom's *Megaman* series was popular in Japan but they didn't enjoy the same popularity in the United States. When Capcom decided to release its two Japanese games *Megaman X4* and *Megaman Battle and Chase* in the United States, Sony decided to activate its veto power and nix the games. While Sony had the right to veto any game, this action became the source of friction between the two companies. Within four months Capcom began experiencing financial problems due to lower than expected sales of some its other games.

GameTek, a familiar software name since the NES days, also began experiencing lower than expected sales. Sales became so bad that GameTek, the premier developer of game show related games, was forced to file for Chapter 11 bankruptcy protection shortly before the Christmas buying season.

Not all software companies were having a bad time. Konami, Bandai and Namco all reported an increase in profits from 1996. Telegames, a company that primarily dealt in orphaned systems, surprised many and released eight new games for the Atari Jaguar and Lynx. Nintendo was quick to announce that its *Starfox 64* became the 'hottest' videogame for any system when it sold 300,000 copies within five days of its June 30 introduction. Purists were to quick to point out that this record only applied in the United States since *Final Fantasy VII* sold over 2 million copies in just three days when it had first been released in Japan in January.

Even the 3DO Company jumped on the software bandwagon! After selling the M2 to Matsushita it appeared that the 3DO would only develop software through its Studio 3DO division. That appearance dissolved when the company announced early in the year that it was forming a joint venture with Samsung to manufacture hardware and peripherals for PCs and other forms of home entertainment. 3DO earmarked eighty of its developers to the venture. In June, just when it seemed like 3DO was in the hardware business once again, the company sold its remaining hardware interests to Samsung for $20 million.

In May the company announced that it would release *Battlesport*, a game that had already been released for the 3DO console, for the N^{64}. Greg Richardson, president of 3DO's software division Studio 3DO, explained that games that his company were working on for the M2 were easy to translate to the N^{64}.

At the same time that Studio 3DO announced its N^{64} lineup, the software company finally unveiled its M2 products to the press. With a blanket covering the actual M2 hardware, Studio 3DO demonstrated its first M2 product, *World Championship Racing*. The initial reaction was that the graphics were smoother than those of the N^{64} and the loading time from the CD was very quick.

Even though M2 games were actually being demonstrated, most critics doubted if the console

would ever be released. One reason was because there was a lack of software. In October 1996 Matsushita had announced that the M2 would have more titles at its launch than the N64 had. Eight months later the reality was that there were only three software companies developing games for the system. And these companies didn't even they didn't know Matsushita's intentions since the working model that they used had been supplied by 3DO before the Matsushita buyout. Whether the electronics giant improved on 3DO's original design was anybody's guess. Although the original 3DO technology blew away the current systems on the market, the longer Matsushita held out from releasing the system, the less impact it would make in the marketplace.

When the M2 didn't appear at E3 in June speculation of its death continued. In July, a Japanese newspaper, *Nihon Kogyo Shimbun*, reported that a high ranking Matsushita official mentioned during an interview that the M2 had been terminated and the entire console division of the company was being disbanded. Matsushita immediately issued a statement that claimed the interviewer had misunderstood what the official had said, and the M2 and ten games were all ready to ship. The M2 was being held back, however, because there were just too many systems on the market to try and introduce a brand new system against.

Shortly following Matsushita's announcement, Matsushita president Yoichi Morishita stated that the M2 would not be released as a videogame console at all. Although Morishita was confident that the M2 was superior to the current systems, he felt that the other manufacturers would catch up and surpass the M2's technology within a year. Morishita hinted that the M2's technology might resurface one day but if it did it would be part of an all purpose multimedia console; the type of console that the 3DO and Philips CD-i had originally be designed to be.

The resurfacing of the M2 occurred a scant three months later. In October Matsushita announced that it was accepting orders for the new incarnation of the M2. Instead of being a consumer product, the new M2 was aimed at the industrial multimedia market. Even then the M2 was not down and out as a videogame console. One Matsushita executive remarked that the videogame market changed in five year cycles and it was feasible that the M2 could still be released commercially if the market warranted it. In fact, the M2 appeared just a month later at Comdex and Japan's Digital Media World Expo. This time the system was displayed as an all-purpose multimedia system. Ironically most of the software that was demonstrated was games.

The M2 wasn't the only console that failed in 1997. In mid-summer Apple Computers pulled the plug on its Pippin Atmark game machine. Apple, which had already been suffering from financial difficulties, couldn't support the Pippin, which only reached 20 percent of its US sales goals. One reason for this may have been because the Pippin was available in very few outlets in the US.

Although Matsushita was under the impression that the time wasn't ripe for a new console to go up against the established big three, the founders of an unknown three year old company called VM Labs felt differently. In late September word began leaking that the company was going to produce a new game console that would be available in late 1998. Behind the new system, which was dubbed 'Project X', were Richard Miller, a former R&D head for Atari who created the chipset for the Jaguar, and Jeff Minter, the renowned programmer who designed the Jaguar's *Tempest 2000*.

In November, VM Labs decided to quench all rumors when Miller officially announced the existence of Project X. Miller wouldn't offer the specifics of the new machine but he did promise that it would be more powerful than the current crop of consoles. He also admitted that Project X would be manufactured by more than one company in the same fashion as the 3DO console had been. Miller also claimed that many developers and publishers were interested in supporting the new console although he didn't name any of them.

While many critics were skeptical about a new company introducing a new system to an already crowded marketplace, Bill Rehbock, VM Labs' vice President of third party development, pointed out

that Sony had run into the same problem when it first announced the Playstation as an individual unit. When Sony made its decision there were no less than six consoles already on the market. Rehbock knew a lot about Sony. He had left that company and its number one game console to join VM Labs because he felt that the Project X hardware was a winner.

On January 23 Sega of Japan made the startling announcement that it planned to merge with Bandai, one of Japan's largest toy companies, on October 1. The new company, Sega Bandai, planned to be a major powerhouse in interactive-related businesses and forecasted net worth of over five billion dollars.

Although most details weren't initially worked out the merger looked good on paper for both companies. At the time both companies looked like they were floundering. Bandai owned the rights to many popular licenses including the *Power Rangers* but profits from the Power Rangers had been on the downswing since 1995. Sega's hope was that many of Bandai's popular licensees could be converted into popular videogames. Bandai, on the other hand, would be able to use many of Sega's popular characters, such as Sonic in other ventures outside of videogames.

Since Bandai was a third-party developer of Playstation games, questions quickly arose concerning conflict of. A Bandai spokesman claimed that the company would continue developing Playstation games because it was profitable.

Another question concerned the fate of Bandai's Atmark player. Bandai wanted to continue with the system even though it sold poorly and was in direct competition against the Saturn's Netlink. However during one of Bandai's numerous board meetings the decision was made to simply abandon production of the Atmark player.

Although the Atmark question had been settled, the Bandai board continued to meet but still couldn't come to any sort of agreement. Bandai president, Makoto Yamashima, admitted that his company had missed important deadlines but didn't mention why. Sega spokespeople didn't acknowledge the delays but stressed that the two companies had to act as one in order for both to survive in the changing marketplace.

Bandai's board finally sat down and agreed to the merger on May 26. Unfortunately many Bandai mid-level managers had been against the merger altogether because they dealt that the cultures between the companies were completely different. The Board was concerned that profits for the new company would be very meager during its first year of operation. On May 28 the Board met again but this time they voted against the merger with Sega. Makoto Yamashima took full responsibility for the failed merger and tendered his resignation from Bandai.

Although Bandai announced publicly its reasons for going against the merger, industry analysts felt there were other factors that had been weighed. One unconfirmed rumor involved a merger between Matsushita and Sega. Many critics believed that Matsushita wanted Sega's help in the development of the long-awaited mysterious M2 console and this may have scared Bandai off.

The probable reason why Bandai backed out was because the toy company simply no longer needed Sega to help turn around its sluggish sales. In November 1996 Bandai had released a new toy that went on to fortify the company's fortunes all by itself.

The toy was called the *Tamagotchi*, Japanese for 'loveable egg'. The Tamagotchi was a small plastic egg attached to a keychain with a small dot-matrix screen and three buttons When the unit was turned on, a virtual on-screen pet 'hatched' from the egg. It was then the duty of the pet's owner to keep it alive and pampered. The virtual pet used a system of beeps at all hours to tell when it wanted to play or eat. If the pet was neglected, it would eventually 'die'. Once that happened a new pet could be hatched at the press of the reset button.

The Tamagotchi quickly became a national obsession in Japan. Although it had been designed for

Bandai Tamagotchi

children many adults purchased it for themselves. Other adults took on the responsibility of raising their child's pet. The demand for the unit quickly exceeded the supply and before long the $16 Tamagotchi was being sold for hundreds of dollars.

By the time Bandai was ready to release the Tamagotchi in the United States in May, 20 million had been sold world-wide. However one modification had to be made before Bandai could release the toy in the United States. After one Japanese girl committed suicide because her virtual pet died, Bandai executives decided to change the story-line for the American release. The Tamagotchis that were to be sold in the United States hatched a creature from another planet, where it would simply return to if it wasn't cared for adequately.

Tiger Giga Pets

F.A.O. Schwartz, the first store to sell the Tamagotchi in the United States, sold out its initial supply of 30,000 in just three days. Bandai knew it sat upon a gold mine. At E^3 in June, the company announced that it was developing PC and Gameboy versions of the Tamagotchi.

With the success of the Tamagotchi, Bandai's competitors wasted little time creating their own virtual pets. Tiger Electronics released a series of $13 virtual toys called *Giga Pets*. Unlike the obviously made-up Tamagotchi, the Giga Pets consisted of virtual animals that people could really relate such as cats and dogs. However there were also more absurd Giga Pets like the baby Tyrannosaurus Rex for a Jurassic Park 2: Lost World tie-in. By the end of the year Tiger also released Star Wars Giga Pets, which allowed people to take care of familiar characters like Yoda and R2-D2.

The $18 Nano was released by Playmates in June. Playmates allowed buyers to care for kittens, puppies or human babies. Mistreatment of the pets (or child) would cause the virtual entity to run away.

By September the stores were saturated with virtual pets. While most analysts believed that the trend would carry the toy companies through the Christmas season, the popular assumption was that the virtual toys were fads and their popularity would eventually diminish.

While Tiger did extremely well with its Giga Pets line, it continued developing other electronic toys. The company cultivated the game on a keychain theme and released a line of $10 arcade classics. The first to be released was *Defender* and *Joust* and *Kaboom!* were to follow in 1998.

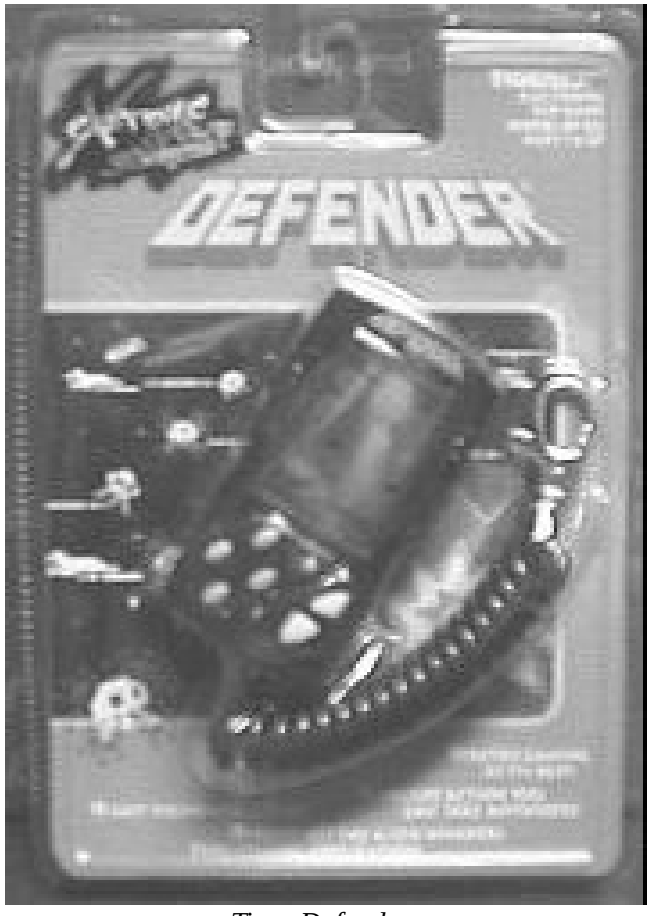
In addition to the keychain games, Tiger also continued to market its R-Zone series of cartridge based games. The company discontinued the Super Screen and released the new R-Zone X.P.G. (Xtreme Pocket Game), a hand-held version of the R-Zone that utilized the same cartridges.

Although Tiger Electronics had a booth at E^3 that June, neither the R- Zone nor the Giga Pets were on display there. Instead Tiger concentrated all of its publicity on the *game.com*, a new handheld, duel cartridge-based, system that it had developed.

The $69.99 game.com employed a primitive monochromatic LCD screen like the Gameboy, its

Tiger R-Zone X.P.G

main competition. However the game.com also employed a few extras such as a built-in solitaire game and a bundled cartridge called *Light's Out* that was based on a best-selling Tiger electronic game. The system also had built-in extras such as a calculator, address & phone number database, and a calendar. An unusual feature of the game.com was the inclusion of a stylus and touch-screen technology. While the stylus could be used to select menu choices, its main purpose was to compose messages. This was extremely important because Tiger planned to offer a special cartridge that connected with a standard PC modem to give game.com users online access. Tiger signed up with Delphi to provide an online text-based e-mail service. Users could use their styluses to compose their e-mail messages and then transmit them. They would also be able to receive e-mail. Unfortunately the game.com lacked the capability to store data so users would not be able to save or print their messages.



Tiger Defender

Tiger game.com

The link to Delphi also gave game.com owners a novel way to use the system. Tiger looked into ways to allow gamers to download new codes and secret levels from the Internet and then gave them the option to play the upgraded versions immediately or to save them to an optional RAM cartridge that they hoped to release. The path to the Internet was only the beginning and Tiger was willing to explore its potential. Of course it first had to sell enough game.coms to make the whole idea feasible.

One way Tiger planned to get people to buy the system was by developing games that they would be interested in. Tiger went out and licensed big names such as *Batman and Robin* and *Jurassic Park*. Long time gamers would also find recognizable games such as *Williams Arcade Classics* and *Mortal Kombat*. Tiger also went with an ambitious full media blitz and inserted their catalog and cardboard game.com previews into the bindings of the videogame magazines.

FOCUS ON GUMPEI YOKOI (1941-1997)

Gumpei Yokoi, the inventor of the Gameboy, died tragically on October 4, 1997, following a minor car accident in Tokyo. After stepping out of his car to inspect the damage, he was hit by another car and was killed instantly.

Although Yokoi had left Nintendo in 1996 after the failure of his Virtual Boy, the executives at Nintendo were saddened by his sudden death and paused to reflect how much he meant to the company. They realized that much of Nintendo's success as a videogame company was due to Yokoi.

Besides the Gameboy and Virtual Boy, Yokoi had a hand in most of the products that Nintendo released. Among his inventions were the pocket Game & Watch series, which included another of his innovations, the cross-key directional pad that Nintendo introduced on the NES controllers. The directional pad was part of every console that Nintendo released. The controller eventually replaced the joystick as the standard controller and although it later appeared on controllers by Sega and Sony, the actual design had been patented by Nintendo.

Tiger designed the game.com to compete against Nintendo's Gameboy, which had been around since 1989, and still kept amazing the company's executives by continuing to be popular. Nintendo announced late in the year its overall sales for the first six months of 1997 would top 180 billion yen and the company attributed this to the continued success of the eight year old Gameboy and its one year successor, the Gameboy Pocket. Nintendo took advantage of this popularity by introducing a new line of colorful Gameboy Pockets that were similar to the colorful Gameboys that had been released in 1994.

Because the Gameboy continued to sell, Nintendo put its proposed Project Atlantis color portable on hold. In mid-1997 the company announced that it was once again ready to tackle the new hand-held system. The Atlantis would be a 32-bit that would be based on a StrongARM CPU, which allowed up to thirty hours of play without changing batteries. Nintendo announced that development kits would be sent to third party developers at the end of 1997. Surprisingly, Nintendo did release a new console in the United States. Actually, the new console was a compact version of the SNES. Unlike the original, the new model did not have an expansion port and retailed at $100. Nintendo also re-released a slew of old SNES favorites such as a *Tetris/Dr Mario* combination cartridge and *Donkey Kong Country*. Curiously the release of the slimmer SNES came four months after Nintendo announced that it wouldn't be doing any more development for the 16-bit system.

What Nintendo did continue developing was its long promised 64DD bulky drive. After the 1996 Shoshinkai show many analysts believed that the 64DD would finally be released by the end of 1997 even though Nintendo hadn't made any official notices. When the year began many developers began hinting that the 64DD would be used as Nintendo's gateway to the Internet. This led to speculation that the 64DD would either have a built-in modem or an expansion port to link to a modem after its release. Many believed that Nintendo would make some kind of announcement at E^3 regarding its Internet plans, but the colossal trade event came and went and little was said about the 64DD. Nintendo did announce, however, that its long-awaited 64DD flagship game, *Legend of Zelda*^{64}, was going to come out on a cartridge first. This came as a shock to many since Nintendo had been highlighting the advantages of the 64DD with *Legend of Zelda*^{64}. The fact that the game was going to come out on a cartridge made many believe that the 64DD was never going to be released at all. Nintendo of America's VP of Marketing George Harrison assured the press that this was strictly a marketing decision. The company executives believed that a great title like *Legend of Zelda*^{64} needed to be available to all N^{64} owners; not only to those who would go out and purchase an upgrade. According to Nintendo the cartridge version would be released simultaneously with the 64DD version at the end of 1997.

Nintendo SNES 2

That plan changed in late May when Nintendo announced that the release date for the 64DD would be pushed back to March 1998 due to delays in the development of both the bulky drive and the disks for it. It would eventually be launched with four titles, *Legend of Zelda*^{64} among them, and would cost approximately $100. The release date of the cartridge version of *Legend of Zelda*^{64} remained at the end of 1997.

In November, Nintendo held its annual Shoshinkai show, which was renamed as Nintendo Space World. A playable version of *Legend of Zelda*^{64} was displayed and most attendees agreed that the game was even better than Nintendo's previous tour de force *Super Mario*^{64}. Unfortunately, the bad news was that release date of the 64DD, which had been displayed at the Nintendo Space World as little more than an unplayable mock-up, was once again pushed back, this time to June 1998. No mention was made of a US launch at all. Rumors circulated that Nintendo was pulling people from the N^{64} to work on a new Gameboy project, *Pocket Monsters*, and this was why the 64DD was constantly delayed. Others felt that the need for such a device no longer was necessary. When it had first been announced the 64DD seemed like a good idea. It gave the N^{64} an advantage over its CD-based competitors by offering discs that would contain up to 64 megabytes of storage, including space for the user to store data.

FOCUS ON SATOSHI TAJIRI

Before December 1997, few people outside of Japan heard of Pocket Monsters. However after the December 16 broadcast of a Pocket Monsters anime (a form of Japanese animation) that left 650 children suffering from epileptic seizures, the world learned quickly about Pocket Monsters. The seizures had been caused by excessive flashing on the TV screen and the anime's production crew quickly made sure that such a problem would never happen again.

Pocket Monsters were the brainchildren of Satoshi Tajiri. The collection of 150 creatures were inspired by Tajiri's childhood hobbies: watching Godzilla movies on Japanese television and catching insects, which he placed in jars where they battled each other as if they were the Japanese monsters that he worshipped.

Another love of Tajiri's was videogames. After getting hooked on *Space Invaders* in 1978, Tajiri was dismayed because he couldn't find enough information about videogames in the media. To fill the gap he created his own fanzine, *Game Freak*. By the time he was eighteen, Game Freak had a circulation of 10,000 copies and was a true magazine with each issue being printed, rather than photocopied. By that time the magazine also had other writers besides Tajiri and the group would get together and talk about games. The conclusion was that the then-current crop of games weren't very good so they decided to design their own. Game Freak then went from being a magazine to being a game design company. This wasn't just a whim on Tajiri's part. When he was sixteen he won a contest for a game idea that Sega had sponsored. He then spent two years learning how to program and then another year programming his first game, *Quinty*.

From the beginning Tajiri wanted to create a world where monsters could be caught and trained to battle other monsters. After Nintendo first released the Gameboy in 1989, Tajiri saw it as the perfect vehicle for his game to play on. He then spent the next six years designing and developing his idea. The result was Pocket Monsters, which Nintendo released on two separate cartridges in 1996. The games sold four million copies and broke all sorts of records.

Pocket Monsters brought new life to Nintendo's seven year old Gameboy and spawned an entire industry that included trading cards, toys, and, of course, the hit anime that introduced them to the world outside of Japan.

However with the *Legend of Zelda*^{64} cart containing 32 megabytes of data, the difference between the cartridge and the 64DD disk wasn't really that much. While many players liked the idea of storing data, they weren't thrilled with having to purchase an entirely new peripheral in order to do so. In addition, disk users would also have to contend with access time, a minor annoyance that didn't occur with cartridges.

Other types of peripherals, such as Interact's GameShark, were easier to deal with. With versions of the GameShark already available for the Saturn and the Playstation, the code-altering accessory finally became available for the N^{64} in late summer. The N^{64} GameShark had more in common with Galoob's Game Genie than to its Playstation and Saturn counterparts. This was because the N^{64} cartridge had to be inserted into the GameShark, which then had to be placed into the cartridge port of the N^{64}.

Since there was little that Nintendo could do to prevent code altering devices like the GameShark, thanks to the judgment against Nintendo in the Game Genie lawsuit, Nintendo decided to go after publishers of non-authorized N^{64} game strategy guides. According to Nintendo Prima Publishing was a chief offender and Nintendo decided to take legal action. As the year came to a close Prima hoped to find an agreeable resolution with Nintendo.

In addition to going against legitimate businesses like Prima, Nintendo also targeted illegal companies that were manufacturing counterfeit games, a practice that cost the videogame industry $810 million annually. In June Paraguay police raided a warehouse and discovered thousands of bootleg N^{64} and the SNES cartridges. Closer to home Nintendo of America filed a lawsuit against Bung Enterprises Ltd. of Hong Kong and Carl Industries Inc of California and charged them with illegally producing and distributing a device that threatened Nintendo's business. The *Doctor V64* was a device that had a built-in CD-R (CD Recordable) unit that had the ability to copy game code from N^{64} cartridges. Once a game had been copied to the CD-R, users merely had to attach the Doctor V64 to their N^{64} consoles and play the games from the CD-R instead of the cartridge.

All the companies were unsure how they would handle the illegal products that were coming out of Hong Kong. Their main concern was when Great Britain returned control of Hong Kong back to China at the end of 1997. China, on the other hand, was having its own battle with videogames. In an effort to reduce the flood of foreign games that were entering the country, the Chinese government began pushing patriotic games that promoted China's image.

Counterfeit games proliferated because they were inexpensive to manufacture and could be sold for a fraction of the cost of a legitimate game. Unfortunately, because the price of legitimate N^{64} cartridges was extremely high, many people bought the illegitimate games because the price was right even though none of the money went to the manufacturer or developer. Nintendo had to do something to keep the costs down.

Ever since Nintendo jumpstarted the ailing videogame industry with its NES, software developers were dependent on the console manufacturers. They had to sign exclusive contracts with manufacturers and then pay licensing fees just to develop a game for a particular system. The publisher then had to rely on the console manufacturer to assemble the games. The software publisher then had to pay the manufacturer up front and had to order a predetermined amount of games. This was a tricky proposition. If they ordered too many copies and the game failed, they were in a position

to lose a lot of money. On the other hand, if the game was a success and they didn't order enough, they would again lose money from lost sales. Still, the market was so lucrative that many companies were willing to take the risk. This way of doing business was practiced for over ten years and had been adapted by all of the hardware makers. However when a system became too successful its manufacturer was deemed a monopolist. This was the stigma that had always been attached to Nintendo.

All this ended in mid-1997 when Nintendo had to change the way it conducted business with European companies. Under strict new laws were passed by the European Economic Commission to promote competition within Europe, Nintendo could no longer award licenses to European software to develop Nintendo compatible games. And since developers no longer needed a license to create games, they no longer had to create games exclusively for the N^{64}. The only exception to this rule pertained to games that featured Nintendo trademarks. Another aspect of the law prohibited Nintendo from being the sole manufacturer of cartridges.

The new European law didn't affect Nintendo's dealings in the rest of the world.

However analysts predicted that the rest of the world would eventually feel the results. Once the Europeans were free from the licensing and manufacturing restrictions, the expectations were of lower production costs leading to lower prices. However if the prices dropped to less than those in the United States and the rest of the world, a gray market would develop as non-European stores and distributors scrambled to acquire their products from lower-priced European sources.

With the absence of a licensing policy, Nintendo's revenue would depend upon its own products and not those of third party developers. Unfortunately Nintendo was not in a good position with its own products. In June the company had announced five new high-profile N^{64} games at E^3 that were targeted for a holiday release. Two of those titles, *Goldeneye* and *Tetrisphere* had already been released in August so were no longer new enough to create a holiday frenzy. The remaining three, which included *Zelda*^{64}, were delayed until after the holidays.

Nintendo's problems were analyzed in time for the N^{64}'s first birthday on September 29 when *Electronic Gaming Monthly* took a look back to see what Nintendo accomplished in the past year. *EGM* found Nintendo's hardware and software to be exceptional but also felt that the company lacked in pricing and third party development. This was due partly because the high cost of cartridges. A third-party developer had to pay as much as $35 a cartridge to produce an N^{64} game. This was compared to the $7 that it took to produce a Playstation title. Following the report, Nintendo, in an effort to spur development and bring out more titles, reevaluated the costs that developers accrued and cut that amount in half. All in all *EGM* was pretty much satisfied with the N^{64} and anticipated that the situation would improve with the release of the 64DD.

Someone else who anticipated the release of the 64DD was Hiroshi Yamauchi, the 69 year old president of Nintendo of Japan. In September Yamauchi told the Japanese newspaper *Asahi* that he would retire sometime in 2000. His goal was to step down after the release of the 64DD. Yamauchi believed that the 64DD was going to cause a revolution in the gaming industry and he wanted to remain in charge long enough to lead that revolt.

The announcement by Yamauchi came several months after Sony Computer Entertainment of America named a new CEO to replace Shigeo Maruyama who moved on to a management position with Sony Computer Entertainment. Maruyama was replaced by former SCEA executive vice-president, Ken Kutaragi, who was also known as the 'father of the Playstation'. Kutaragi also retained his former duties involving further research and development of Sony's game machine.

One part of Sony Playstation development that Kutaragi wasn't involved in was third party development. Because the Playstation was such a hot selling console, developers went out of their way

Reality Quest Game Glove

to develop third party controllers that would separate them from the rest of the pack. One company succeeded. Reality Quest's *The Glove* was similar to Mattel's Power Glove for the NES. It wrapped around a player's wrist and offered them one-handed play. Reality Quest initially released its Playstation Glove version in the fall with a retail price of $89.95 and planned Saturn and N^{64} Gloves for the future.

One new peripheral that Sony planned to release was an analog controller with a vibrating feedback feature that was similar to Nintendo's rumble-pack. A lawsuit from Nintendo was expected but no such lawsuit ever emerged because Nintendo claimed that the patent for the technology went to two developers from Atari Games back in 1991. Whatever the source of the rumor, Sony announced in late summer that it was halting production of the new controllers for the US and it told its developers not to code any of the feedback features into games that were intended for the US. Although Sony didn't cite any reasons for the cutback, reasons other than the rumored lawsuit were thrown around. Some felt that the quality of the analog controller would have suffered had the vibrating feature been included. Others thought that price was an issue. Sony's rumored intention was to pack the new controller with the Playstation by Christmas time. However it was felt that the cost and logistics to do this was simply impossible.

Since its inception in 1995, E^3 became the industry's official showplace. In 1995 and 1996 the massive exhibition had been held at the Los Angeles Convention Center. Although several hundred miles from Silicon Valley, Los Angeles was considered an ideal spot because of its close proximity to most videogame companies operating on the West Coast. Attendees traveling in from other parts of the country and world, found Los Angeles to be a fairly easy destination to get to.

Despite its success, the IDSA decided to change the place of venue in 1997. Instead of the West Coast, the show moved to Atlanta's Georgia World Congress Center for a two year run. Although the IDSA claimed that the East Coast show was a success, the attendance dropped 40% from the prior year. While some claimed that the drop in attendance was due to the declining number of videogame developers, most attributed it to the fact that it just cost too much money for the Pacific based companies to send their employees and equipment to the East Coast.

Videogame arcades experienced a resurgence in 1997 thanks to the opening of several new mega-arcades. Gameworks, the massive arcade that was a joint venture between Sega, Universal Studios, and DreamWorks SKG, opened its doors in Seattle with a grand Hollywood-like gala on March 15. It was quickly followed by one in Las Vegas and another outside of Los Angeles. Nearly 100 additional centers were planned by the year 2002. While each site would have at least one unique attraction, they would also have similar sections that would appeal to different types of gamers. One section would feature classic arcade games while another would have brand new cutting-edge machines that would be on display for testing.

As Gameworks and other entrepreneurs opened more and more arcades, the ongoing debate regarding the content of these games continued to rage. Arizona proposed a new bill that would prohibit minors from playing violent games. What troubled many opponents of game ratings was Arizona's definition of *violence*. According to the bill, *violence* was defined as "graphic, bloody depictions of torture, sexual assault, cannibalism, mutilation, murder and urination or defecation that

occurs in a morbid or violent context." The proposed law made it a misdemeanor to distribute or even display violent (as defined in the bill) videogames to minors. The bill wasn't limited to videogames; videos and magazines were also included. Unlike previous laws that put the emphasis of ratings on the software publishers, Arizona's proposed bill made it the retailer's responsibility to keep the *violent* games away from minors. Fortunately for retailers throughout the state, the bill was not approved when brought before the Rules Committee, the third step in a four step process.

At the Federal level, the National Institute for Media and the Family teamed up with Senators Kohl and Lieberman, the two who were responsible for game ratings in the first place. They issued their annual report card on how the industry had complied with their suggestions. On the whole, the Senators were pleased. By the end of 1997 most software packaging featured ratings. However, the Senators weren't happy with retailers because most stores didn't have a policy that restricted minors from obtaining games with mature themes; the very same problem that Arizona had attempted to institute into law. The Senators did not rate the arcade industry, which was still in the process of implementing its rating system.

Although the Senators were happy with the industry on the whole, they did use the term '*digital poison'* to describe violent computer games such as *Quake* and *Postal*. Doug Lowenstein, president of the IDSA, defended the games by saying that not all games were intended for children. Statistics showed that 73% of PC gamers and 46% of videogamers were over the age 18. The whole reasoning behind the ratings in the first place was to alert consumers, especially parents, whether a game was suitable or not for a child.

When 1997 came to an end, sales for videogame software and hardware in the United States reached $5.2 billion, a new record high. And much of those sales were attributed to Sony. In April, Sony released figures that proved that the Playstation was the world's most popular system. Five million units had been sold in Japan with the United States following close behind with four million units. An additional 2.2 million Playstations had been sold in Europe. Sony proudly announced in August that the twenty millionth Playstation had been sold. The April figures nearly doubled by October. The demand was so high that Sony had to increase its monthly Playstation production to two million systems. Even though other companies had sold consoles in mass quantities that rivaled Sony in the past, the amazing thing about the Playstation was that it had been released by a company that didn't have any prior videogame experience.

The future of the Playstation looked sunny. Analysts believed that the Playstation's popularity would carry it through 1998.

CHAPTER TWENTY-FIVE
1998

When 1998 began, Sony and Nintendo were both claiming that their companies were number one. Because their manner of accounting differed both companies were technically correct. In terms of revenue Nintendo controlled 53% of the industry with Sony controlling 39% and Sega, 7.6%. However the N^{64}'s cartridges cost more than the CDs for Playstation and Saturn. On top of that Nintendo also counted income that it still generated from its SNES, which commanded 67% of the 16-bit market and Gameboy, which claimed an overwhelming 85% of the handheld market.

Sony was more interested in quoting actual sales figures. Nintendo had sold 3.35 million N^{64} consoles in North America during all of 1997. Sony had sold 3.8 million Playstations between October and December alone! By the end of the year Sony had sold 47.3 million Playstations in North America since its September 1995 introduction. The N^{64}, released only a year after the Playstation, could only be found in 4.9 million North American households.

Throughout the year Nintendo and Sony fought each other in the battle of the price tag. Immediately before the May opening of E^3, Sony announced what appeared to be a temporary lowering of the Playstation's retail price from $149 to $130. In reality what the company did was offer a Playstation configuration, which included a new *Dual Shock* controller. The lower price applied to the existing Playstations in stock, which didn't include the new controller. Nintendo, which had once stated that it would match any competitor's price-decrease within 24 hours, followed through on its promise. The price of the N^{64} was temporary lowered to $130. Although both companies claimed that their temporary prices would only last through September, they actually became permanent then when Sony lowered the price of the Dual Shock systems to $130. Nintendo responded by including a coupon with its $130 system that was good for $10 off any Nintendo software or peripherals.

As Nintendo and Sony fought for the top position, it was plain to see that Sega was no longer part of the equation, even though the Saturn was outselling the N^{64} in Japan. North American sales for the Saturn had fallen so dramatically during 1996 that Sega of America made the decision to stop supporting the console. Distributors and retailers were warned right before Christmas to place their final Saturn orders because the merchandise wouldn't be available afterwards. The company cut 30% of its work force in January as retail stores began selling Saturn software for as low as five dollars. By March the price of the remaining consoles were lowered to $100. Although denied by Sega of America, rumors persisted that the company would stop shipping the console to America after March 31.

Despite the gloomy atmosphere at Sega of America, the executives at Sega Enterprises in Japan were determined to begin the new year on an optimistic note. Sega's chairman, Isao Okawa, officially announced at a New Year's Eve party, that Sega and Microsoft were working together on Sega's new system, the Dural. Before the end of January that name had changed to *Katana* (an extremely sharp, short, Japanese sword typically carried by warriors). Sega announced that the Katana would be released in Japan by Christmas 1998 and in the rest of the world in September 1999. The company also said that the console might also be sold in Japan by NEC and Hitachi under their own brand names, as well as by Sega.

Even with the optimistic news concerning the new console, the president of Sega Enterprises, Hayao Nakayama, suddenly resigned in February. Many believed that Nakayama stepped down because of fallout from the failed Sega/Bandai merger of the year before and the lackluster

performance of the Saturn. He was replaced by the former CEO of Sega of America, Shoichiro Irimajiri.

Irimajiri's position at Sega of America was replaced by Bernie Stolar, who also assumed the role of Chief Operating Officer. Stolar continued promoting the Katana and announced that the console's American release would be backed by a $100 million marketing campaign; the most expensive in gaming history. Stolar was overly optimistic that his company would claim 50 percent of the market share.

The 128-bit console was officially introduced to the press on the eve of E3. Before this took place however, one last change was made. The Katana name was changed to *Dreamcast*.

The Dreamcast was a departure from previous Sega consoles. One thing missing was Sega's name and logo. In an interview with a Britain's Sega Saturn Magazine, Irimajiri stated that market research showed that casual gamers did not see Sega as a favorable brand name. Sega wanted the Dreamcast to stand on its own merits and not be brought down by the Sega name if that was the case. The same research did show that the Sega name carried more weight when it came to software so the company would concentrate more on that.

Sega Dreamcast VMS

Besides the lack of a logo, there were other differences between the Dreamcast and the consoles that preceded it. One was its analog/digital controller, which featured two ports for expansion packs. The first of the expansion packs was to be available immediately and was called the Visual Memory System (VMS), which Sega touted as the "world's smallest portable game card". What made the VMS different from the memory cards for the Playstation was that it could also be used as a stand-alone gaming unit, in addition to storing game data. Because the VMS had action buttons, a directional pad, and its own small LCD screen, players could also use it to program special features such as secret moves for fighting games. Two VMSes could be docked together so gamers could transfer data between the two. Sega announced that graphically primitive stand-alone games would also be available.

The other innovative feature of the Dreamcast was its ability to hook up to the Internet. Sega planned to release the console with a built-in 33.6K modem so gamers could access an online gaming network that was being set-up. Sega promised that the modem would be upgradeable so users could switch to broadband or cable modems as they became available. Surprisingly, representatives from Sega of America claimed that the US Dreamcast would not include an internal modem. Sega of America planned an external modem for the console although it was undecided whether the modem would be included with the unit or available optionally.

Sega planned to release the Dreamcast in Japan on November 20 for between $150 and $225. US gamers wouldn't be able to purchase the unit until Fall 1999.

In October, with only a month remaining before the launch of the Japanese Dreamcast, Sega showed off its online capabilities at the New Challenge Conference in Tokyo. Sega proudly displayed its web page, which it called *Dricas* (short for Dreamcast). Dricas offered a number of features such as an e-mail system called *Dream Flyer* and *Daily DC News*, a virtual newspaper. No mention was made regarding which Internet browser the Dreamcast would use, or whether the system would even

be packaged with one or not. However the company's plans included WebTV compatibility and online multiplayer games, beginning with *Sega Rally 2*. The company also revealed several peripherals such as an arcade stick, racing controller, steering wheel, fishing rod, and a keyboard. As far as software support for the Dreamcast, Sega promised that it would release one new game a week beginning with the system's launch through the end of the year.

As promised, promotion was the name of the game for Sega and the Dreamcast. The Dreamcast logo was everywhere at the Tokyo Game Show, which followed the New Challenge Conference. Dreamcast bags were even handed out at local train stations. Surprisingly, with all the emphasis on the Dreamcast, Sega of Japan still set aside a tiny portion of its booth for the still-supported Saturn.

Everything appeared to be going flawlessly for Sega in the weeks leading up to the November 20 launch. However in early November, a problem occurred on the PowerVR production line resulting in far fewer chips than what Sega had ordered. The consequence of this was that fewer consoles were available at launch time. Anticipating shortages, some local Japanese stores informed gamers who had reserved Dreamcasts in advance, that they probably wouldn't receive the consoles right away. With the prospect of less Dreamcasts on the market than anticipated, Sega changed its software release plans. Instead of a new title each week the company was going to release three groups of games: one at launch, one before Christmas, and the last on January 14.

Despite the fears of shortages, Sega delivered the Dreamcasts on November 27 as promised. Lines formed outside major stores in the Akihabara district of Tokyo. Everyone who had preordered a Dreamcast was able to purchase one for $260, a marked difference from the $225 that Sega had originally quoted. Even those who hadn't preordered were able to take one home. By the end of the day, Sega had delivered 150,000 units. Four games were also offered and the most popular was *Virtua Fighter 3tb*, which was sold with nearly every console.

Sega Dreamcast

The launch of the Dreamcast almost paralleled that of the Saturn nearly four years earlier. By the end of day on November 29, 1994, Sega had shipped 150,000 Saturns along with an almost equal number of *Virtua Fighter* discs. Sega executives hoped that the comparisons between the two systems ended there.

Although the Dreamcast wasn't officially available in the United States in November, its architecture was; at least in arcades. Introduced at Japan's JAMMA 98 trade show in September, Sega's new Naomi arcade board was basically a sister chipset to the Dreamcast. Naomi allowed Sega to distribute high quality arcade games for a third of the price of its predecessor, the Model 3. The compatibility between the two systems meant that games played in the arcade could be saved and brought home to the Dreamcast in a fashion similar to what SNK did with its Neo•Geo systems. Although Sega didn't specifically announce any games that would take advantage of this feature, the company did explain that the data saving procedure would be done via the VMS.

Since the Naomi was basically the same chipset as the Dreamcast, it was powered by NEC's Power VR2 chip. This is the chip that Sega chose instead of the one from 3Dfx, which then caused a lawsuit between the two companies. In August Sega and 3Dfx announced that they reached a confidential agreement to their lawsuit.

Ironically, as Sega of America braced for its Dreamcast debut, a new version of the Genesis was quietly released in American stores. Dubbed *Genesis 3*, the new console was the size of a portable CD

Sega Genesis 3

player and was fully compatible with all of the Genesis cartridge-based games yet. Interestingly, the Genesis 3 hadn't been released by Sega at all. Majesco, a New Jersey based software distributor, licensed the Genesis name from Sega and released the console on its own with a retail price of $50. The Genesis 3 was only the beginning for Majesco, which planned to release new inexpensive Saturns, Game Gears, and Picos in 1999.

Sega, with its new and old systems appearing on store shelves, was not the only competition that Nintendo and Sony had to contend with. VM Labs' Project X was still waiting in the wings.

After being something of an anomaly for three straight years, Project X finally came out of hiding in January at the Winter CES in January. VM Labs finally permitted a select group of people to actually witness a demonstration of the hardware that had long been written off as vaporware by industry skeptics. While the guests found the hardware to be impressive, VM Labs still was tight-lipped about the system. Company spokesmen stated that the console would be manufactured by several companies but they couldn't reveal the names of those companies. Third party support was happening and development kits (which cost only 1/3 as that of a Playstation development kit) had been sent out to twelve developers (whose names remained confidential). Game development was said to be relatively easy. At the CES demo, engineers were able to take the source code of *Doom* and have it run on Project X in a mere two days. Even more impressive was the fact that the playable version of *Doom* only utilized 15% of the system's resources. At least six games were expected to be available when the console finally made its grand debut in late 1998. VM Labs optimistically revealed that it expected to sell millions of units by 1999.

Many of the unanswered questions from CES were revealed at E^3. Instead of being a new stand-alone game console as had been expected, Project X was going to be a chip that would enhance the capabilities of DVD players, including the ability to play games. The inexpensive chip would be powerful enough to serve as the player's MPEG-2 decoder and would replace the MPEG-2 decoding hardware that the DVD players currently used. VM Labs insisted that the DVD player manufacturers would pay very little, if anything, for the chips. VM Labs expected to make its money by charging third party developers royalties for the software that they created to use on the Project X equipped DVD players. The system interested many of the top names in software such as Hasbro Interactive, Activision, and Capcom. VM Labs seemed to be offering highly advanced DVD players that would cost no more than standard DVD players. The first Project X enhanced systems would begin appearing in the beginning of 1999.

By year's end, VM Labs shed the Project X moniker and announced an official name for their chip. The *Nuon* name "reflected the wide-reaching power of a technology capable of introducing millions of consumers to interactive entertainment through their television sets", according to VM Labs' CEO, Richard Miller.

While DVD players with the Nuon chip would be able to play specially designed videogames, even DVD players without the Nuon chip would be able to play games. Canada-based Digital Leisure released *Dragon's Lair*, the first game that could be played on any DVD player.

Although *Dragon's Lair* had been released for home use may times over the years, the DVD version was the first to be completely faithful to the original arcade laser-disc game. The disc also

included exclusive interviews with Don Bluth and Rick Dyer, the original designers of the game.

Throughout the year as Sega readied its plans to release the Dreamcast, Sony slowly began revealing its plans for a successor to the Playstation. Early rumors for the new console indicated that it would be backward compatible with the original Playstation. Critics quickly began weighing the merits and pitfalls of such capabilities. On the plus side was the fact that one could play a pre-existing library of games as soon as they bought the new console. However history showed that backward compatibility didn't necessarily spawn success. A good example of this was the Atari 7800, the only console to ever offer built-in backward compatibility. Even though it could play nearly all of the games that had been made for the 2600, the 7800 had never achieved popularity. On the other hand, the 7800 hadn't been released until after the NES successfully entered the American market by which time the Atari 2600 became passé.

If the rumors were true and Sony did decide to release a backward compatible console it ran the risk of selling a product that contained features that nobody was going to use. Developers might continue to program games that would play on all Playstation incarnations and ignore the new features that would set the new console apart from the old one. If that happened then there would be little need for a new console since all of the games would still play on the old one.

In addition to compatibility, another issue that Sony had to decide about was whether the new system should be CD or DVD-based. Sony polled its developers to see what they thought.

In order to regain much of the thunder that Sega was receiving unfavorable publicity for the Dreamcast, Sony began discussing the Playstation2 publicly in May at E^3. Sony made developers happy by promising 3D graphics that would rival those on the Dreamcast. This would allow developers to create products that would have a similar look on both machines. On the whole developers liked what they heard about the Playstation2's capabilities although they felt that development for the Playstation2 would be more difficult than that for the Dreamcast. And since the Playstation2 wouldn't incorporate the Windows CE operating system like the Dreamcast, PC games would be more difficult to port over.

Despite all of the hoopla, the Playstation2 was still in the planning stages and Sony couldn't even cite when the system would be available. Sony didn't have any intentions on releasing the new system until after sales began to slow down on the original Playstation. Most analysts didn't expect to see the new system until the year 2000.

With the Playstation2 still years away, Sony had other new hardware up its sleeve that it planned to release in Japan by the end of the year. The $30 PDA (Personal Digital Assistant) was announced in February and was similar to Sega's VMS. The PDA could plug into the Playstation like a standard memory card. Gamers could then load characters from a Playstation game into the PDA. They could then train these characters even when a Playstation wasn't available. When the gamer had access to the Playstation, the character could then be downloaded back into the game. The PDA contained an infrared function so gamers could trade characters with one another easily.

However the PDA wasn't meant to be merely a Playstation peripheral. Sony planned to release simple games that would play only on the PDA. Software would be available on standard Playstation discs that could be loaded into the PDA via the game console. Sony planned to have twelve titles available upon the PDA's release. At least one third party company, Square, also planned to support the PDA.

In November Sony gave the PDA a new name: the *Pocketstation*. A December 23 release date was established. However two weeks before that date Sony felt that it couldn't produce enough Pocketstations in time for release date to satisfy the anticipated demand. Sony decided to delay the release until January 23 to avoid shortages.

Sony Pocketstation

Although Nintendo didn't have any plans on releasing a PDA-type, the company did announce a standalone unit that was very similar to the Tamagotchi. The *Pocket Pikachu* allowed gamers to care for their own Pikachu and also doubled as a pedometer. The more a person walked, the stronger the Pikachu would become.

Nintendo Pocket Pikachu

Pikachu was the most popular of the 150 Pocket Monsters, which had taken Japan by storm. Basically a modern take-off of the children's game 'Rock, Paper, Scissors', gamers assumed the roles of trainers who used their Gameboys to search and collect as many of the different creatures as possible. Since some Pocket Monsters were harder to find than others, gamers could trade captured monsters with their friends by connecting two Gameboys via the video link cables. Trading was essential since Nintendo marketed the games on two separate cartridges: Pocket Monsters Green and Pocket Monsters Red. All 150 Pocket Monsters couldn't be found on both cartridges so gamers had to buy both, or trade with friends, in order to collect them all.

Pocket Monsters had become such a phenomenon in Japan that Pocket Monsters stores sprung up selling anything that was remotely related to Pocket Monsters such as dolls and card games. American analysts thought that the phenomenon could never happen in the United States because of the cultural difference and it was widely believed that Nintendo wouldn't even attempt to release the games outside of Japan. However with over 8 million Pocket Monsters cartridges sold, making it the best selling videogame in Japanese history, Nintendo's incentive to release them world-wide was overwhelming.

When E^3 opened in May the big news was that Nintendo was going to release the Pocket Monsters, renamed *Pokémon*, in the United States in September. The games had been renamed because when Nintendo went to trademark the Pocket Monsters name in the United States, they discovered that someone already owned it. *Pokémon* was merely an abbreviation of Pocket Monsters.

Many critics felt that Nintendo was taking a big risk by releasing *Pokémon* in the United States. They were certain that American children would not embrace the characters the way the Japanese had. Despite this criticism, Nintendo planned a major marketing blitz to ensure that the Americans would endearingly welcome the Pokémon their September release. In late August, Nintendo dispatched a fleet of ten bright yellow Volkswagen Beetles that had wings and fins added to make them look like Pikachus. On board each car was an SNES and Super Gameboy. When the cars appeared at local events the *Pokémon* games shown to the crowds.

The popular *Pokémon* cartoons were dubbed in English and scheduled to appear on American

television (the seizure-inducing episode would not be aired). The *Pokemon* characters were heavily licensed and would appear in electronic games from Tiger and as plush figures from Hasbro. Wizards of the Coast, the makers of the *Magic* card games, planned to offer an American version of a *Pokémon* card game, which like all -related things, was a enormous success in Japan. And the *Pokémon* weren't only going to be relegated to the Gameboy. A game called *Pokémon Snap* was planned for the N^{64}.

While Nintendo anticipated that *Pokémon* would take-off in the United States, the company presented other products at E^3.

Nintendo Gameboy Camera & Printer

The $50 Gameboy Camera went on sale in the United States on June 1. The unit looked like a cartridge with a round revolving ball on its top. The ball actually housed a low-res black and white camera. Photos taken by the camera could be manipulated on the Gameboy screen or traded with other gamers by transferring them from one Gameboy to another with the link cables. Although the camera was capable of saving up to 30 photos, gamers could also their photos by printing them out on an optional $60 Gameboy Printer. To capitalize on the *Pokémon* phenomenon that Nintendo anticipated, a special limited-edition bright yellow Pikachu printer was planned.

Even though the Gameboy Camera and Printer were peripherals that had been designed to prolong the life of the nine year old Gameboy, Nintendo also had plans to replace the pocket console.

Nintendo Gameboy Light

On April 14, Nintendo of Japan released the *Gameboy Light*. This $55 unit was essentially a Gameboy Pocket with a built-in backlight. Although this was a feature that many Americans wanted for a long time, Nintendo didn't plan to release the Gameboy Light outside of Japan.

The reason that Nintendo decided against selling the Gameboy Light outside of Japan was because the company was more interested in releasing another product that the public had been hungering for: a Gameboy with a color screen.

Nintendo showed a plastic-protected *Gameboy Color* at E^3 in May. Unlike Nintendo's previous attempt at a color portable, the 32-bit Atlantis, the Gameboy Color was an 8-bit unit just like its predecessors. It was compatible with all of the existing monochrome Gameboy games and while the games would display in shades of gray, gamers could activate a palette and assign several colors to the old games. Nintendo also pre-programmed colors for selected classic Gameboy games. New color games would also play on the old units but naturally they wouldn't be in color.

The new screen was capable of displaying up to 54 simultaneous colors from a palette of 32,000. While color was the main showcase of the Gameboy Color, there were other features that set it apart from the previous models. Even though the new unit used the same Z-80 chip as the original, it ran at twice the clock speed. The screen buffer was doubled from 8k to 16k and RAM was raised to 32k from the original 8k. The new color games that Nintendo planned to be compatible with the existing

Gameboy Color

Gameboy and Gameboy Pockets wouldn't take advantage of these new features. However Nintendo also planned to offer a new line of cartridges that would only play on the Gameboy Colors and these games would benefit from the new features. Nintendo introduced several new cartridge colors so gamers could tell which games played on which units. The standard black and white games would come in gray cartridges as they always had. The new color games that were compatible with the old monochrome consoles would come in black cartridges.

Finally, the games that would only play on the new Gameboy Color would come in clear cartridges. The Gameboy Color also had an infrared port near the cartridge slot that would be used for linking systems together.

Nintendo released the highly anticipated $79 Gameboy Color worldwide in Japan on October 21 and in the rest of the world on November 18, 1998. Unfortunately, another eagerly-awaited Nintendo product once again failed to materialize. The 64DD had not been shown at E^3 and games like *The Legend of Zelda: The Ocarina of Time*, which had been scheduled to appear in the 64DD format, were shown only in cartridge form. Despite the absence, Nintendo still planned to release the 64DD that summer in Japan only. A US release was pushed back to after Christmas. This timetable changed dramatically as 1998 progressed. The summer Japanese date was removed within a month after E^3 and a new date wasn't announced. Nintendo of America's president, Howard Lincoln, stated that he was certain that the 64DD would be released in Japan before the end of the year but an American debut before 2000 was very doubtful. This statement was contradicted in October when Nintendo formally announced that the 64DD would be delayed in Japan until June 1999. In a related statement, Nintendo announced that it would not hold its annual Spaceworld exhibition that November. The company decided to delay the show until shortly before the 64DD's release.

No matter which format it would be available in, the public clamored for *The Legend of Zelda: The Ocarina of Time*. Over 325,000 advanced orders were placed before for the game's actual November 23 release. By the end of the year Nintendo shipped over 2.5 million copies of the game. In just six weeks, *The Legend of Zelda: The Ocarina of Time* became the best selling game of 1998 and generated more revenue than any movie released during the same period. Nintendo predicted that worldwide they would sell more than 6 million copies of the game by the end of March 1999.

Unfortunately the overall outlook for the N^{64} didn't appear bright even with the success of *The Legend of Zelda: The Ocarina of Time*, The cartridge-based system lagged behind the Playstation and Saturn in Japan. Although *The Legend of Zelda: The Ocarina of Time* had been embraced by the buying public, many other long-awaited titles were missing their release dates. Nintendo desperately needed new quality products to make the N^{64} more attractive, especially in light of the constant delay of the 64DD. One step in the right direction was the December release of the *Expansion Pak*, a new peripheral that fit into the N^{64}'s 'Memory Expansion' slot. The $30 peripheral increased the N^{64}'s internal memory from 4 megabits to 8 megabits. Although this additional memory had originally been intended to support the 64DD, it was welcomed by many N^{64} game designers who previously had to cut features from their games because there simply hadn't been enough memory to support

them. The additional memory also enabled new N64 games to display in a much higher resolution on TV screens. Designers were also pleased with how easy the additional memory was to work with. Unlike other game consoles that had certain parts of memory reserved for specific features, all memory locations in the N64 could be used for whatever the developers wanted.

Nintendo N64 Expansion Pack

The astounding success of the Nintendo Gameboy naturally led to the release of competitive hand-held portables. Although several systems, including the Atari Lynx and Sega Game Gear, had been released over the years, none could ever gain a foothold in the market. Naturally, other companies believed that they could fare better. SNK, the maker of the Neo•Geo consoles, decided to enter the Japanese hand-held market in October with a small monochrome portable called the *Neo•Geo Pocket*.


*SNK Neo*Geo Pocket*

Early prototypes of the Neo•Geo Pockets looked like slightly larger versions of the Dreamcast VMU. This was probably not coincidental since the Neo•Geo Pocket had been designed to link up with the Dreamcast, as well as with other Neo•Geo Pockets. The final production model that was actually released was a horizontally-held console similar to the Game Gear. Although the initial release didn't include any games that were Dreamcast compatible, SNK revealed that it would release a Neo•Geo Pocket version of *King of Fighters* that would work in tangent with the Dreamcast version.

Initially, SNK didn't plan to bring the Neo•Geo Pocket to the United States. This changed shortly following the hand-held's Japanese release when SNK revealed that it would release the Neo•Geo Pocket in the United States in April 1999.

SNK was not the only company that planned to compete against Nintendo in the hand-held arena. In May, Bandai, the developer of the Tamagotchi, announced that it too would release a monochrome hand-held system. The Bandai system's 2.5 inch screen would have twice the visual capacity of the Gameboy. This would give the console limited full-motion video and the give the illusion that several characters were moving independently. Bandai expected the system to be available in Japan by the end of the year and that sales would reach 304 million by March 1999. Like SNK, Bandai initially didn't plan to release the new system in the United States.

The Bandai system, which had been designed to compete against the Gameboy, had been partly designed by Gumpei Yokoi, designer of the Gameboy, through a partnership between his Koto Laboratory and Bandai. Yokoi tragically died before he could complete the system so his designers finished it for him. In his memory they designed a puzzle game called *Gun Pey* for the console.

By October, Bandai had signed on over 30 third-party companies to design games for the console that was now officially called the *Wonderswan*. Most of the games were targeted for a Japanese

audience but Bandai began hinting that if software suitable for Americans was available, they might release the console in the United States.

Meanwhile, Tiger Electronics' unpopular game.com was still available. Tiger surprisingly re-released the unit in a smaller compact edition called the *game.com Pocket Pro*. The new $50 unit contained the same features as the original but was smaller due to the omission of the second cartridge port. Tiger also released a slew of new titles such as *Centipede*, *Frogger*, and *Monopoly*.

Tiger game.com Pocket Pro

Tiger had been able to obtain rights to *Monopoly* easily because the company had been purchased by Hasbro for $335 million during the first quarter of the year. Hasbro was also the parent company of Parker Brothers, which owned *Monopoly*. *Centipede* was available for the game.com in a similar fashion. In another highly publicized purchase, Hasbro Interactive, purchased Atari's remaining assets from JTS for a mere $5 million. This sale gave Hasbro ownership of more than 75 classic Atari titles such as *Asteroids, Missile Command, and Pong*. Also included in the sale were the various consoles that Atari marketed over the years such as the 2600, 7800, and Jaguar, as well as the Atari line of computers. What wasn't included in the sale were the Atari arcade games that were owned by Williams. In the case of pre-1984 games that appeared in both arcade and home versions, Williams retained the arcade rights and Hasbro Interactive acquired the home rights. Many classic gaming fans secretly hoped that Hasbro Interactive would re-release classic games for the 2600 and Lynx but Tom Dusenberry, Hasbro Interactive's president, stated that the company planned to "bring these classics back to life by updating them with the latest technology and interactive game design". Dusenberry hoped to duplicate the success that Hasbro received following the release of the updated *Frogger* from the year before. *Centipede* was the first Atari game that Hasbro Interactive updated with versions available for the PC and Playstation.

Hasbro Interactive's purchase of Atari caused the Securities Exchange Commission (SEC) to take a second look at JTS. In order to receive SEC approval for the 1996 merger of JTS and Atari, JTS had to promise to keep Atari afloat. According to rumor however, after the two companies merged, JTS paid its executives back bonuses with Atari money. At the same time Atari severed its existing contracts with its Jaguar developers and no new Atari R&D was instituted. The merger with JTS allowed Atari to stay in business longer than it might have without JTS. However without any sales or R&D, was Atari really still in business? This is what the SEC wanted to find out.

Regardless of what the SEC discovered, Hasbro Interactive's purchase of Atari made many classic fans happy since this meant that the Atari name and logo would continue. What also made them happy was the fact that Activision decided to re-release its popular pack of Activision 2600 classics for the Playstation. Unfortunately the final result was less than what the fans had hoped for. The interface was poorly designed and the Playstation controller did not work well with the 2600 games.

The original 2600 games had been written in a form of assembler language that could only be understood by computers with a 6507 CPU. Since the Playstation's R3000A RISC processor naturally couldn't understand the original code, there were only two ways that the Activision could get the old games to play on the new system. One was by rewriting the game altogether. This method would have a programmer study the original game's look and feel and write a version of it in a language that the Playstation could understand. The danger of this was that unless the programmer was thoroughly

familiar with the original game, important aspects of the game, such as Easter Eggs, may not be programmed into the new version.

The second method was to emulate the original code that was saved as binary files called ROMS. An emulator was a program that could read the original 6702 code and translate it into something that the Playstation could understand. The danger of using emulators was that any bug that existed in the original design would be carried over into the translated. However from a nostalgic point of view, the emulated version was the way to go since it allowed gamers to play the actual original game just as it had originally been designed.

Since Activision owned all of the games that were featured on the collection, the company was free to do whatever it wanted with the ROMS. Unfortunately for the manufacturers, ROMS for virtually every game that ever existed, were available for free download from the Internet. Various emulators, which could translate the different ROMS to on PCs, were also freely available. This led to a legal tug-of-war between those who believed that the old games should be preserved and freely distributed and those who believed that only the legal copyright holders should have access to the ROMS.

All sides agreed that the emulation programs were perfectly legal. Anyone with the know-how could sit down and write an emulation program for any computer that they wished. The legalities come into play with the software that needed to be emulated. The general belief was that any game that was no longer commercially available was ripe for emulation. The games from companies that were no longer in business were specifically prime candidates.

This however wasn't true and the IDSA was quick to seek out and shut down any Internet sites that were illegally distributing ROMs. People failed to realize that games were protected by copyright laws whether they were still being distributed or not. Current copyright laws protect any game that was written after 1978 for 75 years following its publication (or 100 years after its creation date - whichever is longer).

Although the actual legalities are in question, the general rule of thumb is that someone can possess a ROM image only if they own the original game. However someone who owns the Atari 2600 version of *Defender* doesn't have a right to the ROM image of the arcade *Defender*. Although it was highly unlikely that the IDSA would file suit against individuals for owning illegal ROMS, the organization was going after the distributors of the questionable ROMS.

While the IDSA was in favor of getting rid of questionable ROMs, the organization took an opposite view concerning the removal of violent videogames. Following fatal school shootings in Jonesboro, Arkansas and Springfield, Oregon, two Florida politicians proposed a ban on all graphically violent videogames. The IDSA quickly responded with a warning that such a law was a 'serious threat' to all videogames in Florida. And, as they pointed out, when a bill became a law in one state, it wouldn't be long before other states followed suit.

The problem began early in the year when Florida Representative Barry Silver and Senator John Grant began pushing the 'Children's Protection from Violence Act'. This law would 'prohibit the public display of videogames that contained graphic violence in specified places'. Under the bill people under eighteen were restricted from entering establishments that sold violent videogames. It would be up to the manager or owner of the business to keep the minors out. This would essentially ban any one under the age of 18 from entering an arcade where 'graphically violent games' were available. Graphic violence was described as 'the depiction or representation of death or severe injury, including, but not limited to Decapitation, Dismemberment, Repeated instances of bloodshedding; or Grotesque cruelty'. While the bill was primarily written to remove the games in question from public areas such as movie theaters and family arcades, the IDSA was deeply troubled with the wording of the bill, which was constructed in such a way that it could also apply to home

games. If such a law was enforced then any questionable game had to be removed from store shelves before minors would be allowed to enter the store.

Even though the IDSA was troubled with the bill, it was also confident that the bill would never pass. The videogame industry, which was already cleaning its act through the use of warning labels, did not need to be dictated by a state on what could and could not be displayed. Furthermore, the bill was unconstitutional. This had been proven in 1989 when Missouri tried to pass a similar law that would have prevented minors from entering video stores that rented and sold violent videotapes. In addition to deciding that the bill was unconstitutional, the Federal Court ordered the Missouri to pay the $200,000 fee to the plaintiff's (the Video Software Dealers Association) attorneys. Videotapes, like videogames, have rating guidelines printed on the packaging. However there aren't any laws that require stores and move theaters to enforce these ratings. While some states made moves to create laws that required mandatory enforcement of the ratings, these attempts had been decreed unconstitutional.

The IDSA felt that the Florida bill was merely a rehash of the Missouri law and the result would be the same if the law had been passed. Fortunately it never came to that. The bill died in May.

With similar bills being proposed nationally by politicians who had no idea what videogames were all about, members of the videogaming industry decided to form a political action confederation (PAC) to stick up for their interests in Washington and at the local levels. The group called themselves GamePAC and their purpose was to 'form a grassroots organization to monitor Congress and the federal bureaucracies, state legislatures and local governments and in turn notify' members of GamePAC 'so that they can then voice their opinion to these entities'.

Despite this new voice in Washington, the arcade industry suffered a major defeat when Wal-Mart, one of the industry's top customers of arcade games, announced that it would remove all violent arcade games from its stores. Fifty titles were scheduled to removed from the stores by the end of the year so Wal-Mart could maintain its image as a family store.

Even though the industry was experiencing setbacks such as the proposed Florida law and the Wal-Mart ban, the two senators who had originally been responsible for game ratings were very happy with the results. At a July press conference Senator Herb Kohl thanked and praised game makers and arcade owners for posting game ratings. Kohl said that because of this goodwill act on the part of the arcades, no new laws would be enacted to force the arcades to monitor the games with mature themes. Kohl warned however that boycotts would be considered at arcades that failed to voluntarily enforce the ratings. Kohl was joined by Senator Joseph Lieberman at a November press conference set-up by the citizen's group 'National Institute for Media and the Family'. In a speech Senator Lieberman declared that the industry had developed a 'split personality'. This comparison was made to the fact that although most of the industry had complied in the effort to clean up violent games, there was still a small fraction of developers that were releasing games that were more violent than ever. These games went beyond the usual killing and carnage. Now torturing and maiming were making their way into videogames. Despite this the group released its Fourth Annual Video and Computer Game Report Card in December. All in all the gaming industry was given an 'A for Effort' in its attempts to enforce the ratings. Unfortunately, once again it was pointed out that not all arcades were cooperating.

The United States wasn't the only country with a rise in violence that was credited to videogames. Japan, where violent acts are rare in the first place, began seeing a rise in teen violence. To counteract against the a wave a negative criticism, the Japanese companies formed a trade organization called the Computer Entertainment Software Association (CESA). The goal of the CESA) was similar to that of the IDSA in the United States. It provided a unified voice that spoke for the entire industry.

One place that was stereotyped as a place where violence bred was the arcade. Fortunately arcades themselves were changing for the better. Disney followed Gameworks' lead and opened DisneyQuest, a five-story entertainment center at Walt Disney World. While similar to Gameworks, the attractions at DisneyQuest featured Disney characters and themes. Disney planned an additional twenty DisneyQuest centers around the country with the first scheduled to be built in Chicago in 1999.

Although big seemed to be better, Gameworks began opening smaller entertainment centers. The new Gameworks Studios were one-third the size of the regular Gameworks centers but featured big brand-new arcade games that were just too expensive for the standard older, smaller arcades. Just as the movie industry had to find unique ways to get people away from their TVs and into theaters during the fifties, arcade manufacturers were facing the same dilemmas. One calamity of this shift to the home was the closing of Acclaim's coin-op division early in the year.

The sales of arcade games dropped dramatically in 1998. Ironically this occurred when the gaming industry experienced a record year as Americans spent $6.3 billion on game consoles and software, a 20% increase over the previous year. As the technology for the home systems improved and rivaled that of the arcades, much of the money that used to be spent on the arcade games were now going to purchase software. Unfortunately for the arcade industry, this was a trend that appeared to be continuing as the year came to a close.

CHAPTER TWENTY-SIX
1999

The MacWorld Expo show in San Francisco was the first major game-related event in 1999. Apple Computer's MAC had never been noted for its games, but Steve Jobs, Apple's founder and interim CEO, hoped to change that. Jobs and Apple were "totally committed to making the MAC the best gaming platform in the world". They hoped to do this with a new line of super-fast MAC G3 computers and partnerships with notable software companies like id, Activision, and Eidos.

Although Jobs' promise had been specifically targeted against the PC market, there was also an implication that he planned to go after the dedicated consoles like the N^{64} and the Playstation. During the keynote speech a representative from a software company called Connectix addressed the crowd about his company's newest product. The *Virtual Game Station* was an emulator that allowed nearly 100 Playstation games to run on the MAC G3. As the Connectix representative demonstrated several Playstation games on the MAC including *Street Fighter* and *Crash Bandicoot: Warped*, the crowd witnessed games that looked like they were being played on the Playstation. Although it wasn't yet officially available in stores, Connectix sold copies of the $50 *Virtual Game Station* at the MacWorld Expo.

Sony did not endorse or authorize the *Virtual Game Station* and socking Connectix with a copyright infringement suit at the end of January. The lawsuit was confusing since the *Virtual Game Station* didn't actually infringe upon any of Sony's copyrights. Furthermore, according to Connectix CEO Roy Mcdonald, a legal precedent had determined that software that emulated hardware didn't violate any patent laws.

Critics were also confused why Sony was so dead set against the *Virtual Game Station* in the first place since Sony and the third party developers would probably benefit from it. Since the emulator couldn't use imported or pirated games, people would have to purchase the software. Sony claimed that the *Virtual Game Station* violated its intellectual property rights and displayed the games in a way that could potentially tarnish the Playstation brand name.

Despite the lawsuit, Connectix continued to sell the *Virtual Game Station* throughout the winter. In the spring the court discovered that the *Virtual Game Station* did actually copy the Playstation's BIOS and did indeed violate Sony's copyrights. A preliminary injunction ruled in Sony's favor forcing Connectix to stop its deliveries. Representatives from Connectix swore that shipments would resume once the courts studied the evidence further.

Sony had less success against Bleem!, which marketed a Playstation emulator with the same name. Although Sony submitted numerous requests for restraining orders to keep *Bleem!* off the market, they were all denied by the court. Bleem! cooperated fully with the courts and even handed their source code over to Sony who couldn't find any evidence of copyright violations. Consumers who purchased *Bleem!* when it was at the end of July found the same problems that *Virtual Game Station* users discovered: numerous bugs, limited compatibility, and an inclination to crash often. Bleem!'s excuse was that the product that it sold was still a work in progress and would improve as patches were released.

The fact that people were purchasing emulators so that they could play Playstation games on their computers was one indication on how popular Sony's freshman attempt at a videogame console actually was. But even as Playstation games were being played on devices that they were never intended for, Sony was 'secretly' working on the details for the follow-up to its four-year old console. The secret was officially brought out into the open on February 16 when Ken Kutaragi, the

Playstation's inventor, presented specifications for a new chip at the annual IEEE International Solid State Convention in San Francisco. The chip, a joint project between Sony and Toshiba, was more powerful than any other on the market. Code-named the Emotion Engine, it actually consisted of four processors including a built-in MPEG2 decoder and a 128-bit RISC CPU that clocked at 300MHz. Although Kutaragi didn't come right out and say it, everyone in attendance knew that this chipset was the successor to the Playstation.

Sony officially announced on March 2 that the chipset that Kutaragi had revealed was indeed for the "future Playstation". In addition, the Emotion Engine was going to be joined by the CPU from the original Playstation that would handle all I/O functions. The addition of the original processor would make the new console backwards-compatible with the original.

Bleem!

While Sony lauded the new system as the most powerful ever built, developers learned quickly that harnessing all of its power would not be easy. At a developer's conference in San Mateo, California they learned that the new Playstation would be able to do anything they wanted. The catch was that they had to figure out how to make it happen. Even though Sony would deliver development libraries, the developers would still have to program their own assembly language sub-routines to really take advantage of the new console's power. This had been something that had been discouraged with the original Playstation. Although most developers were certain that the first generation of games for the new system would be on par with Sega's Dreamcast, they speculated that the games could only improve as they learned more about the system.

Chip production was set to begin in the summer at the rate of 10,000 chips per month. Sony estimated that it would have 1.44 million systems ready in time for a Winter 1999 Japanese launch. One magazine was skeptical of these numbers. *Next Generation* printed a sidebar in its May 1999 issue that speculated that Sony might experience shortages upon its launch.

Because Sony didn't yet have an official name for the new system, they referred to it merely as the "future Playstation". The press, on the other name, had been calling it the Playstation2. Sony agreed and on September 13 the company announced that this was the official name. They also announced that the system would be released in Japan on March 4, 2000 and would cost approximately $375, the same price as the original Playstation had cost in 1994.

Although it shared the same launch price as its predecessor, the Playstation2 was nothing like the original. Sony's intention was to market a set-top box that bridged the gap between videogames and other forms of home entertainment. Towards this end the Playstation2 resembled a cross between a stereo component with a front loading tray that accepted DVDs and CDs and a computer with USB ports in the front and slots for modem and Ethernet cards in the back. Unlike Sega, Sony didn't plan to release the Playstation2 with a built-in modem because they feared that it would be obsolete by the time the company was ready for networking in 2001. At that time Sony planned to offer broadband technology through the Ethernet connection or a cable modem. Sony also planned to release an optional disk-drive that would allow gamers to download and store game data and demos. Options that would be available at launch included a Dual Shock analog controller and a memory card with 8 megabytes of memory.

Games for the new system would be delivered in both CD-ROM and DVD-ROM formats. CD-

ROMs would be read at 24x, 12 times faster than the original machine. DVD-ROMs would be read at 4x. The CD-ROMs would have a blue underside to differentiate them from the black Playstation discs. DVD-ROMs would be silver. The discs would be packaged in plastic Amaray case that were becoming the standard in the DVD industry.

An unprecedented 172 developers from the US, Japan, and Europe signed on with Sony for the Playstation2. Unfortunately Sony had trouble keeping most of them happy. As the year progressed many developers, particularly the ones outside of Japan, complained that they weren't receiving development kits from Sony. The select developers that did receive kits complained that they received 'preliminary' kits that didn't represent what the final console would be like. Sony acknowledged that the full development kits wouldn't be available until 2000 and this made many developers nervous because they anticipated that they wouldn't have any titles in time for the Playstation2's US launch.

Even though Sony was setting its sights on the Playstation2, it promised that it would still support the original Playstation. To this end Sony finally released the Pocketstation in Japan on January 23. The tiny handheld sold out immediately and Sony soon claimed that because the demand for the Pocketstation was so high in Japan, it would have to postpone the US and European launch so it could meet the demand adequately. Those outside of Japan weren't missing much. The gamers in Japan who purchased the Pocketstation quickly learned that it consumed batteries very quickly and that it did little more than a standard memory card.

When the Playstation2 became official, Sony announced that it was going to revamp the Pocketstation so it could be used with the new console. This decision effectively canceled all plans for the Pocketstation to be released outside of Japan. Sony's plans were to upgrade the PDA by adding more memory and increasing the battery power.

While some critics felt that the Pocketstation was Sony's entry in the portable gaming market, Sony was actually pursuing other avenues into the area that had always been dominated by Nintendo's Gameboy. One route had Sony looking into SNK's Neo•Geo Pocket. However this seemed very unlikely since SNK was courting Sega in a bid to link the Neo•Geo Pocket with the Dreamcast.

Sony's second possibility was to manufacture a portable version of the original Playstation. This could be accomplished by shrinking the Playstation into a size that would be similar to Sony's popular audio Discman player. A small 2.25 inch screen could attach to the lid of the player and power could be supplied by a lithium battery.

Sony never disclosed when or if a portable Playstation would ever reach store shelves and it never appeared by year's end. However Sony did continue to make changes to the original Playstation that were less obvious. In the late summer Sony announced that it would remove the I/O ports from future Playstation models. Many analysts believed that this was a strategic move on Sony's part to lower the price of the console to under $100. Since Sony had never used the I/O ports, the decision was practically a no-brainer. Unfortunately it wasn't so cut and dry for the third-party vendors that produced peripherals that utilized the I/O ports. One such company was Interact, which used the I/O ports for its highly popular GameShark. Questionable peripherals such as the Game Wizard, a device that allowed gamers to get around territorial lockout switches so Japanese discs could play on American sets, also used the I/O ports. Of course since the removal of the I/O ports wouldn't affect anyone who already owned a Playstation, Sony didn't have to worry about any frustrated consumers.

On August 23 Sony did indeed reduce the price of the Playstation to $99, an amount that many financial experts believed put it in the category of impulse buying.

Sony's price decrease came only two weeks before the US debut of the Dreamcast. Sega claimed that it wasn't bothered by the $99 and that it wouldn't change the Dreamcast's expected market share. Casual gamers would be swayed by the lower prices. Sega was after the hard-core gamers.

Since it was a game company, Sega didn't concentrate on making the Dreamcast initially DVD compatible. However Sega stressed that DVDs would definitely play a role in the Dreamcast's future. Before offering DVD support Sega wanted to wait until DVDs reached a price point that would be comfortable for potential customers.

As Sega of America geared up for the September launch of the Dreamcast, it also analyzed the Dreamcast's impact on the Japanese consumer. Although the Japanese launch had been less than stellar, executives at Sega Enterprises were confident that they would have an installed base of four million units in time for the console's first anniversary in March 2000.

Bernie Stolar referred to the Dreamcast as "a living organism that could grow as the player grows". According to Stolar the system would "change and evolve with the gamer's needs, demands, and wants". One way to make the console evolve was by offering a variety of peripherals.

Two storage devices, one external and the other internal, were announced. The external one was a Dreamcast version of Iomega's popular Zip Drive. Sega and Iomega had joined forces to produce it and although a prototype was displayed, neither a release date nor a retail price were announced. The internal drive was a hard drive that Sega planned to release so online users had a place to save their e-mail. A camera and a microphone were also planned so online gamers could see and talk to the people they were competing against.

The new peripherals emphasized online gaming because Sega looked at it as videogame's next frontier. Dreamcast owners were pioneers since they had, for at least the time being, the only videogame console that could connect to the Internet. Sega's plan was to offer the Dreamcast Network, an online gaming site network, which was being designed by SegaSoft. Even though the Dreamcast Network wouldn't be available until 2000 Sega was still shipping the Dreamcasts with a full-function web browser so users could still access the Internet. And to make web surfing from a console as easy as it was from a PC, an optional $25 keyboard would be available. Sega would even provide the keyboard free to those who subscribed to AT&T's Worldnet, Sega's ISP (Internet Service Provider) of choice.

Sega planned for most of its games to be compatible with the Internet in some fashion. *Sonic Adventure*, one of the games to be included in the launch, would allow players to upload and download game data between the Dreamcast and Sega's website.

Americans would have a faster online experience than the Japanese. Bernie Stolar told an audience at the Game Developers Conference in March that the American Dreamcast would include a 56K modem instead of the 33.6K model that had been offered to the Japanese. What he had failed to tell them was the fact that Sega had asked Microsoft and NEC to absorb the cost of the modem so the price of the Dreamcast could be under $200. If the two companies refused, the modem would have to be sold as an accessory. When Stolar announced in April that the American Dreamcast would be launched on September 9 (9/9/99) and would retail for $199, he didn't mention whether the modem would be included or not because he didn't yet have a firm commitment from his corporate partners.

At E^3 in May, Sega of America officially announced that the 56K modem would be included with the Dreamcast and the console would cost $199. However the 56K modem was just the beginning. At a later date Sega planned to offer a cable modem or an Ethernet connector that would replace the 56K modem. And high-speed data transfer wasn't limited only to the modem. The Dreamcast's controller ports were also high-speed, high-bandwidth interfaces.

After facing tough times throughout 1999, Sega had much riding on the Dreamcast's American launch. The company experienced a $378 million net loss during the fiscal year that ended on March 31. In order to save money the company combined its arcade and consumer divisions and planned to close many Japanese arcades. Sega employees also felt the pinch. The company announced that it would lay off 25% of its employees and lower the salaries of its executives.

Unexpectedly, three weeks before the U.S. launch of the Dreamcast, Bernie Stolar left Sega of America. He was replaced by Toshiro Kezuka who had formerly been in charge of domestic sales and distribution for Sega Enterprises in Japan. Sega was certain that Stolar's departure would not affect the launch of the Dreamcast.

Generally system launches in the United States never produced the frenzy that was typically felt in Japan with long lines outside of electronic stores that opened at midnight. The year-long hype for the Dreamcast changed that. While one hundred thousand people had preordered the Playstation in 1994, three times that many people pre-ordered the Dreamcast. Stores opened at midnight on September 9 to waiting crowds. All in all, during the 24 hour period of September 9, sales for the Dreamcast totaled nearly $98 million. The launch went so well that Sega executives who had that forecasted 1 million units would be sold by the end of the year went back to change their projections.

Unfortunately the launch did not go off without a hitch. Complaints about defective discs began arriving at Sega's customer service hotline immediately. A quick investigation revealed that all of the defective discs had been pressed at a single duplicating machine at a Sanyo plant in California. The discs hadn't fit in their molds correctly resulting in missing data. What made it worse was that the defect was found among Sega's most popular launch titles including *Sonic Adventure*. Although the problem had been caught relatively quickly it still put a damper on Sega's near flawless launch. In order to satisfy the public Sega and the third party companies that experienced the defective discs changed their return policies. Activision even went so far as to set up a toll-free phone number that could be used by anyone who bought a defective copy of *Blue Stinger*. Everyone who called the Activision hot-line immediately received a good copy of the game along with a postage free envelope so they could return the defective disc.

Another problem that Sega experienced was a temporary shortage of consoles and peripherals. Within a week after the launch the stores were stocked and Sega went on its way to sell its first million consoles.

Until Microsoft optimized its Windows CE operating system for the Dreamcast, it never had anything to do with videogame consoles. Although Microsoft's part in the overall development of the Dreamcast was relatively minor, the software giant got its feet wet in the lucrative videogame industry and apparently it liked what it saw. By the end of the summer rumors began that the company was ready to go all the way in the development of videogame consoles. It was going to build its own.

The initial reports were quite detailed for something that was only a rumor. The system would be code-named *X-Box* and would use a Windows CE operating system similar to the Dreamcast's. The system would contain a 500MHz Intel processor and the graphics chip would be supplied by either Nvidia or 3Dfx. Microsoft would not actually manufacture the X-Box. That job would probably be subcontracted to a computer company like Dell or Gateway. And like a PC, the system would have an open architecture that developers could freely design and release games for without having to pay any royalties. The system would be DVD-based and all X-Box software would run on PCs that had the Windows operating system. Finally, the system would be released in the fall of 2000 and would sell for under $300.

Within a month after the rumor first broke, more details were leaked to the press. The X-Box would have an AMD processor instead of the Intel and it would contain a 4GB hard drive. While Microsoft denied the X-Box, other companies were more forthcoming. Sega of America executives said that they knew about the X-Box for a while and they were pleased with it because it complimented the Dreamcast. Since they both used a Windows operating system, developers would have little trouble porting games between the Dreamcast and the X-Box, as well as the PC.

Another rumor said that the X-Box would connect to any TV wirelessly. This meant that if

someone wanted to play games on an X-Box that was connected to a TV that was being used by someone else, the gamer merely had to go to a second TV to play. A wireless adapter would send video from the X-Box to the secondary TV and from the game controller back to the X-Box. Of course this was only a rumor as was everything connected with the X-Box. By the end of the year Microsoft still hadn't admitted that it was working on the game console. According to a Microsoft spokesman, the X-Box was just a rumor and Microsoft did not comment on rumors.

Despite all of the publicity that the X-Box received from mainstream publications like the *Wall Street Journal* as well as the videogame magazines, Microsoft had a reason for not officially announcing the X-Box. With competition from Sony, Nintendo, and Sega, some critics felt that the world may not have been ready for a fourth game console. Still, most analysts agreed that Microsoft was merely biding its time and waiting for the right moment to make the official announcement. Many felt that Bill Gates would make the announcement during his keynote speech at CES in January 2000.

Nintendo followed Sony's lead and immediately lowered the price of the N^{64} to $99 also. Nintendo had to do everything it could since the N^{64} was rapidly losing ground to the Playstation. The Japanese press even went so far as to call the N^{64} a failure in that country. While other companies released a new system when sales for the current one began falling, Nintendo denied that it would go with that approach Peter Main, a vice-president at Nintendo of America, claimed that Nintendo was in no rush to bring the new product to market. Historically, Nintendo had never been the first to release a new generation console and the company didn't have any intentions on changing that. Even so, work had begun on a new console that had temporarily been dubbed *Nintendo 2000*. Despite the moniker, Peter Main doubted that it would be available in 2000.

Early information concerning *Nintendo 2000* was very sketchy. Nintendo of America president Minoru Arakawa only admitted that the storage medium for the new console most likely wouldn't be a cartridge. The company was researching all types of different mediums, including DVD, and the one that was most suitable would be chosen.

More information began appearing in March. Despite Main's earlier prediction, Nintendo of Japan now announced that a Christmas 2000 release date was probable. In addition, the company was experimenting with a proprietary disk system that could store 1.6 gigabytes of data. With the absence of a cartridge slot the new console definitely would not be backward compatible with the N^{64}.

On May 12, the day before the opening of E^3, Howard Lincoln officially announced Nintendo's new console. The *Dolphin*, which was the new name for the system, would be driven by an IBM 400MHz Gekko processor that was small enough to sit on a human fingertip and was an extension of IBM's PowerPC computer architecture. The individual transistors in the chip would use copper connectors instead of the traditional aluminum. This would result in smaller chips that would require less power and would be less expensive to produce. Lincoln assured the press that the Dolphin would be the "most powerful of any current or planned home video game system".

Nintendo still intended to release the new system in time for Christmas 2000 to directly compete again the Playstation2. Lincoln even made it a point to tell the press that the Dolphin would "equal or exceed the Playstation2". Art-X was developing the console's 200 MHz graphics engine. The head of Art-X, Dr. Wei Yeng, had designed the N^{64}'s graphics chip when he had been with Silicon Graphics. NEC, in a deal worth $2.86 billion, would manufacture the chips.

Lincoln further revealed that the new system would be DVD-based. Matsushita, who developed the DVD drive, would provide manufacture the drives and the software. Under its Panasonic brand, Matsushita would also manufacture other consumer devices that would use the Dolphin technology. In

a move reminiscent to VM Labs and its Nuon technology, Panasonic planned to release DVD players that would be able to play Dolphin games beginning in fall 2000.

While the Panasonic players would play Dolphin games as well as DVDs and audio CDs, the Dolphin console would not. Lincoln made it clear that Nintendo was strictly a game company. Lincoln stressed that the Dolphin's inability to perform functions other than games would theoretically keep the price of the console down. Although the price wasn't revealed, Lincoln promised that the Dolphin would be sold at a "very aggressive mass market" price.

During the six months following E^3 there was little news from Nintendo regarding the Dolphin. Factor Five, a development with proprietary sound tools, was added to the list of developers working on the Dolphin hardware and S3 Inc was employed to add an advanced texture-compression technology. Unfortunately no one outside of Nintendo would be able to view it for nearly year as Nintendo publicly announced its plan to unveil the Dolphin at its annual Spaceworld show in August 2000. Nintendo still stood behind its Christmas 2000 release date although several anonymous developers began hinting that the date was totally unrealistic and sometime in 2001 was more probable. Meanwhile Matsushita announced that it would not release its Dolphin-compatible DVD consoles in the United States.

As the companies scrambled to make their new consoles Internet friendly, Nintendo of Japan formed the *RandNet* network, an Internet site where players could upload scores and download games for the N^{64}. The downloaded games needed to be stored somewhere and Nintendo of Japan had the ideal disc drive all ready: the 64DD. After two years of promises and delays, Nintendo of Japan finally released its 64DD peripheral on December 1 along with several titles including *Sim City 64* and the *F-Zero Expansion Kit*.

Even though the RandNet was a system that would only be available inside Japan, US gamers were also offered a peripheral that would get them online. Interact released a modem cartridge and accompanying full-size keyboard that plugged into the N^{64}. Basically, it wasn't much different than Sega's Netlink for the Saturn. However where the Netlink cost $200 when it was new, the Sharkwire retailed for only $80. As was the usual case, you got what you paid for. The Netlink's modem transmitted data at 28.8k bits for second, which was the standard modem speed in 1996. In 1999, when the standard speed for a modem was 56k, the Sharkwire only provided a 14.4k modem. A modem at that speed would be to slow to browse the World Wide Web or play online games. However the Sharkwire didn't offer either service to its users. Instead, Sharkwire users signed on to Sharkwire Online, Interact's personal website for Sharkwire users. Sharkwire Online was text-based so the slow modem speed didn't matter much. And since Sharkwire users could only sign on to Sharkwire Online, there wasn't any danger of them trying to access the rest of the Web. Interact provided a gaming community that users could access for $10 a month and keep in touch with other N^{64} owners. And since Sharkwire Online provided an e-mail service, the gamers could keep in touch with the rest of the world. Unfortunately, since the 64DD wasn't part of the package, gamers still didn't have any way to save anything they downloaded, including their e-mail.

Interact Sharkwire Online

A company called Bung Enterprises offered a device that would literally save games. The Z64, which had a built-in Iomega Zip Drive, plugged into the N^{64}'s cartridge slot. When gamers plugged

an N64 cartridge into the Z64, they could then save all of the code from the cartridge onto a Zip Disk. From then on players could play the game from the disk instead of from the official cartridge. Like emulators, the Z64 itself was not illegal since copyright laws permitted owners of software to make backup copies. However no one actually believed that anyone bought the Z64 for the sole purpose of backing up game cartridges.

Even though Nintendo felt that the device was illegal, the mammoth company did nothing about it. In order to declare that the Z64 was illegal so it could be removed from the market, Nintendo had to prove that the majority of consumers bought the Z64 solely for purpose of illegally copying games. However since such statistics did not exist there was nothing that Nintendo could do except sit on the sidelines.

With the Sharkwire Online, Interact had found a way where people could use their N64s to access e-mail. Their next goal was to get e-mail on the Gameboy Color. As a means to this end they developed a system, that would turn the Gameboy Color into a Personal Digital Assistant (PDA).

GameTek had tried this before in 1991 with its *Personal Organizer* cartridge but the Interact software, which would retail for $20-$30, was much more sophisticated. The Gameboy PDA could keep track of hundreds of addresses and phone numbers and also had a built-in tone converter so that when the speaker of the Gameboy was placed against a telephone, it would automatically dial the number.

Interact succeeded in its effort to send and receive e-mail with the Gameboy Color. Unfortunately the Interact software couldn't connect with the Internet so e-mail could only sent and received through the Gameboy Color's infrared port. This meant that the e-mail could only be sent between people who were in the same room and who had a Gameboy PDA that was turned on. It was a noble effort but one that was never released. Besides, Nintendo had other plans in store for the Gameboy and the Internet.

In early 1999 Nintendo planned to slowly phase out the old line of monochrome Gameboy Pockets. The company wanted to focus its energies on the Gameboy Color, which had sold more than 8 million units in approximately six months. However rumors began emerging from Japan in May stating that Nintendo was looking beyond the Gameboy Color to a new color handheld that would feature a bigger, backlit screen.

Nintendo began disclosing details regarding the new Gameboy Color at it's annual Japanese Spaceworld show in August. Tentatively called the *Gameboy Advance*, the new handheld would contain a 32-bit RISC processor but would still be compatible with all of the prior Gameboy and Gameboy Color cartridges. New games that could only play on the new system would also be offered. And despite the original rumors, the new system would not be backlit.

The processor was being developed by ARM Corp, a British company that developed CPUs for cellular phones. Not surprisingly, the Gameboy Advance would have the ability to hook up with a cellular phone to connect to the Internet. Gamers would then have the ability to access e-mail, download games, chat, and partake in some type of online gaming system. And in a move similar to what Sega was doing, Nintendo was developing a digital camera that would allow network gamers to see each other while playing.

The release date for the Gameboy Advance was scheduled to parallel that of the Dolphin. Usually it was risky for a company to launch two new consoles in the same time frame since most households would probably only buy one of them. Nintendo had the incentive to do so was because the two consoles would be joined at the hip. In other words, Nintendo planned for the Gameboy Advance to hook up with the Dolphin in some capacity.

The Gameboy had a market share of more than 80% and practically ruled the hand-held market.

With little hope of surpassing the Nintendo in sales, several companies were content with just going after the 20% that didn't own Gameboys.

Bandai Wonderswan

Surprisingly, Bandai's monochrome Wonderswan held its own against the Gameboy Color in Japan. The console did so well that Bandai announced that it would finally be released in the United States in early 2000. Mattel, the company that started the hand-held craze with its *Football* game in 1977, had signed with Bandai to handle the U.S. distribution.

Meanwhile another monochrome hand-held, the Neo•Geo Pocket, also managed to survive against the Gameboy Color in Japan and the United States. In March, SNK followed in Nintendo's footsteps and released a color version, the Neo•Geo Pocket Color. Like the Gameboy Color, the Neo•Geo Pocket Color was compatible with all of the monochrome games and the new color games would also play on the original system.

SNK planned for the Neo•Geo Pocket Color to go against the Gameboy Color feature to feature. The Neo•Geo Pocket Color would run on two AA batteries for 40 hours, twice as long as the battery life on the Gameboy Color. SNK also bragged that the Neo•Geo Pocket Color would sport near-arcade graphics thanks to its 16-bit CPU. In addition, SNK was throwing in some extras like a calendar and world clock that were only offered on the Gameboy Color through Interact's unreleased Gameboy PDA. Then there were some features that weren't available anywhere else like a horoscope generator and an alarm. An infrared adapter similar to the one that was built into the Gameboy Color was also in development.

The new color system was released in Japan on March 19 and retailed for $79. SNK initially announced that the Neo•Geo Pocket Color would be available in the United States in September, but it surprised everyone by offering the console to Americans through its website in April.

When the Neo•Geo Pocket Color actually did reach American store shelves in September, consumers learned about a new agreement between SNK and Sega. Gamers would be able to transfer data such as new characters between the Neo•Geo Pocket Color and the Dreamcast by connecting the two systems with an optional link cable. The first games to offer the compatibility were *King of Fighters: Dream Match 1999* for the Dreamcast, and *King of Fighters R-2* for the Neo•Geo Pocket Color.

Another result of the agreement between SNK and Sega was the release of Sega games for the Neo•Geo Pocket Color. The first was *Sonic The Hedgehog*, which came out in December.

Because of a surprise announcement in May from Sega Enterprises president, Shoichiro Irimajiri, *Sonic The Hedgehog* wasn't expected to be the only Sega game for the Neo•Geo Pocket Color. According to the Japanese newspaper *Nihon Keizai Shinbus*, Irimajiri said that his company would begin selling software for the Gameboy Color and the Wonderswan. Irimajiri's reasoning behind this business decision was sound. Since Sega didn't have any plans of reentering the hand-held market for the time being, it could develop games for the competitor's systems without having to compete against them.

One handheld that already had *Sonic The Hedgehog* on it was Tiger Electronics' poorly received game.com Pocket Pro. Unlike SNK, which released a color version of its handheld to better compete against the Gameboy Color, Tiger Electronics didn't have any intentions to do the same thing. Instead, the price of the monochrome handheld to $29.99 and offered the system in five colors including pink

and orange.

It didn't matter whether a handheld unit was good or bad because they all had to compete against Nintendo's juggernaut. Even though the Gameboy was in its tenth year its popularity showed no signs of abating, fueled mostly by the Pokémon phenomenon. Pokémon were so popular that Nintendo sold a special yellow Pikachu edition of the Gameboy Color that was packaged with the new *Pokémon Yellow* cartridge. Nintendo sold over one million copies of *Pokémon Yellow* within two weeks of its release, making it the company's best-selling game ever. Nintendo continued to cash on its lucrative franchise by releasing additional Pokémon for both the Gameboy and N^{64}. Wizards of the Coast released a Pokémon card game that erupted into a collecting frenzy and caused it to join Nintendo in court with a racketeering charge against them.

According to the suit, which had been filed by a San Diego law firm, the Pokémon cards were akin to illegal gambling. Wizards of the Coast set it up so some cards would be rarer than others. Children purchased the packs of eleven cards hoping they'd find the rarer cards inside. The law firm asserted that this was nothing more than "a lottery disguised as a kids' game". Nintendo viewed the lawsuit as unwarranted especially since this was the ninth such lawsuit that the same law firm filed against trading card companies.

Although the cards were not declared illegal, they were banned by many school districts around the country. School officials found that the cards were constantly the cause of fights and general disturbances.

Despite the hopes of school authorities Pokémon were not going away. On November 10 *Pokémon: The First Movie* was released in theaters around the country. When a Los Angeles radio station offered chances to win tickets to the movie, Warner Bros. was inundated with more then 70,000 calls, which forced the studio to shut down its voice-mail system. And as if children needed any enticing to attend the movie, a Pokémon card that wasn't available anywhere else, was handed out free to all attendees. This caused another problem for parents. Wizards of the Coast produced four different cards for the movie but the theaters only handed out one per customer. This meant that many children attended the movie more than once just to get the individual cards.

In December Burger King began its most ambitious Kids Meal promotion ever. The fast food chain included one Pokémon character with each Kids Meal. Unfortunately Burger King produced 57 different Pokémon and the promotion only lasted four weeks. Individual Burger Kings ran out of the characters very quickly as people kept returning over and over again hoping to collect a complete set.

Schools were upset with Nintendo because of Pokémon, but the government of Quebec Canada was angry with Nintendo and the other videogame companies for a different reason. A Quebec charter decreed that any company that did public business in French-speaking Quebec had to sell its products with the French language on the packaging. Any other language, including English, could be included as an option. To alleviate any problems, most companies merely printed their packages with both English and French writing. Videogame companies were the exception. Canada and the United States received the same products and all were in English. And unlike standard products where the manufacturer only had to worry about the packaging, videogames had the unique problem of having English text appear in the product itself.

Many American companies that wanted to sell products in Quebec got around the dual languages by importing their products from France. That couldn't be done with videogames, which used different television standards. Canada, like the United States and Japan, used the NTSC broadcasting standard. Because France used the SECAM standard, French games couldn't play on Quebec sets.

In order to change the companies' policies towards Quebec, the government of Quebec threatened to sue if the policies weren't changed by the end of the year.

While Nintendo and the other console manufacturers basked in their success, the arcade companies prepared for troubled times. In early spring Midway announced that its revenues from coin-op sales were down 25% from the same period one year earlier. Meanwhile Namco's chairman, Masaya Nakamura, pinpointed two reasons for the arcade's failures: the high quality of the home systems and the success of online gaming through the Internet. Nakamura warned that the arcade industry had to be innovative in order to survive.

With the number of arcade companies dramatically decreasing, the amount of old-fashioned arcades were also disappearing. As the newer games became more complex and expensive, the smaller arcades and distributors could no longer afford to carry them. In their place came food and entertainment centers like Dave and Busters and Gameworks. A big difference between the new arcade centers and the old ones was that the newer ones catered to adults rather than children and teens. In fact Gameworks changed its strategy and began installing large bars at its newer facilities. A survey of adults who frequented the centers said that the bar was mandatory because it helped the patrons get comfortable.

Gameworks CEO Ron Benison compared his center to a movie theater. Critics had forecasted for years that videotapes and home viewing would cause the eventual extinction of the movie theater. Despite those gloomy predictions, movie theaters were experiencing record attendance. Benison felt that the same critics were predicting the death of the arcade thanks to the success of the home games. Benison's goal was to prove them wrong. One way that Gameworks kept people coming was by featuring exclusive games that couldn't be found anywhere else.

A good arcade cannot exist without good games and many questioned whether the arcade companies were doing their part. Sega was accused of ignoring the arcade business as it concentrated on the home system. Sega of Japan's CEO denied these accusations at a summer meeting with members of the US arcade industry. As proof, one had only to look at Sega's Naomi board, which sold 200,000 during its first year. Fifteen videogame manufacturers ordered the board and although Sega wouldn't reveal who they were, the company planned to support them by releasing 30 Naomi games within a year. Sega later improved on the Naomi design by adding a capability to allow satellite downloading of new games.

Of course all arcade game manufacturers were not going to use the Naomi system. Sony confirmed in July that a number of manufacturers, including Namco and Taito, would use the Playstation2 hardware.

Home videogames were not the only cause for the downfall of the arcades. Although videogames pretty much dominated the arcades, they usually shared some floor space with the original arcade money generator, the pinball machine, which had been a mainstay in arcades for most of the twentieth century. However once *Space Invaders* began descending the glory days of the pinball machine were over. As videogames became more and more dominant, pinball companies began merging and disappearing. Bally, once the prestige name in pinball, was acquired by Williams along with Gottlieb. Attempts to merge videogame and pinball technology were tried (*Baby Pac-Man*) but they were never successful.

In 1999 Williams tried to regain some of its previous eminence by releasing an extraordinary new pinball line that it called *Pinball 2000*. Unlike the previous attempts at linking videogames with pinball by switching back and forth between the two, Pinball 2000 actually integrated the two. While looking almost like a standard pinball table, the Pinball 2000 model also contained a video monitor. Video images were projected onto the table itself so players had to shoot at virtual targets in addition to the physical ones.

While Williams planned for the Pinball 2000 to be challenging for players, it also designed the series to be easy for arcade operators. The gameplay was completely controlled by a CPU that was

William Pinball 2000

housed in the back of the table. This allowed the pinball machines to be completely upgradeable, a first for the pinball world. Arcade operators could upgrade a pinball machine by merely changing the software and replacing the easily removable playing field. Williams initially released two Pinball 2000 games: *Revenge From Mars* and *Star Wars: The Phantom Menace*.

The Pinball 2000 line received kudos from the press and in the summer Williams called the line a success. Despite this, WMS Industries, the parent company of Williams, abruptly shut down the pinball division on November 19. Even though the Pinball 2000 line proved to be successful the executives at Williams realized that it wouldn't bring in the type of revenues that the investors wanted.

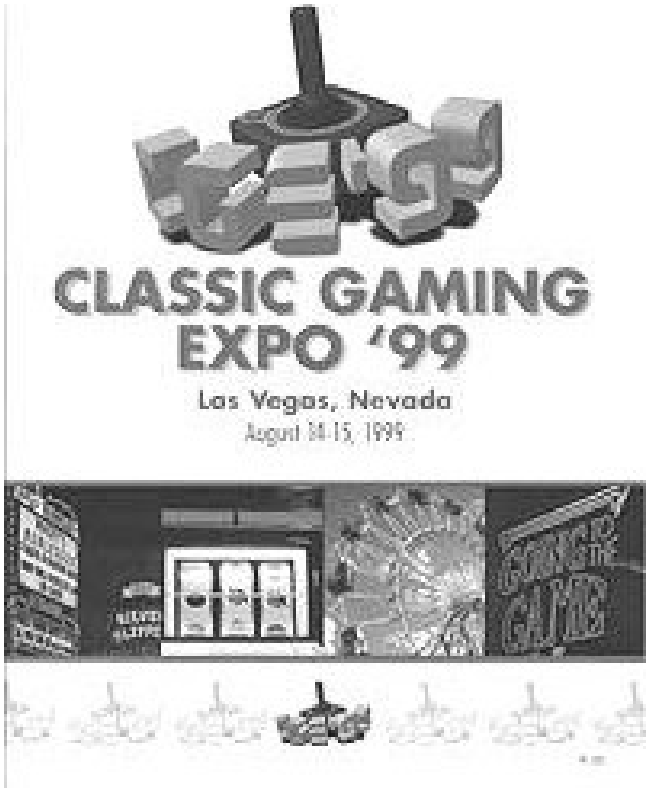
With the end of Williams, Stern Pinball Inc remained as the only manufacturer of pinball machines. Stern's targeted audience were the people who frequented bars and pubs, not arcades. Although videogames won the big picture, pinball machines were down but not quite out.

Employees at Williams weren't the only WMS Industries employees who lost their jobs. Atari Games, which had been owned by WMS Industries since 1996, slowly lost its status as an independent game designer. By 1998 the once grand company began developing less and less unique hardware and started sharing hardware with its sister company Midway. In 1999 it lost everything that made it an independent company within WMS Industries: its management, sales, marketing, and distribution. All that remained of Atari Games was its designers and its location in Milpitas California where it had access to Silicon Valley programmers. While new games would still be released with the Atari logo, Atari Games became a brand name under Midway in the same fashion that Atari was really a brand name under Hasbro Interactive.

Hasbro Interactive believed that there was still interest in the old games. In 1999 it released an updated version of *Pong* along with a PC compilation of classic arcade games that included the original versions of *Pong*, *Asteroids*, and *Centipede*.

Retro games were making headlines also. On July 3, 1999, 33-year old Billy Mitchell became the first person in history to achieve a perfect score in *Pac-Man*. In six hours Mitchell scored 3,333,360 points, the maximum that could be attained. Mitchell, who also held the record for *Donkey Kong*, did not go unnoticed. His feat was written up in several mainstream magazines including *Time*. Namco, the manufacturer of *Pac-Man*, flew him to Japan where he received an award that certified him as the 'Player of the Century'.

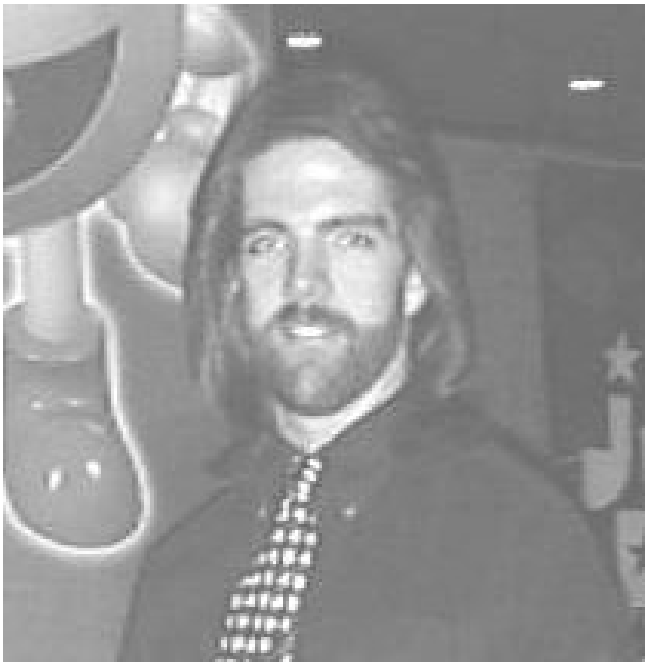
As further proof that the classic games still supported a very large fan base, the pioneers of the videogame industry gathered together in August in Las Vegas for the first annual Classic Gaming Expo (CGE). CGE was the brainchild of John Hardie and Keita Iida, two New York-based collectors who conceived of the idea a year earlier for an annual World of Atari conference. Unlike the trade-only E^3, which it was wrongly compared to, CGE was open to the public and celebrated the classic games and the people who designed them. More than 600 people from around the world attended the show to meet with such legends as Ralph Baer, Dave Nutting, Jerry Lawson, Jay Smith, David Crane, and Howard Scott Warshaw. Fans of the original Electronic Games magazine were awarded with the



Classic Gaming Expo

chance to meet Arnie Katz, Bill Kunkel, and Joyce Worley.

The two day show featured question and answer sessions where fans could interact with the celebrated guests. Ralph Baer even set up his 'Brown Box', the legendary Odyssey prototype, which still amazingly worked after more than thirty years. Several lucky fans were even allowed to play against Baer at his own game. Classic home consoles and arcade machine that were set for free play were scattered around the room. Walter Day of the Twin Galaxies Intergalactic Scoreboard held contests throughout the exhibition so people could try to get their names in the latest edition of his *Official Video Game & Pinball Book of World Records*. Day brought along Billy Mitchell, the world record holder of *Pac-Man*. Also packed around the room were vendors who sold brand new copies of the old classic games. All in all the show was a great success and plans were made to make it a yearly event.



Billy Mitchell

Walter Day

CGE honored games from an era when the most violent game was one where the player had to run down on-screen gremlins (*Deathrace 2000*). Unfortunately that innocent time was long gone. After the 1998 schoolyard shooting in Jonesboro Arkansas, the state Senate proposed a bill that would make it illegal for a minor to enter an establishment where a violent game was sold or displayed. On March 31 the bill was forwarded to an interim study commission, in effect killing it. The IDSA seemed to get the message across that videogames were not responsible for the killer's behavior. In fact of the 5000 games that had been rated since 1994, less than 7 percent had been rated as violent. Less than 1 percent were deemed for Adults Only and all of them were PC games.

Still, just when America began turning away from the issues of videogame violence, tragedy struck again. After two students shot and killed twelve fellow students and a teacher in Littleton Colorado in May, videogames were blamed once again. This time it was discovered that the two killers were fans of *Doom*, a violent PC game that had been around for five years. At E^3, which was

held the following week in Los Angeles, the exhibitors were more cautious about the types of games they showed. Most new violent games were not displayed to the convention public. Sega, which was gearing up for its U.S. Dreamcast launch, decided not to release a lightgun for its launch title *House of the Dead 2*. To make matters worse for gamers who wanted to play the game as it had been intended, the lightgun that was released in Japan wasn't compatible with the American version of the game. Fortunately third-party manufacturers came to the rescue and released their own lightguns that were fully compatible with the U.S. *House of the Dead 2*.

Despite the publicity that proclaimed that America was out of control because of violent videogames, other countries were also experiencing violence that videogames were blamed upon. In November a 24-year old medical student named Mateus Meira opened fire in a crowded movie theater in Brazil. Three people were killed and eight were injured. After he was arrested Meira said he got the idea from a PC game called *Duke Nukem.*

In the wake of the shootings a Brazilian judge banned six violent videogames from store shelves. *Duke Nukem, Doom,* and *Mortal Kombat*, were among those banned. Stores that didn't remove the banned games from their shelves faced daily fines of $10,000. The judge who ordered the ban also ordered the federal government to institute a gaming rating system within four months.

Despite the negative publicity, the videogame industry enjoyed another record year in 1999. Videogame software grossed $3.75 billion and consoles weren't far behind as they grossed $2.9 billion.

The videogame industry was bigger than ever. And as Sony geared up for release of the Playstation2, the expectations were that it could only get better.

CHAPTER TWENTY-SEVEN
2000

The world did not end at midnight on January 1, 2000. Despite all of the doom and gloom forecasts concerning the Y2K bug, most date sensitive devices, including PCs, continued to operate just as they were programmed. But while civilization continued on its merry course, the PC gaming industry appeared to be on the verge of collapse.

Throughout their entire history computer games had always been the bigger cousin to the console games. In the early days of computers, the PC games always looked better than their console counterparts that had less memory. The second generation consoles such as the Atari 5200 and Colecovision brought the console games on an even plain with the PC games. But as the costs of home computers began dropping in the early eighties, the school of thought was that the computers would force the console makers out of business. After all, you could do other things on computers besides play games. With all costs being even, it just made sense to buy a computer instead of a console.

That never happened, however. As processing power increased on the computers, software companies began designing games that demanded all of the processing power that the computers could muster. Unless you had a computer that was upgraded to the hilt with the latest peripherals, you could never be sure if a game would play on your computer adequately. With a videogame console that was never a problem. If you purchased a Playstation game, you knew that it was going to play on your Playstation.

As faster processors continued to be developed, the software companies finally realized that they could no longer design games that could only be played on the most powerful computers. By doing so they weren't appeasing the majority of the consumers who didn't upgrade their computer every time a better one came along. So now designers had to make sure that their games were compatible with the older systems. Meanwhile newer and better consoles like the Playstation2 were released that had games tailored made to take advantage of custom designed components. Pretty soon the quality between the consoles and the PC games definitely showed.

There was, however, a glimmer of hope for the future of PC games. Microsoft's 'secret' X-Box was on the horizon and if the rumors were true, games developed for the X-Box would essentially be the same as those for the PC since the two would have similar operating systems. There was nevertheless one major problem with the X-Box though. Microsoft still hadn't confirmed that the console existed.

Many industry insiders had believed that Microsoft was going to officially announce the X-Box at the Winter CES in January. That didn't happen. However the 'secret' finally came to light in February when Microsoft held private talks with many of the top PC software developers in order to sell them on the X-Box. Despite the lack of an official statement from Microsoft the developers confirmed that the X-Box was indeed on its way in 2001 And from what they learned they believed that it was going to be more powerful than anyone had dared to imagine.

The extent of the X-Box's power was finally revealed on March 10 at the Game Developers Conference. And it was Microsoft's CEO Bill Gates who announced the intriguing details.

According to Gates Microsoft had put to good use the information that it had gleaned from the developers. It also paid attention to what consumers were looking for in a game machine. One thing that they definitely weren't looking for was a PC that played games. Gates quelled the notion that the X-Box would be a wolf in sheep's clothing. Although the X-Box would share many similarities with PCs, the system would definitely be a game console that Microsoft expected to have on the market for

approximately four to five years. Contrary to the earlier rumors, the console would have a closed architecture and third party developers would have to pay licensing fees. Microsoft would also have the right to approve the quality of the games from the licensed third party developers. And Microsoft planned that every game would play on every X-Box around the world without any regional lockouts. But all games would not be available for the new console. While Microsoft shopped for PC developers who could quickly convert their PC games to the X-Box because of their similar architectures, Gates stressed that not all PC games were suitable for a game console.

The fact that the X-Box would be powered by a 600Mhz Intel Pentium III processor didn't quench the belief that the console would indeed be a PC in disguise. However Gates clarified that the X-Box was indeed a real gaming console with "no boot time or software installation". Even the presence of an 8Gb hard drive didn't mean that the X-Box was really a computer. Gates explained that the games that would play on the X-Box demanded such storage. Games would run faster because large audio and video files that would be needed later in a game could load onto the hard drive while the game was in progress. Game statistics and demos could be downloaded from the Internet and be stored on the hard drive. As far as the gamer was concerned the hard drive would be transparent and couldn't be used to store and access files in the traditional sense.

The graphics on the X-Box would blow away its competitors. The custom Nvidia graphics chip would be capable of generating 150 million polygons per second. This was more than double that of the Playstation2 and completely ridiculed the 12 polygons per second that the Dreamcast could generate.

The X-Box would contain 64 MB of memory. However, unlike previous consoles, the memory would be shared by the CPU and the graphics processor. The benefit of this was that programmers could allocate any portion of memory for any use that they wanted.

Microsoft X-Box Prototype

Since the X-Box was a game machine, Gates placed less emphasis on its non-gaming features such as the ability to play DVD movies and hook up to the Internet. Although a modem wouldn't be include with the console. An optional modem would be available at launch however.

The prototype that Microsoft showed off at the Game Developers Conference and at E^3 resembled a large 'X'. Microsoft stressed that this was simply a way to display the chipset in a presentable manner and wasn't meant to portray the final console at all.

On September 20, Microsoft announced that it had signed up more than 150 publishers to develop games for the X-Box. Most of the major software developers were represented, although the absence of Electronic Arts, the world's largest software company, was highly conspicuous. On the other hand, several Japanese companies had also signed on. This was a major achievement since it had been a question concerning how the Japanese companies would embrace the American X-Box.

In addition to the naming of the developers, Microsoft also announced what the actual production name of the X-Box would be. Surprisingly, Microsoft had decided to stick with the code-name. *X-Box* was the final name.

Microsoft wasn't the only American company that planned to release a new videogame console. However unlike Microsoft, which had years of experience and billions of dollars behind it, the Indrema Corporation was a small start-up company that only began in January 2000. The company was targeted spring 2001 for the release of its first console, the Indrema L600. How did John Gildred, CEO of Indrema, hope to sell a game machine in a market dominated by Sony, Nintendo, Sega, and

soon Microsoft? For starters, Indrema would market the L600 as all-in-one home entertainment system instead of a gaming console. In addition to having the capability of playing DVDs, CDs, and games, the L600 could also store digital video recordings making it similar to the TiVo. The recordings would be saved on a built-in hard-drive that would range in size from 8Gb to 50Gb. The hard drive would also store MP3 music which the system would be able to play back. Nvidia would provide the graphics chip that could generate 120 to 150 million polygons per second. The graphics processor would be accessible to the end-user. If a newer more powerful graphic processor became available, the user would be able to easily switch the old one with a new one, a first in videogaming history. Games would be stored on 10Gb discs.

Indrema L600

The brains of the system would be a 600MHz CPU. The operating system would be Linux. Unlike Windows, Linux had an open source architecture that made it accessible to anyone who wanted to use it. The goal of Indrema was to attract independent developers by enticing them with a free developer's kit. Coupled with a low royalty rate, developers wouldn't have to spend as much money to develop for the L600 as they would for the Playstation2. The result would be high quality low-priced games.

The X-Box was not the first console to have an 'X' in its code-name. When VM Labs first announced its videogame system in 1997, they called it 'Project X'. Eventually the videogame system evolved into a chip that would enhance DVD players and VM Labs finally settled on the name *Nuon* for the chip.

Before Microsoft came on the scene, Project X languished in the background as the possible fourth console that would compete against Sony, Nintendo, and Sega. Most thought that there wasn't any room for a fourth console and wrote VM Labs off as a pipe-dream. Still the company continued with its day to day activities and managed to keep itself in the background without selling a single product to the public. In January at CES, VM Labs made its grand appearance and finally showed off its products.

As revealed in 1998, the Nuon was a chip that enhanced DVD players. Nuon-equipped DVD players could play games and VM Labs officially announced a few at CES including *Tempest 3000*, which had been designed by Jeff Minter, the same person who wrote *Tempest 2000* for the Atari Jaguar.

But Nuon went beyond the ability to play games. With a Nuon-enhanced DVD player a person could zoom in on any area of the screen without any appreciable loss of quality. Special enhanced DVDs were planned that would allow viewers to see data associated with a movie that they were watching alongside the actual movie. While Nuon players could also play audio CDs like standard DVD players, they also included Jeff Minter's popular Virtual Light Machine program that displayed psychedelic effects on the screen in sync with the music.

Samsung NUON-enhanced DVD player

Although the first enhanced DVDs weren't scheduled to appear until 2001, the first Nuon-equipped DVD players finally made their debut in 2000. The first, a Samsung model that retailed for $400, came out in June. For that price consumers received a DVD player, a controller, a test disc, and a game *Ballistic*, a game from Infogrames. Toshiba followed in September with a $350 unit that didn't include a controller but was packaged with *The Next Tetris*.

With Nuon, gamers could purchase a DVD player that played games. With the Playstation2, gamers could get a game machine that played DVDs.

Although the X-Box garnered a lot of attention throughout the year, it was nothing compared to the publicity that Sony mustered up. The Playstation2 was written up in mainstream journals that usually ignored videogames. The *Wall Street Journal* called the Playstation2 "Sony's Trojan Horse", a device that would enter households as a videogame console but wind up as an all-purpose entertainment system. Trip Hawkins, who had failed in a similar attempt with his 3DO console, said the "Playstation2 would do for entertainment what Johannes Gutenberg's movable type did for printing". With more hype preceding it than any other gaming console in history, Sony released the Playstation2 to record crowds in Japan. Excitement for the Playstation2 geared up in Japan one week before the console's actual March 4 release date. Unlike previous console launches, stores had to stop taking advance orders because Sony knew it couldn't produce enough consoles to meet the demand. In Akihabara, Tokyo's electronic district, people began camping outside shops on March 1 since the stores would distribute the Playstation2s on a first-come, first-served basis. Even those who were fortunate enough to spend the $360 and receive a console didn't wind up lucky in the end. There were many reports of people being mugged for their consoles. One group of teens attempted to rob a stockpile of consoles from a store. They didn't succeed and were arrested. When one young man learned that he would not be able to purchase a console, he attempted suicide by jumping off a building. Fortunately he survived with minor injuries.

Sony Playstation2

Such actions like this were previously unknown in Japan where youths usually waited in line patiently and orderly. However the hype for the console was just too high. To make matters worse, Sony did not have enough consoles to go around. While the company initially stated that it would have two million Playstation2s ready at launch, only half that number was actually available. And of that million, only 600,000 went to the stores. The rest were allocated to Sony's website that crashed from too much traffic as soon as the consoles went on sale. Although Sony couldn't deliver enough consoles, it still managed to sell almost a million Playstation2s during the first two days of its launch, making it the most successful launch in Japanese history.

Sony's problems extended to its peripherals. It was soon discovered that many of the 8Mb memory cards did not function correctly. Saved data was erased from the card and replaced with useless data that couldn't be copied or deleted. To make matters worse, the memory card was needed to operate the Playstation2's DVD player. A defective memory card rendered DVD movies unplayable. Although it was a small problem that was resolved fairly quickly, it caused Sony's stock price to fall a few points when it was reported.

As people who purchased the early Playstation2s discovered, it wasn't a good idea for the DVD drivers to reside on the memory card. Although the drivers could be reinstalled if they were accidentally deleted, it was a hassle that consumers shouldn't have had to go through. Before long it was discovered that there were other glitches with the Playstation2's ability to play DVDs.

The Japanese Playstation2s were set-up so they could only play Region 2 DVDs. This included all Japanese discs and a few European ones. Region 1 DVDs, which included the DVDs sold in the United States, were not supposed to play on it. On the heels of the defective memory cards, Sony learned that there was a bug in the DVD drivers. In true Easter Egg fashion, gamers discovered that they could play the Region 1 DVDs on the Japanese Playstation2 if they plugged a regular Playstation controller

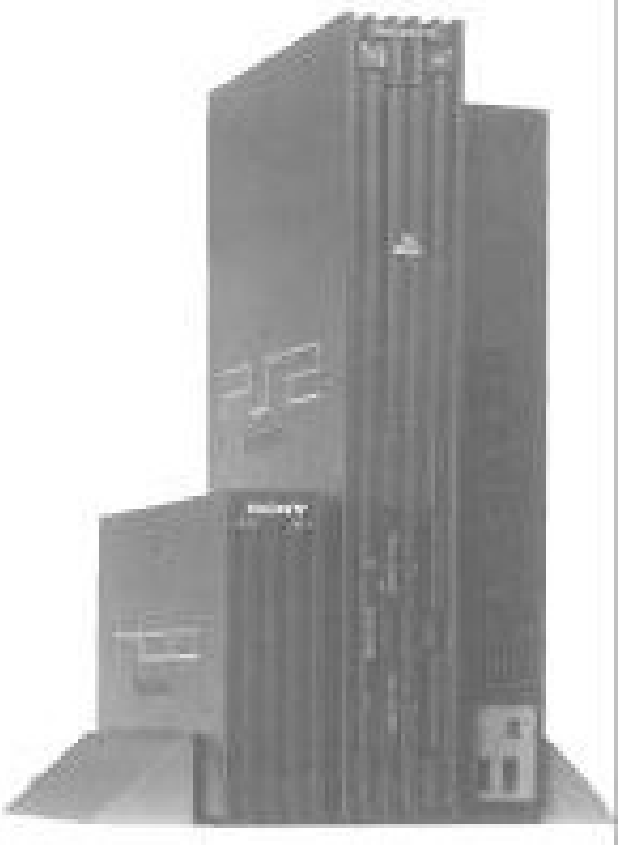
into the first player controller port of the Playstation2 and then followed a few easy steps. Sony quickly issued a fix to what it deemed a problem.

What Sony did not consider a problem was the fact that the DVD features could only be accessed through the Playstation2's wired controller. However the reality is that most people do not watch movies only a few feet away from the TV set. Several third-party companies quickly came to their rescue with wireless remote controllers.

Once the Japanese launch was out of the way, Sony was able to set its sights on the Playstation2's American launch scheduled for October 26. Bloomberg, a news agency, leaked a story on April 14 that Sony, in an attempt to get at the X-Box, would include a hard drive and a modem in the American console. Sony spokesmen wouldn't comment on the story but Microsoft executives were quick to react. Many people couldn't distinguish the X-Box from a computer merely because it would contain a hard drive. The fact that Sony might embrace a hard drive proved that the storage device was no longer relegated only to computers.

In May, Sony used E^3 to highlight the changes between the American and Japanese consoles. The most notable was the fact that the DVD drivers would be built into the console and not the memory card. Since the memory card would no longer be required, Sony would not include it with the system. This was a good thing because Americans could then expect to pay $299 for the console and not the $350 that the Japanese spent.

The Bloomberg story turned out not true. Sony would not include a hard drive and modem with the American Playstation2. However there would be a bay in the rear of the console that would eventually house an optional hard drive or Ethernet adapter.



Sony Playstation2 with Hard Drive

Within a month after announcing that the American Playstation2 would have room for an internal hard drive, Sony showed off an external hard drive for the Japanese console. The HDD (Hard Disc Drive) had its own power supply and plugged into the Playstation2's PCMCIA slot. Sony was evasive about mentioning how much data could be stored on the drive and this led to the belief that the company might offer several hard drives with various capacities.

During the summer, there was a severe shortage of the original Playstations available for sale. Many believed that this was Sony's way of creating demand for the Playstation2. It was true that Sony had ceased manufacturing the original Playstation and that resulted in the shortages. However while Sony hoped that those who owned an original Playstation might eventually upgrade to the Playstation2, the company didn't plan to phase out the original console. As was the case with earlier popular consoles from other manufacturers, Sony was merely replacing the Playstation with a smaller version of itself.

When Sony president Ken Kutaragi announced the Playstation2 HDD, he also debuted the PSOne, the replacement for the best-selling original Playstation. The PSOne was 1/3 the size of the original console and was designed for mobile use. An optional 4 inch LCD screen would be available in 2001. While Sony stressed that the PSOne would not be a hand-held unit like a Gameboy, it would be portable in the sense that it could be played in a car with an optional car power adapter. An adapter would also be available so cell phones could plug

into the PSOne and allow users to plug into a network for online gaming.

The $99 PSOne was released in the United States on September 19 with little fanfare. Meanwhile in Japan Sony announced a slew of new Playstation2 peripherals such as a color printer called *Popegg*, a cellular phone adapter, a modem, and a digital camera. The uses for the digital camera would be similar to those of the Gameboy Camera. Gamers could take photos of themselves and 'paste' them onto game characters.

Sony PSOne

As the US launch day approached, Sony delivered some bad news at the end of September. Instead of delivering one million consoles on October 26 as promised, the company would only deliver 500,000. An additional 100,000 consoles would be released each week afterwards through the end of the year.

This was not good news for people who had pre-ordered the system with the expectations that they would receive it on the launch day. While Sony cited a shortage in the raw materials needed to manufacture the Playstation2s the company didn't expect the reduction in supplies to cause any problems. With its new shipping schedule Sony planned for 1.3 million consoles to be available by the end of the year instead of the originally planned million. And even though only 500,000 consoles would be available on October 26, that number would still give Sony the record for the most consoles sold on its US launch date.

During the next month the hype for the Playstation2 ran very high. With the notion that the consoles would be impossible to get, even people who originally didn't have any interest in Playstation2s wanted one.

On October 24, a line began forming in front of Sony's Metreon store in San Francisco. There were one thousand people in line twenty-eight hours later when the store opened at midnight to begin dispensing the Playstation2. Nearly half of the people in line went home empty-handed since the Metreon only had 500 consoles to sell. Elsewhere in the country more people went home frustrated. Most stores only received allotments of twenty consoles and had to contend with crowds of 100 or more. As people realized they wouldn't be going home with a Playstation2, even though they pre-ordered, crowds became unruly with fistfights breaking between people on line. Those who did receive a console had to be escorted from stores in some places to prevent them from being stolen.

Not everyone who went home with a Playstation2 intended to keep it. Within hours E-Bay was flooded with Playstation2 auctions with prices for the $299 console ranging from $650 to more than $1000.

Although spectacular launches were a common occurrence in Japan, it had never happened in the United States before. Most mainstream newspapers and TV news covered the launch and the additional hype made the Playstation2 desirable to anyone who read or heard about it.

Despite the fact that the hype surrounding the Playstation2 made it seem like it was the only system available, Nintendo and Sega were quick to prove that it wasn't. Following its September 1999 US launch, sales for the Dreamcast were pretty good. Unfortunately all the Dreamcasts had been sold with modems that couldn't be used to their fullest because the gaming network that Sega had planned wouldn't be ready until 2000. Unfortunately that launch wasn't as smooth as Sega had planned.

The initial plan was for Sega to offer in March an online version of *Chu Chu Rocket*, a *Pac-Man* type maze game where up to four players could compete against one another. This would be followed

in April with some online card games. Then Sega was expected to make major announcements at E^3 in May. Unfortunately, other than the E^3 announcements, it didn't happen that way at all.

Since Sega didn't release anything for the Dreamcast Network prior to E^3, it decided to show off the initial online lineup at the exhibition. By that time it was decided that the first games for the Dreamcast Network would be *NFL 2K1* and two role-playing games. The company also planned to offer a new broadband modem that would allow subscribers to hook up to the Internet with cable or DSL lines. Until the broadband modem was released, online gamers would have to settle with the 56k modem that came with the Dreamcast. Sega promised that its network would supply better service through the 56k modem than PC web surfers were used to receiving.

Sega announced several Dreamcast peripherals at E^3. Among them was a mouse, a digital camera called the *Dreameye*, and an MP3 player. In order to make the Dreamcast even more enticing, Sega offered a rebate of $50 to anyone who signed on to the Dreamcast Network for a month between June 4 and August 31.

Following E^3 Sega decided that the Dreamcast Network would be renamed Sega Network and it would now launch on September 7. In addition Sega started a new subsidiary called Sega.com that would function as an Internet Service Provider (ISP) for both Dreamcast and PC owners. To lure people to sign up for the monthly $21.95 service, Sega announced a rebate program that would award people who signed up for two years with a free Dreamcast. The company also offered $200 to people who signed up with the service who already owned a Dreamcast. While people didn't have to sign up with Sega.com if they already had an ISP, not everybody would have access to Sega Network. America Online (AOL), the largest ISP in the world with 20 million subscribers, could not use that service to access the Internet with their Dreamcasts. If any of these AOL subscribers wanted to partake in online gaming on their Dreamcast, they would have to subscribe to another ISP such as Sega.com.

On September 1, the day after the $50 rebate ended, Sega announced that the price of the Dreamcast would be dropped $50 to $149 permanently. The price change naturally affected Sega's $200 rebate program for signing on with Sega Network. The new program that went into place immediately offered $150 back to those who signed up to the Sega Network for 18 months. For those who still weren't enticed to sign up, Sega offered a free 50 hour trial period to the network to anyone who purchased *NFL 2K1* or *Quake III Arena*.

The Sega Network officially went live on September 7. Despite a few initial glitches, the startup went reasonably well and most gamers discovered that playing *NFL 2K1* against online opponents was a fun experience. Sega officials were highly optimistic that the Sega Network would be a success.

As gamers in the United States were experiencing console online gaming for the first time, Japanese consumers were learning about where Sega was heading. Sega of Japan introduced a few new peripherals that would enhance the console online gaming experience. One was a LAN link that would link together several Dreamcasts that were at one location. For gamers on the go a cellular phone link was announced that would allow gamers to use their cellular phones to call up the Internet.

Nintendo of Japan had a similar idea for the Gameboy. The *Mobile Adapter GB* was a modem that gamers that connected a Gameboy with a cellular phone so they could call up the Internet and play online games. One of the games that would use the new technology was *Pokémon Crystal*, a Pokémon game that allowed players to trade and battle via the Internet. The release of the Mobile Adapter GB in the United States was iffy due to an absence of cellular phone standards.

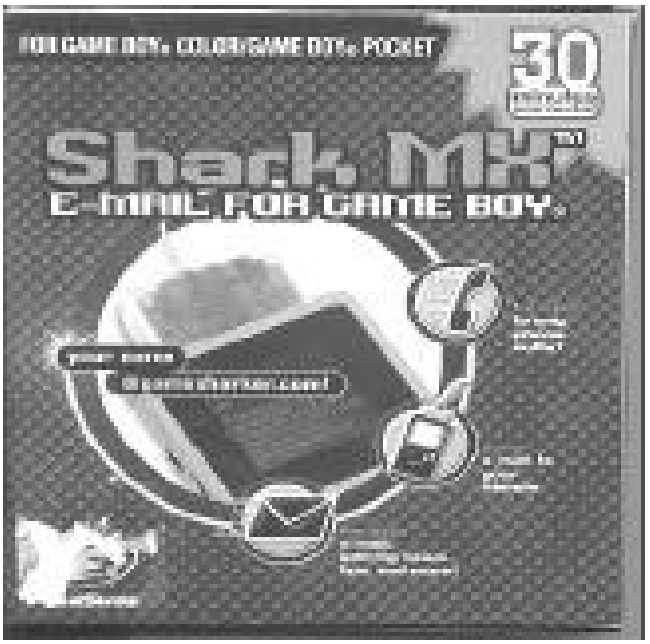
Although the Internet wasn't available for online gaming to Gameboy owners in the United States, they could use their Gameboys to connect to the Internet for e-mail.

The *Shark MX* from Interact was actually the Gameboy PDA that had been introduced in 1999. E-mail could be composed on an onscreen keyboard by manipulating a cursor with the Gameboy's 'A'

button. It was a monotonous way to write e-mail but it was meant for novices who had no other e-mail connections. The Shark MX also provided Gameboy users with a calculator, calendar, and address book.

The Shark MX was essentially a cartridge with a built-in modem. It hooked up to the Internet via a phone line that plugged into the cartridge.

The Shark MX was a great innovation but it was too late in coming. By the time it was released Nintendo was already releasing information about the Gameboy Advance, the next-generation Gameboy Color that would feature a wireless connection to the Internet.



Interact Shark MX

The Gameboy Advance would be roughly the same size as a Gameboy Color but it would be held horizontally instead of vertically. The screen would be wider than the one on the Gameboy Color and it would not be back-lit. The absence of a light would allow the Gameboy Advance to run 15 hours on two AA batteries. While the unit would not have an infrared communications port like its predecessor, a link cable would be available to hook up as many as four consoles. Of special interest for multi-player games was the fact that if two or more Gameboy Advances were linked together, only one copy of a game was needed. When earlier Gameboys were linked together, each one needed a copy of the game that was being played. The Gameboy Advance would also connect with Nintendo's forthcoming Dolphin in some fashion while maintaining compatibility with all of the Gameboy cartridges that preceded it.

Originally the Gameboy Advance was expected to be released in the fall of 2000 but Nintendo delayed it until 2001 simply because the Gameboy Color was selling too well for it to be replaced. Since the Gameboy Color didn't have any real competition in the marketplace there wasn't any reason for Nintendo to jump the gun and change things.

Actually the Gameboy was doing better than anybody's expectations. In June, after being available for 11 years in several incarnations, Nintendo sold its 100 millionth Gameboy console. This made it the most popular game console in videogame history. In fact, thanks mostly to the success of Pokémon, Nintendo managed to sell 17 million consoles between June 1999 and June 2000.

Due to the unprecedented success of the Gameboy, third-party companies continued to release new games and peripherals. In December Nintendo of Japan released a new game called *Kirby's Tilt & Tumble*. Inside the cartridge was a motion detector that sensed at what angle the Gameboy console was being tilted. The angle of the tilt determined what direction Kirby would move on-screen. While the game itself wouldn't be released in the United States until early 2001, Nintendo announced that the technology would be used in many Gameboy Advance games.

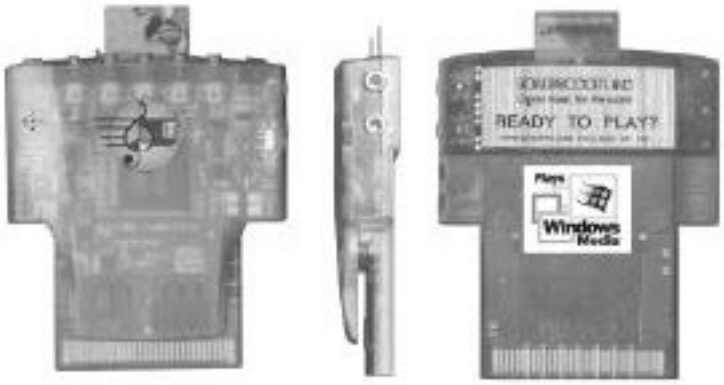
Not all of the Gameboy innovations were from Japan. One unique device that originated in the United States was a peripheral that turned the Gameboy into a portable MP3 player.

The Songboy was housed in a cartridge that plugged directly into the Gameboy. MP3 music could be downloaded from the Internet to a PC and then sent to the Songboy via a USB connection. The $79 Songboy could store approximately sixty minutes worth of music within its 32Mb of memory. If that wasn't enough then an additional 32Mb of memory was available.

The Songboy wasn't just an MP3 player. Thanks to the Gameboy's screen, additional features like viewable song lyrics or album cover visuals were also possibilities. The Gameboy could even double as a recorder since the Songboy had a built-in microphone.

Songboy.com, the company behind the Songboy, had applied to become an official Nintendo

licensee. Nintendo not only denied the request, it turned around and sued Songboy.com for infringement of its intellectual property rights. The suit became even more vicious when Ron Jones, the head of Songboy.com and the inventor of the Songboy, commented that the lawsuit was a bias attempt by Nintendo to stop Songboy.com because it was a black-owned company.



songpro.com Song-Pro

The two companies battled one another throughout the summer. In August representatives from the two companies finally faced each other in a meeting sponsored by Reverend Jesse Jackson. During the meeting the two companies were able to reach an amicable decision. Songboy.com agreed to change its name to Song-Pro.com and the name of its product was changed to Song-Pro. Nintendo in turn agreed to officially license the product. The only calamity from the agreement was the price of the Song-Pro. The $79 peripheral retailed for $119 when it was finally appeared on Song-pro.com's website at the end of the year.

The Gameboy wasn't the only hand-held system that Songboy.com initially intended to support. At E^3 the company showed off the Songjones, a version of the Songboy that was compatible with the SNK Neo•Geo Pocket Color. Unlike the Gameboy version, the Songjones never made it to market. And this wasn't due to any fault of Songboy.com at all.

Despite having a large exhibit at E^3 in May, SNK decided shortly afterwards to change its focus in the United States, Canada, and Europe. On June 13 the company announced that it was closing down its entire U.S. operation. The company immediately asked retailers to return all unsold SNK products. This included not only the Neo•Geo Pocket Color hardware and software, but also any SNK software for the Dreamcast and Playstation. SNK intended to repackage the recalled merchandise and sell it in Japan.

The closure of SNK in the United States took its personnel completely by surprise especially since the U.S. office had just signed a new five year lease at its Torrance California headquarters. The response for the Neo•Geo Pocket Color had been overwhelming at E^3 and at least four third-party companies intended to begin developing games for the console. The belief was that the system would have been a contender for at least a year. The sales department had even requested a $10 million advertising budget from Japan to promote the hand-held. Instead it received notice of the closure.

The closure was basically attributed to the fact that the Neo•Geo Pocket Color couldn't compete in a market that was more than 80% dominated by the Gameboy Color. However there had also been major conflict among the SNK developers in Japan. In January the company had been purchased by Aruze, a major Japanese maker of casino games, and the new regime decided to make changes immediately. Developers who had been writing action and fighting games for over fifteen years were told to change their efforts and began writing pachinko titles. The belief was that the developers left SNK in protest and found jobs at Capcom, another software company that specialized in fighting games.

While this departure of developers couldn't have a drastic effect on the overseas businesses, many believed that the closures were made because SNK didn't really need to have them open. A lot of SNK's overseas business was done by diehard gamers who imported the games from Japan because they couldn't wait for the domestic releases. This business would continue and prosper since the Japanese imports would be the only SNK games available.

With the death of the Neo•Geo Pocket Color in the United States, Nintendo had absolutely no

competition in the hand-held market. This wasn't the case in Japan where the Neo•Geo Pocket Color still flourished along with Bandai's monochrome Wonderswan, which was so popular that Bandai released a color version in December. The Wonderswan Color was completely backward compatible with the original and was capable of displaying 241 colors on the screen at a time. The system could play for twenty hours on one set of AA batteries and it featured a USB port so it could hook up with cell phones, PCs, and the Playstation2. While the original monochrome unit never made it to the United States, the word from Bandai was that the Wonderswan Color would although not in 2000.

One color hand-held that did appear on U.S. store shelves was the Sega Game Gear. Majesco, the software company that had re-released the Sega Genesis as the Genesis 3, assumed the rights to the Game Gear and re-released it in December. Although Majesco didn't have any illusions that the Game Gear might outsell Nintendo's Gameboy Color, its $30 price made it a nice inexpensive alternate. Majesco also re-released a dozen or so cartridges that retailed for $15.

In early January executives at Nintendo insisted that the Dolphin would appear in 2000. Most people, inside and outside of Nintendo, were highly skeptical and several reasons were cited. Chief among them was the fact that the second and third party developers weren't anywhere nearing completion of their first Dolphin games. One reason for this was because the development kits that the licensees had weren't representative of what the final Dolphin would be like. Nintendo acknowledged this and promised that it would send out the finished development kits beginning in April. With the word out that Nintendo hadn't yet shipped the current development kits, the company didn't have any choice than to admit at the Game Developers Conference in March that the Dolphin would not appear in the United States and Europe until the first half of 2001. A holiday release was still expected in Japan.

Attendees to the E^3 in May were disappointed to learn that Nintendo was not showing either the Dolphin or the Gameboy Advance. Prototypes of the new consoles weren't even shown off behind closed doors to select members of the press as was usually the custom when a company had a hot new system coming out. Instead, Nintendo concentrated on its N^{64} and Gameboy Color lineup that included several new Pokémon titles. Nintendo preferred to debut its new consoles at its own Spaceworld show that would be held in Japan on August 25. However even that date wasn't set in stone. Several developers suggested that Spaceworld would be pushed back to November if Dolphin software wasn't ready in August. This scenario became more and more apparent when by July Nintendo still hadn't sent out the all-important development kits to the second and third party developers.

Despite the anxiety that was being felt by the developers, Nintendo intended to hold Spaceworld at the end of August as originally planned. Before the show arrived Nintendo went ahead and changed the name of its new console. Dolphin was out and *Star Cube* was in. However that moniker wouldn't last long. By the time Spaceworld actually opened on August 25, the name of the new console was officially called the *Gamecube*.

The name was appropriate. Shown to the press for the first time at Spaceworld, the console simply looked like a cube that played games. While measuring a small 6 inches x 6 inches x 4.3 inches, the inside of the Gamecube contained nearly the same specifications that Nintendo had outlined for the Dolphin over a year earlier. The Gekko microprocessor would run at 405Mhz and the graphics chip would generate 6 to 12 million polygons per second.

While Nintendo finally abandoned the cartridge format, it did not embrace the CDs or DVDs like the rest of the industry. Instead it went with a proprietary optical disc that was based on Matsushita technology. Each 8cm disc could hold 1.5Gb of data. While that was roughly 190 times the data that was stored on an N^{64} cartridge and twice as much as on a CD, it still contained only one third of the

data that could be stored on a DVD. Nintendo predicted that its format would eventually become a standard and that its small size would be attractive for future hand-held consoles.

Like the other videogame consoles of the 21st century, the Gamecube would have the optional ability to hook up to the Internet. Modular 56k or broadband modems would plug into a socket on the underside of the Gamecube.

Nintendo Gamecube and Gameboy Advance

While Nintendo revealed much about the Gamecube and Gameboy Advance at Spaceworld, including a new release date of July 2001 in Japan and October 2001 in the United States, it didn't announce everything. The company specifically left out details that it wouldn't announce until the 2001 E^3 for fear that the competition might 'borrow' them. Game titles for the Gamecube were also conspicuously absent at Spaceworld.

Pikachu Nintendo 64

Even though the Gamecube and Gameboy Advance wouldn't be available until 2001, Nintendo still managed to release a 'new' console in 2000. The Pikachu Nintendo 64 was a redressed version of the N^{64}. The blue and orange console had a pokéball that doubled as an on-off switch and next to the cartridge slot sat a raised Pikachu whose cheeks lit up when the power was turned on. The special console was Nintendo's attempt to use the Pokémon franchise to keep the N^{64} alive. Since the release of the Dreamcast in 1999 sales for the N^{64} had plummeted. The few third-party companies that had invested in the N^{64} were now turning away from it. Acclaim announced early in the year that it would release five games for the N^{64} in 2000 and then it would abandon the console. Nintendo, on the other hand, didn't plan on forsaking the N^{64}. At E^3 it announced several new outstanding games including *Pokémon Puzzle League*, a *Tetris* type puzzle game.

It made sense for Nintendo to keep releasing Pokémon related products. Since the U.S. introduction of Pokémon in 1998, Nintendo had seen its sales rise in record proportions. In 1997 hand-held games only accounted for 6% of the total videogame sales. After *Pokémon Red* and *Pokémon Blue* came out in September 1998, the handheld sales jumped to 8% of the market for the entire year. That number climbed to 18% in 1999 when Pokémon products were available for an entire year. This occurred during a year when overall videogame sales actually fell slightly. During the first five months of 2000, Nintendo reported a 220% gain in sales on Pokémon-related games over the year before. And that was before the company even released *Pokémon Silver* and *Pokémon Gold* for the Gameboy Color.

One new Pokémon-related product that Nintendo released was the *Pokémon Pikachu 2 GS*. This hand-held unit was similar to the *Pocket Pikachu* that Nintendo had released in 1998. New features were a color screen and the ability transfer data with the Gameboy Color via the infrared port.

Another new *Pokémon* title was *Hey You Pikachu*, a children's game where gamers could actually talk to Pikachu and have him respond to their voice commands. To accomplish this feat, a

microphone that plugged into the controller, was included. But Nintendo wasn't alone with this technology. Sega also released a game that came with a microphone so players could communicate with onscreen characters. In the Sega game *Seaman*, players talk to fish that had the faces of humans. Sega's long-term plans was to use the microphone that came with *Seaman* for other applications. One plan was the *Dreamcall* program where two Dreamcast owners to talk to each other over the Internet for free. However since games were Sega's prime business, the company also looked for ways to incorporate Dreamcall with its games. One plan was to allow players competing in games over SegaNet to talk to each other. Sega planned to release the first compatible game, *AlienFront*, in the fall.

Because they were packed with microphones, *Hey You Pikachu*, which retailed for $80, and *Seaman*, which carried a $50 price, cost more than other games for their respective systems. However even the average price for software for the two systems cost much more than new Playstation software.

Nintendo Pokémon Pikachu 2 GS

In April Sony instituted a new licensing structure where third party companies paid lower licensing fees. Sony did low-cost titles would be produced and the Playstation could remain popular. Once the new price-structure was in place, several companies released brand new $10.00 Playstation discs. Most of the low-priced games didn't look or play as well as the higher-priced titles from the better-known companies but, they still managed to sell decently.

One reason people may have been buying Playstation discs was to play them on their Dreamcasts. Bleem announced a new emulator at E^3 that allowed Playstation games to play on a Dreamcast. Bleem planned to sell four Bleempaks. Each $20 pack would contain an emulator that would allow the Dreamcast to play 100 Playstation titles. Although Bleem garnished a lot of attention for the Bleempaks at E^3, they still weren't available by year's end.

Another way for Dreamcast owners to play more games on their console was by purchasing Japanese imports. The only problem was that imported games couldn't play on domestic Dreamcasts without the installation of a mod chip, which voided the warranties. Eventually this procedure proved to me unnecessary after it was discovered that by inserting a Gameshark CDX into a Dreamcast and pressing 'Start Game' without activating any codes, put the console in state where it would accept any Dreamcast CD regardless of the region it originated from.

And then, of course, there were those who bought counterfeit copies of the games. Thanks to Sega's anti-piracy actions, there were a lot less scrupulous people selling the bootleg copies. Sega was responsible for the shutdown of over 60 websites and 125 online auctions that sold counterfeit material.

Meanwhile the battle concerning violent videogames raged on. In April a federal judge dismissed a lawsuit against 25 entertainment companies. The suit had been filed by the families of three girls who had been killed at a 1997 school shooting in Paducah, Kentucky. The prosecution charged that the shooter, Michael Carneal, had imitated the violence that he found in movies and games that had been released by the entertainment companies including Nintendo, Sony, and Sega. The judge ruled that Carneal's actions were tragic and unforeseeable but there was no way that the companies could be

held responsible.

Although at least one judge ruled that the games weren't responsible for someone's violent behavior, the stores weren't taking any chances. In May, following an Illinois sting operation where 32 children were able to buy M-rated games from every store that they entered, Illinois Attorney General Jim Ryan wrote to the leading department stores and asked them to stop selling M-rated to minors. Sears and Montgomery Ward complied by removing all games that had Mature-rated content. The stores received kudos from Senator Joe Lieberman and he implored other stores to follow suit. At the very least he asked that the stores not sell the M-rated games to people under 17. Wal-Mart and Kmart responded to Lieberman's request by announcing that they would check the ID of anyone who wished to purchase an M-rated game. The two stores didn't go all the way and completely remove the games because they felt that the games were legal and their customers wanted them. Toys R Us already had a similar policy in place.

As kids around the country were being banned from buying mature games, kids in Indianapolis found that they couldn't play violent games in arcades. Indianapolis became the first city in the country to officially ban minors from playing games with graphical violence or sexual content. The law called for the mature games to be separated from other games in an arcade by at least ten feet. They also had to be behind a curtain or wall so minors couldn't even see them. The new law was challenged by two game industry groups but the Mayor of Indianapolis was confident that it would hold up in court.

Despite the laws and the removal of stock from store shelves, children were still learning about the mature games. An FTC report issued in September found that the game companies were targeting minors by placing ads for mature games in inappropriate places such as magazines that catered to teens. Peter Moore of Sega didn't completely agree with the report. While he conceded that the companies shouldn't place ads for violent games in a magazine like *Sports Illustrated For Kids*, he didn't see a problem when the ads appeared in the general videogame magazines.

The videogame magazines themselves had experienced a bad year as four U.S. magazines closed down in 2000. *Diehard Gamefan* and newcomer *Incite* were consumer magazines and *Games Business* and *MVC* were trade magazines. While the death of the consumer magazines didn't leave much of an impression upon a readership that still had four other general videogame magazines to choose from, the loss of the trade magazines made a larger impact. Only *Gameweek*, the first of the videogame trade magazines, remained.

But the magazines weren't the only businesses in the industry that was having hard times. Hasbro Interactive, the software division of Hasbro, also found itself in dire straights. The company announced in December that it was pursuing a deal where France-based Infogrames would buy the company for $100 million in cash and stock. Among the assets that Infogrames would receive were all of the Atari patents and titles.

But if any company symbolized the fickleness of the buying public, it was Sega Enterprises. Sega had entered the year 2000 after losing nearly $100 million in 1999. The company initially experienced healthy Dreamcast sales, but that changed considerably once Sony released the Playstation2 in Japan. In mid-summer, as mounting losses continued, Sega's president, Sholchiro Irimajiri, took responsibility and stepped down from his position. He was replaced by Isao Okawa who had been the chairman of CSK Corporation, Sega's primary stockholder. One of Okawa's first steps was to give Sega of America Peter Moore an ultimatum. Moore was given $500 million and one year to make the Dreamcast healthy again. After that the fate of the Dreamcast, as well as Sega, was anybody's guess.

But even as the Dreamcast was given a new lease on life in the United States, the outlook of Sega

Enterprises was miserable. After being called ‘the least profitable company in Japan’ by the Japanese newspaper *Nihon Keizai Shinbus*, executives at Sega of Japan met on November 15 to announce that Sega planned to become the number one network game service provider before 2003. At that time Sega would split up into three separate businesses. One would run online videogame content. The second would provide broadband online services. The third would concentrate on entertainment centers that would feature Sega’s games.

On the software side, Sega would support several consoles by licensing its hit titles out to third-party developers. Bandai expressed interest in bringing Sega games to the Wonderswan Color and there were rumors that said Acclaim would team up with Sega to develop Sega titles for the Playstation2.

On the hardware side, Sega intended to keep supporting the Dreamcast, although the definition of the console was subject to change. Sega’s intention was to license the Dreamcast technology to other companies who would incorporate it in other platforms such as DVD players, cellular phones, and PCs. The goal was to raise Sega’s market share from 4.2% to 25%.

Sega appeared to be off to a good start. With Playstation2 shortages abundant, many people settled on the Dreamcast, which numerous videogame critics favored anyway. But it would be a minor victory. As the year came to a close the rumor mills were already reporting that the Dreamcast’s days were numbered.

And the rumor mills were usually right.

APPENDIX A
COMPUTERS

Although home computers have always been an viable alternative to dedicated home videogame systems for game players, never was there a time like in the early to mid 1980s when cartridge-based computers played a major role in the home videogame shake-up of 1983-84. As opposed to today's IBM PC and Apple Macintosh, home computers such as the Commodore 64 and VIC-20, TI-99/4A and Atari's line of 8-bit computers were mass-market products that steadily declined in price to the point where the price differential between these machines and home videogame systems virtually vanished. In addition to boasting graphics and a library of games that rivaled their console counterparts, the ability to run a variety of educational, programming, home financing, word processing programs influenced many gamers to abandon their consoles in favor of the more versatile home computers. However, these computers also had one feature that didn't set them apart from their console counterparts, and that was cartridge based software. Although many of them had optional disk drives, in all cases owners could buy a variety of games in cartridge form and simply insert them into the computers to play them. As the price of the systems decreased, before long there little distinction between these 'computers' and the dedicated videogame consoles.

The earliest cartridge based computer system was the Videobrain, which is mentioned on page 25. This system was released in 1977 and came with a sculptured keyboard, 1K RAM, 4K ROM and two joystick controllers. Unfortunately, since the system was incapable of saving or printing data the Videobrain's usefulness as a full-scale computer system was pretty limited.

Atari entered the personal computer market in late 1978 when it released the $499 400 and the $999 800 computers. The 800 was a 16K (later 48K) computer expandable to 48K. It came with a full-stroke keyboard, 8K BASIC built in and high resolution graphics capabilities. Atari had originally developed only the 800 computer, but one of its strategic partners in the marketplace, Sears, insisted that a $999 computer would not garner the necessary sales to carry them in their stores. They maintained that a sub-$500 entry-level computer was crucial in an era of computer apathy. Atari's answer was the 400, an 800-compatible, non-upgradeable 8K (later 16K) computer with a membrane keyboard, a single cartridge slot and no monitor output. Later 400/800 models were offered with 16K and 48K of memory, respectively. A disk drive, monitor, modem, printer and other devices were available as add-ons.

The Atari 8-bit line of computers, as they were often called, were slow out of the gate as consumers were hesitant in spending hundreds of dollars on a machine because they were unsure of what they were. Were they souped-up game machines or were they low-cost business and educational alternatives to the Apple II? The answer came in 1981 with the arrival of the mega-hit intergalactic dogfight simulator, *Star Raiders*. Designed by Doug Neubauer, *Star Raiders* was a beautifully executed *Star Trek*-type game that immediately made all other programs in the same general classification obsolete. Hordes of science fiction fans raced to the stores to purchase an Atari computer and this space flight marvel. Subsequent Atari releases such as *Pac-Man*, *Missile Command* and *Centipede* further cemented the position of the Atari 400 and 800s as a deluxe home arcade machine that was also capable of productivity and business tasks.

The Atari 8-bit computer line was revised several times during its life. The 1200XL offered 64K and a sleek design and was intended to be the flagship computer of the 8-bit line. However, it was shipped with several significant bugs and wasn't completely compatible with existing 400/800

software as Atari promised. Atari quietly killed off the 1200XL, and in 1984 brought out the 16K 600XL and 64K 800XL. After Jack Tramiel took over control of Atari in 1985, they redesigned the computers yet again and called them the 65XE and 130XE, which had 64K and 128K of memory, respectively. Finally, in 1987 Atari offered the XE Videogame System, a repackaged Atari computer, complete with keyboard, that was compatible with existing Atari 8-bit computer software and peripherals and could handle all computing tasks as well as play games.

Atari 130XE

Texas Instruments TI-99/4A

In June 1979, Texas Instruments introduced the first 16-bit computer in history. The 16K TI-99/4A was based on the TI 9900 CPU and ran at 3MHz. The computer included a full-stroke keyboard and the ability to display 16 colors on-screen. It originally retailed for $1150 and included a 13" Zenith color monitor. Texas Instruments later dropped the monitor and made it an option.

One of the more innovative hardware items available for the TI-99/4A was the MBX voice recognition system by Milton Bradley. For the first time, voice recognition and speech synthesis were made available on a home computer. The MBX was sold with a 64 position keypad with overlays for each cartridge, a precision, three-axis joystick, and a headset microphone for the voice command function. Among the cartridges available was *Championship Baseball*, a game where players controlled the movement of the ball by a series of voice commands. For example, when the player wants the ball to be thrown to first base he says the words "first base" into the headset microphone.

Fueled by a $100 rebate strategy, by the end of 1982, the TI-99/4A was the number one computer in America and was outselling the Commodore VIC-20 and the Atari 400/800 at the rate of three to one. Starting in 1983, however, Texas Instruments became engaged in a furious price war with Commodore as the VIC-20's price was reduced to $125 and Texas Instruments followed suit. With this round of price reductions the TI-99/4A was now being sold at break-even prices (It cost $100 to make the TI-99/4A, while the VIC-20 cost $75). This was the beginning of the end for TI-99/4A.

In early 1983, shipments of TI-99/4As were halted when an apparent defect was discovered in power supplies shipped with the computer. Texas Instruments lost $50 million fixing the problem. The power supply was one that Texas Instruments bought from another company, and although it had passed safety tests in the US, it was not approved for Canada. The nail in the coffin came when the VIC-20 dropped in price to $99. Texas Instruments matched the price but announced a $119 million loss during the second quarter of 1983. Battered by losses mainly attributed to the TI-99/4A, Texas Instruments bowed out of the personal computer business in October of 1983.

Radio Shack's TRS-80 Color Computer began appearing in Radio Shack stores in the fall of 1980 retailing at $399. The name TRS came from *Tandy Radio Shack* and the 80 stood for the Z-80 CPU in Tandy's first computer, the Model I. The TRS-80 Color Computer was based on the Motorola 6809E chip and came with 4K RAM, 8K BASIC, a 53 key calculator-style keyboard, built-in modulator to

connect to any television and an RS-232 interface.

The TRS-80 Color Computer went through several configurations. The TRS-80 Color Computer 2 was introduced in 1983 and was basically a refinement of the original, with a more efficient power supply, a full-stroke keyboard, higher integration/lower parts count, smaller case and lower manufacturing cost. The TRS-80 Color Computer 3 was introduced in 1986 and incorporated several more improvements, the most significant being the doubling of the clock speed from 0.895 MHz 1.7 MHz. The TRS-80 Color Computer 3 also had a RAM increase to 128K (upgradeable to 512K). Although the TRS-80 Color Computer was virtually anonymous due to its lack of coverage in most contemporary gaming and computer magazines, enough of them were sold to the extent that Tandy supported and sold the machine at Radio Shack stores until 1987.

Commodore 64

Commodore's bid to capture the home computer market first began in 1980 with the VIC-20, a 6502-based system running at 1.01 MHz. Although it was underpowered compared to its competition with only 5K RAM (3.6 of which is usable for BASIC programming), primitive BASIC and 22 characters per screen line, it more than held its own in the marketplace as a result of Commodore's aggressive pricing. By 1983, VIC-20s were being sold for $99, establishing it as the price leader in the home computer segment. This price point proved to be so successful that Commodore had to postpone its initial plan of halting production by mid-1983. Overall, more than 2.5 million units were sold during its lifetime.

It wasn't until late 1983 with the introduction of the Commodore 64 that Commodore was able to compete in both price and power. Featuring 64K RAM (40K useable), an excellent sound chip and graphics that were superior to the VIC-20, the $199 Commodore 64 was an immediate hit as it quickly assumed the leadership role in home computer sales. Although questionable quality (at least initially) and a slow (optional) disk drive were among a few of its flaws, the price of the computer and its peripherals helped to wash away any fears that prospective purchasers had in purchasing the machine.

As more powerful computers like the IBM PC, Apple Macintosh, Atari ST and even Commodore's own Amiga threatened to drive the Commodore 64 to extinction in the mid-1980s, the Commodore 64 more than held its own. Those who wished to get into computers for the first time or mainly play games found that the Commodore 64 was more than adequate for their needs. And with the drop in price to $99, the Commodore 64 did not require a large investment to get into computing. By the time it was finished, the Commodore 64 had established itself as the best selling computer of all time, selling between 20-25 million units during its remarkable lifetime. And over 10,000 programs were written for the machine, both commercially and in public domain circles.

APPENDIX B
THE INTERNET

Sometime in 1995, several new words entered the lexicon of ordinary non-scientific people. Those words were *Internet*, and *World Wide Web*. To most people the two were synonymous and a brand new frontier for them to explore. The truth was that the World Wide Web is in fact just a part of the Internet, a network that has been around for nearly three decades.

The Internet is a network of networks where government, education, and business computer networks are all interconnected with each other. The Internet developed from a project developed in 1969 by the U.S. Defense Department. In anticipation of nuclear war, the idea behind the ARPAnet (Advanced Research Projects Agency) project was to create a computer network that could withstand some destruction yet still remain intact. If the network consisted of a central computer that many other computers were linked to, that network would be totally useless if the central computer was damaged. The ARPAnet project developed a network where every computer had the ability to send and receive data with every other computer on the network.

During the eighties universities and businesses began to incorporate individual LANs (Local Area Networks) where many of their personal computers were hooked up to one central server computer usually located inside the same building. Many of these LANs used the same communications protocols as ARPANET. Before long many of these local networks linked up with ARPANET. In 1983 the ARPANET went from being an experimental network to a practical one when all of the United States' military bases were connected to it.

In 1988 the National Science Foundation (NSF) set up five supercomputer centers that were located around the United States. Their idea was to allow researchers to use the supercomputers via the ARPANET. Unfortunately the ARPANET was limited in its capacity and couldn't handle the load. To clear away some of the traffic the NSF built NSFNET, a new, faster network that connected its five supercomputer centers.

The universities hooked their computer networks up to NSFNET and before long they began using the network for more than it was intended. Rather than calling up the supercomputers for research, they were using the network to send E-mail to each other. Before long the majority of the traffic on the NSFNET was not going to the supercomputers as its final destination. The Internet was here to stay.

Although the Internet had been around for several decades, very few had access to it. Those who were able to get on it had to be fluent in Unix, the Internet's native language. Before long search tools such as Gopher and Archie were developed that aided Internet users to find desired files.

The Internet consists of seven areas:

1) Electronic Mail allows users to send notes from one computer to another.

2) FTP (File Transfer Protocol) lets users download and upload files from anywhere in the world. The trick of course is knowing where to find them.

3) Gopher is one of the ways to find files on the Internet. Like the animal gopher that burrows through layers of dirt to build tunnels, the electronic gopher will burrow through megabytes of data searching for appropriate files.

4) IRC is a world wide chat area. Users can 'talk' to other people online in real time by merely typing out a message.

5) Mailing lists are E-mails concerning a specific topic. One person sends the mail to a group address that contains the E-mail addresses of everyone who is signed up to that particular list. The

mail is then automatically sent to everyone on the list.

6) Newsgroups are mailing lists in reverse. In this case there is a central area that contains messages from people concerning specific topics. Anything in the newsgroup can be read by any subscriber to the list.

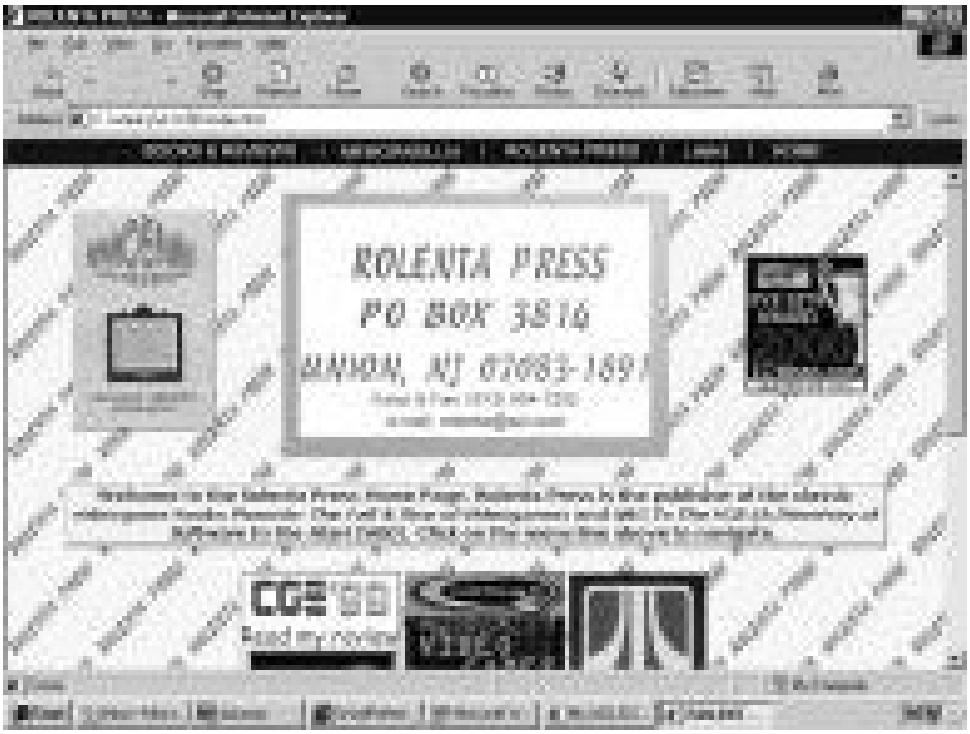
7) The World Wide Web (popularly known as The Web) is the part of the Internet that is commanding the most attention. The Web consists of pages that are stored on multiple computers that can easily be accessed through hyperlinks.

In the late eighties, Dr. Tim Berners-Lee, who worked for CERN (European Center for Nuclear Research) wrote a program called *Enquire*, which allowed him to record his academic summations. *Enquire* allowed him to cross-reference all of his papers through a technique called hyperlink. Hyperlink allowed Berners-Lee to bring up a certain paper by simply highlighting its name. The hyperlink concept caught the eye of the other people at CERN and before long all their papers were put in a central computer so they all could simply be accessed.

The first Web site appeared in 1991 and it was a simple text-only interface that was used to educate physicists on how the hyperlink concept worked. From that point on the World Wide Web slowly grew but it was pretty much limited to educational and government agencies. However that soon changed in 1993 when a Web Browser called *Mosaic* was developed by students at the University of Illinois. Mosaic allowed people to access the World Wide Web through a graphical interface by merely pointing and clicking with a mouse. An advanced browser called the *Netscape Navigator* followed in mid-1994 and pretty soon Internet providers were popping up everywhere. While the first Web sites consisted of text, they were soon replaced by colorful pages that contained graphics.

It wasn't until mid-1995 that the commercial online companies such as Prodigy, America Online and Compuserve began providing access to the Internet. Once they did millions of computer owners began to 'surf the web'. Once this vast number of people gained access, most companies realized that they had to have a presence on the Web.

The "Information Superhighway", as the Internet is often called, is indeed a vast frontier that anyone can explore. Sometimes the trudging can seem tedious. But at all times it will indeed be rewarding and informative.



Microsoft Internet Explorer

APPENDIX C
WEB SITES

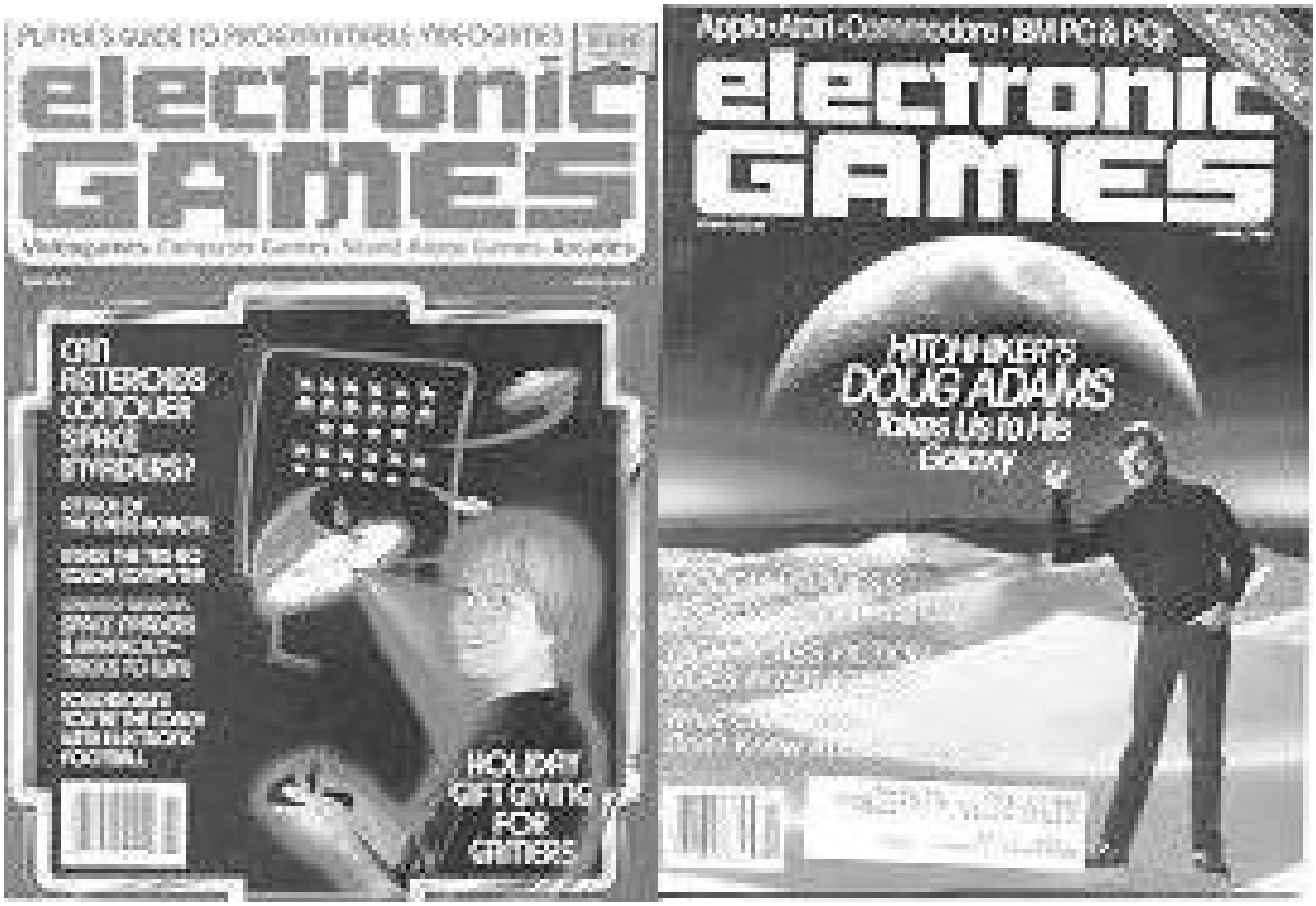
SECTION 1 — GENERAL
For a more extensive list go to the Classic Video Games Nexus

All Game Guide, www.allgame.com
Atari Age, www.atariage.com
Atari Gaming Headquarters, www.atarihq.com
Atari Historical Society, www.atari-history.com
Classic Gaming, www.classicgaming.com
Classic Video Games Nexus, fly.hiwaay.net/~lkseitz/cvg/nexus/
Digital Press, www.digitpress.com
I.C. When, www.icwhen.com
KLOV (The Killer List of Videogames), www.klov.com
Rolenta Press, www.rolentapress.com
Twin Galaxies, www.twingalaxies.com
UVL (Universal Videogame List), uvl.arteh.com
Video Game Connections, www.videogameconnections.com
Videotopia, www.videotopia.com

SECTION 2 — MAGAZINES
Game Informer, www.gameinformer.com
Gamepro, www.gamepro.com
Next Generation, www.next-generation.com
PSE2, www.psextreme.com
PSM, www.psmonline.com
Tips & Tricks, www.tipstricks.com
Ziff Davis Magazines (EGM), www.videogames.com

SECTION 3 — MANUFACTURERS
Nintendo, www.nintendo.com
Sega, www.sega.com
Sony, www.sony.com

APPENDIX D
MAGAZINES



Electronic Games
Winter/82 - 4/85

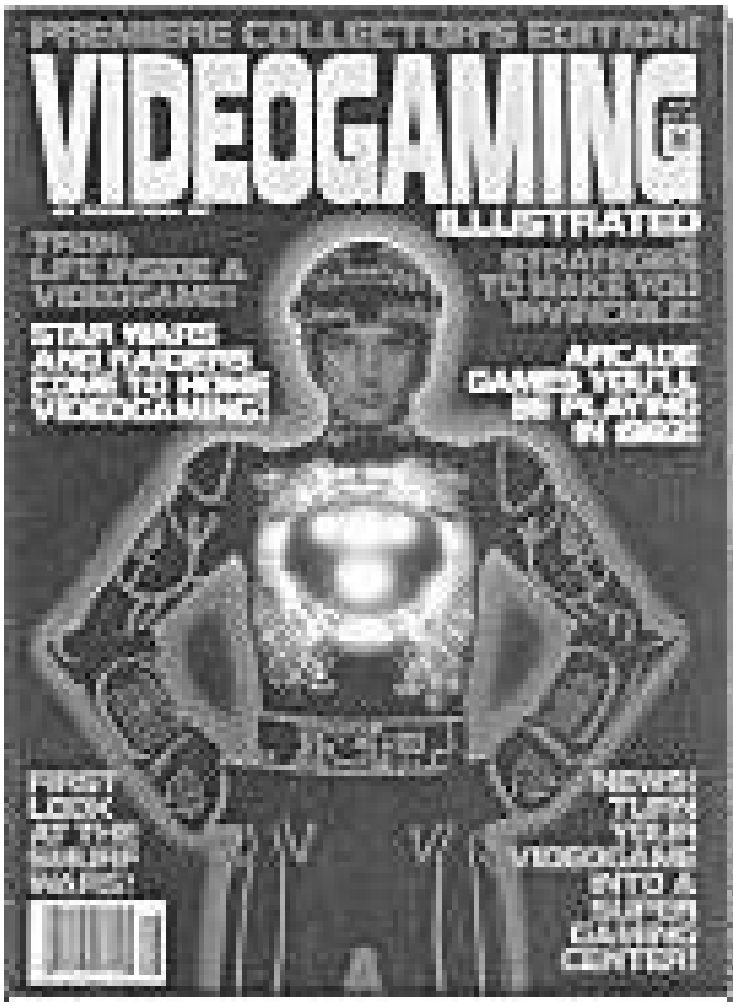
becomes

Computer Entertainment

5/85 - 8/85

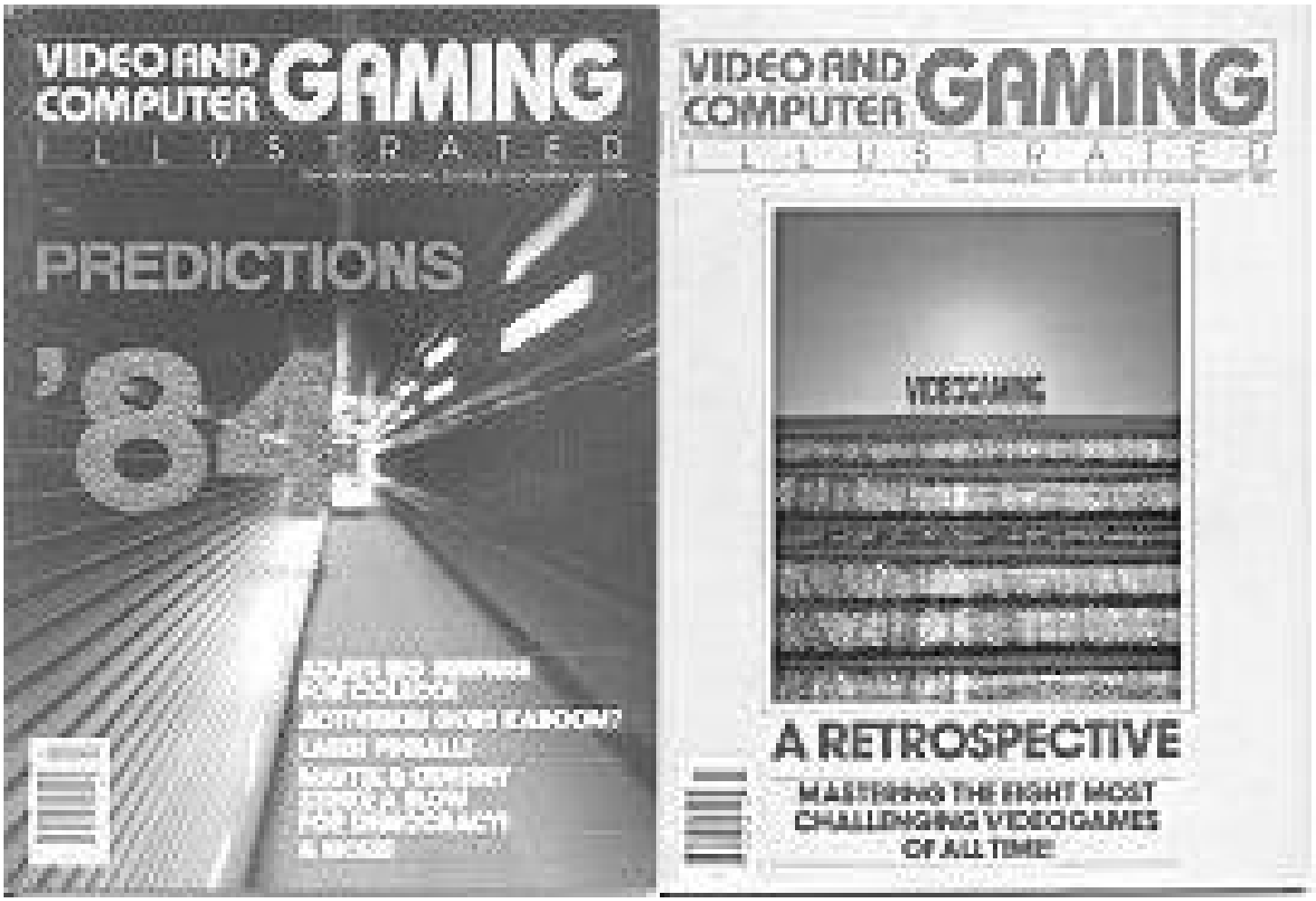
Video Games
8/82 - Fall/84

Joystick
9/82 - 12/83



Videogaming Illustrated
8/82 - 12/83

becomes



Video And Computer Gaming Illustrated

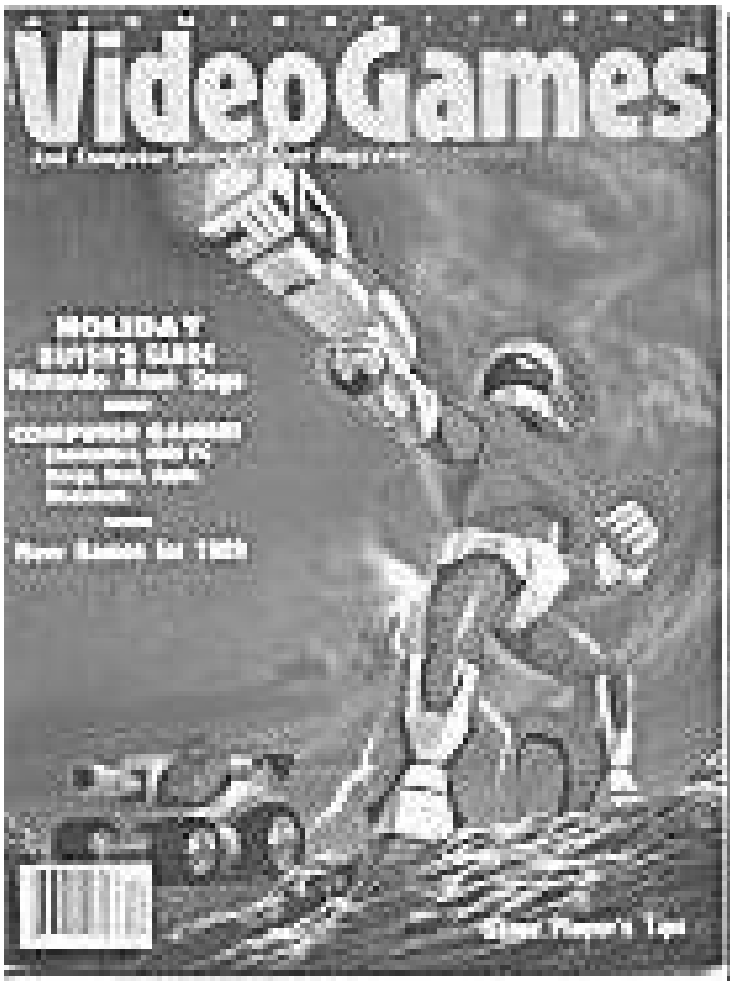
1/84 - 3/84

Electronic Fun With Computers & Games
11/82 - 3/84

becomes

Computer Fun
4/84 - 5/84

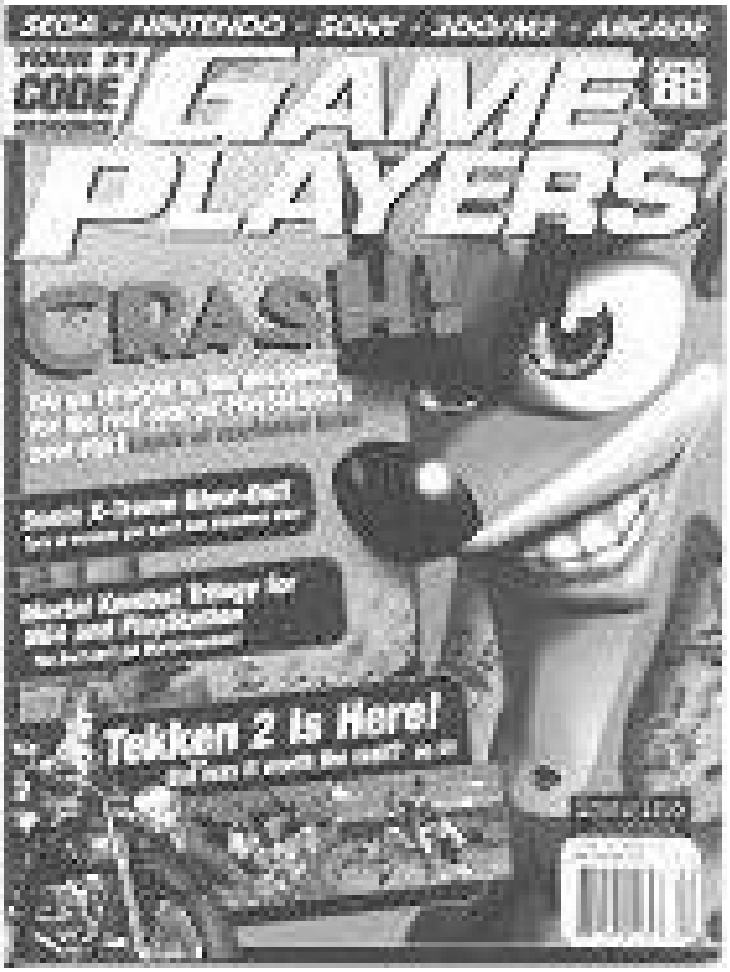
Hi-Res
11/83 - 5-6/84



Videogames & Computer Entertainment
12/88 - 8/93

becomes

Video Games
9/93 - 8/96

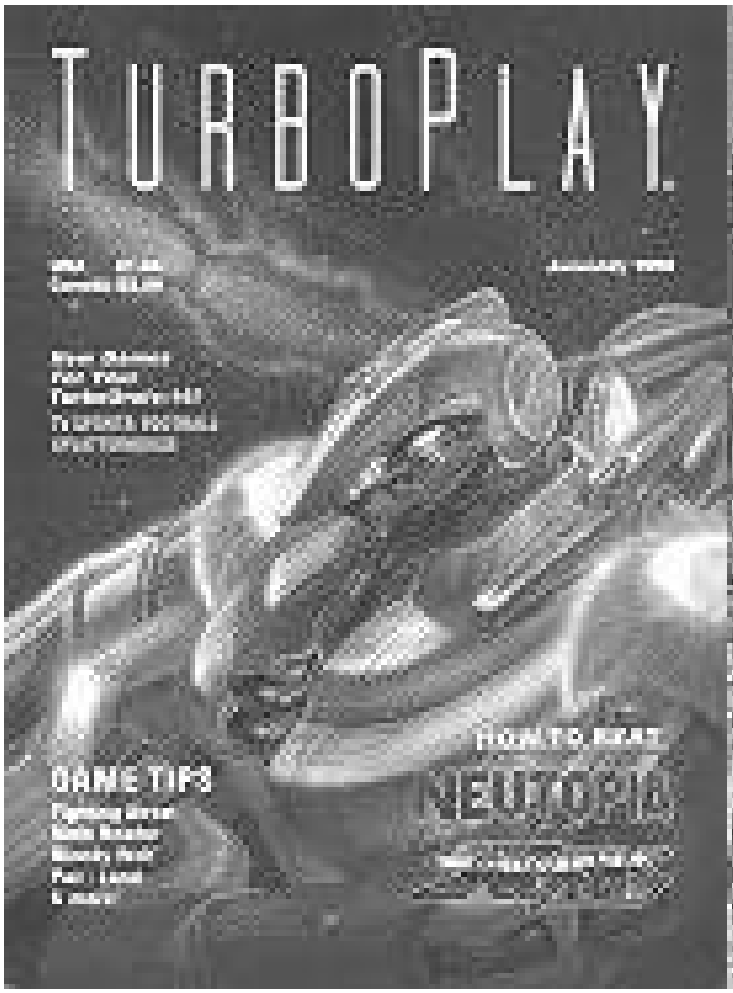


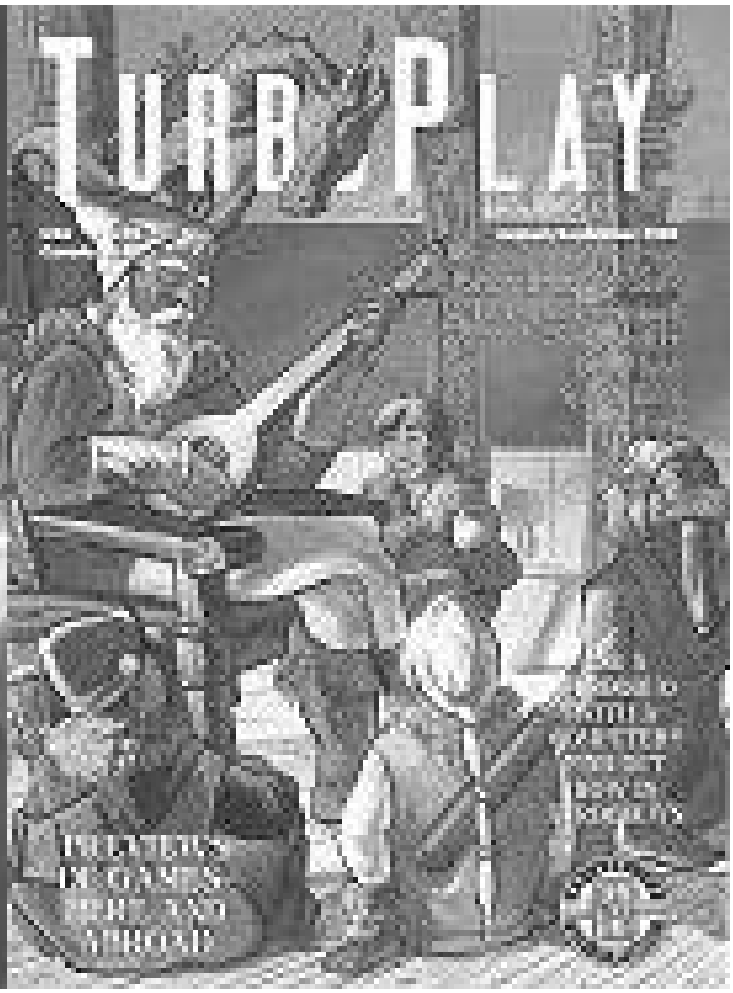
Game Players
4-5/89 - 9/96

becomes

Ultra Game Players
10/96 - 6/98

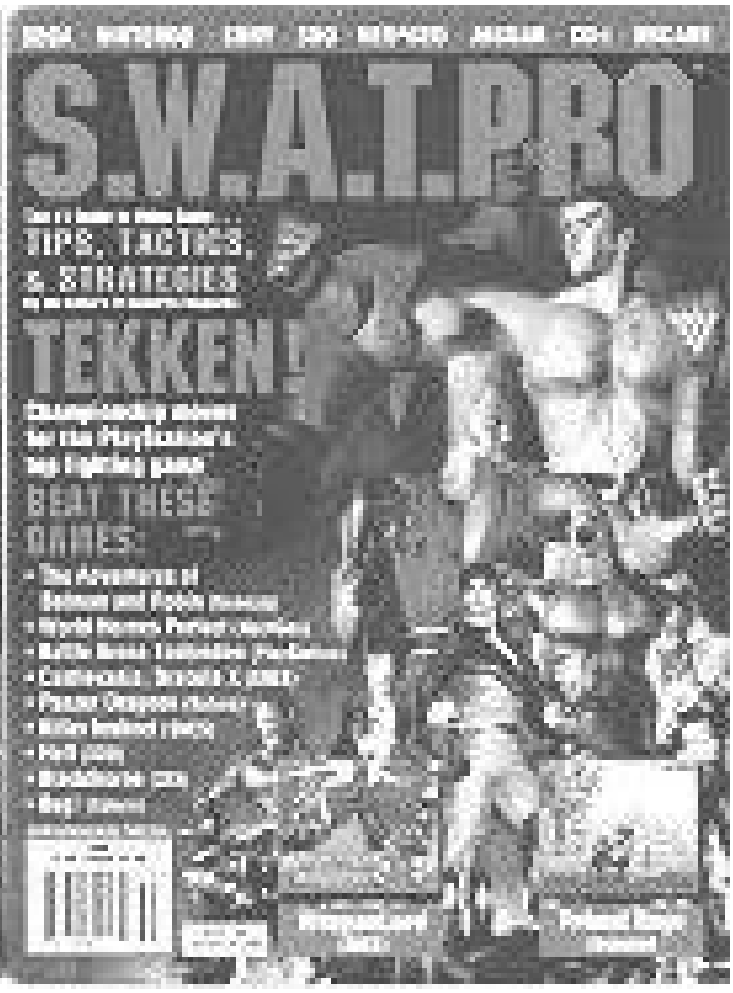
Atarian
5-6/89 - 10/89





TurboPlay
6-7/90 - 8-9/92

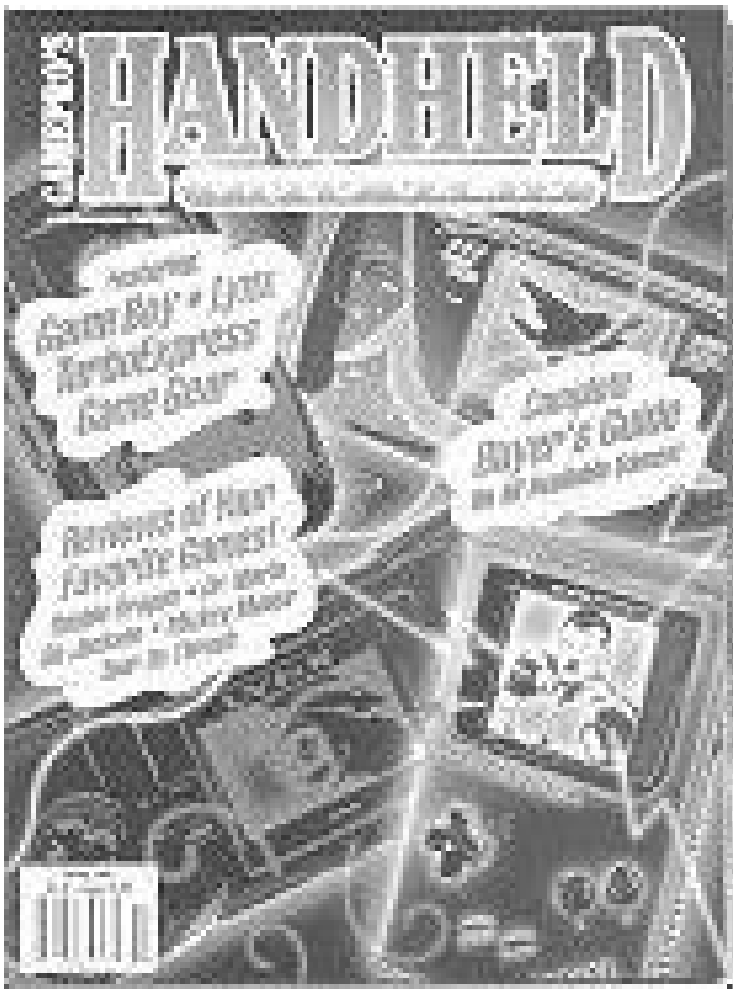
Sega Visions
6-7/90 - 9/95

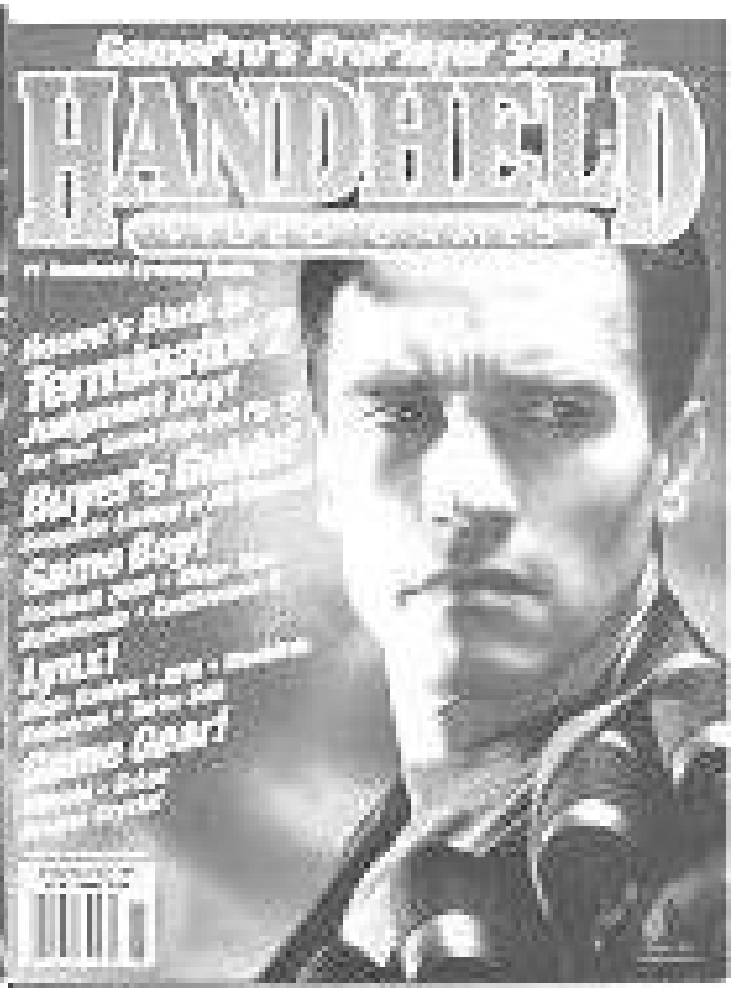


S.W.A.T.
Fall/90 - 11/95

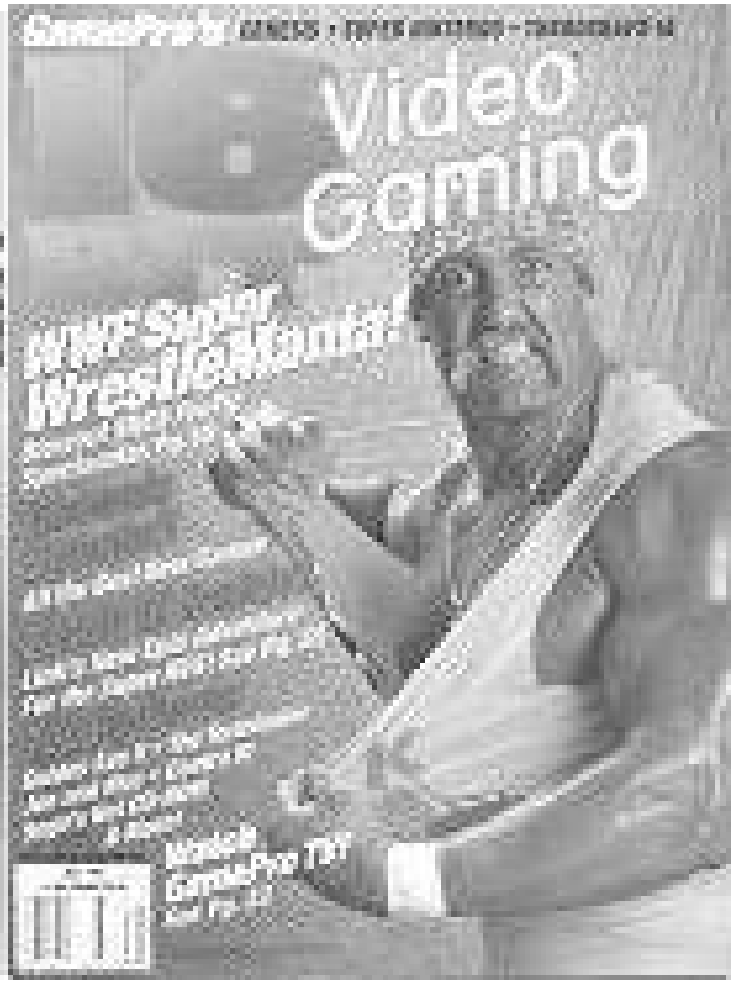
Super Gaming
Fall/90 - Spring/92

Mega Play
?? - 6-7/95





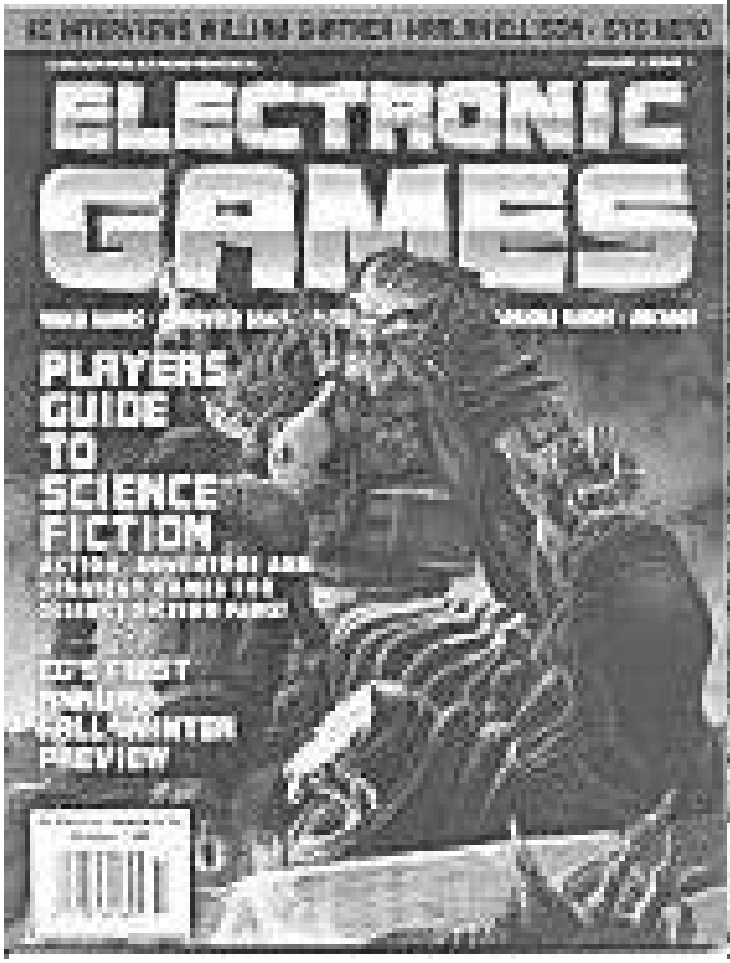
Handheld Video Games
Spring/91 - 10-11/91

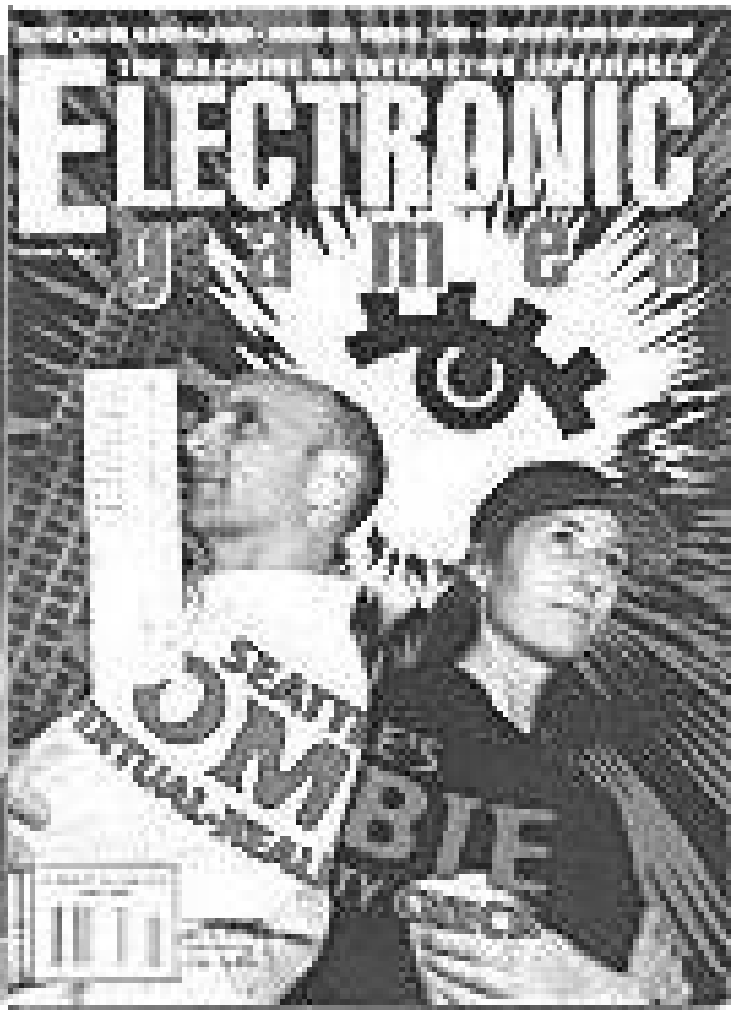


16 Bit Video Gaming
2/92 - 5/89

TurboForce
6/92 - Spring/93

Gamefan
10/92 - 12/00





Electronic Games
10/92 - 7/95

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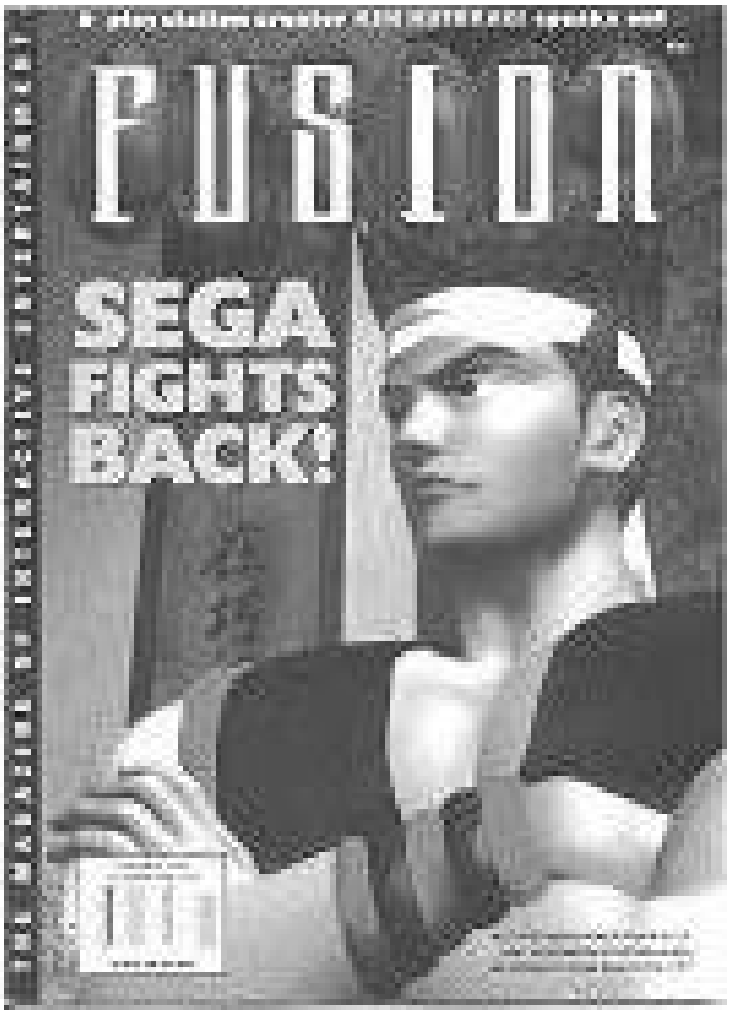
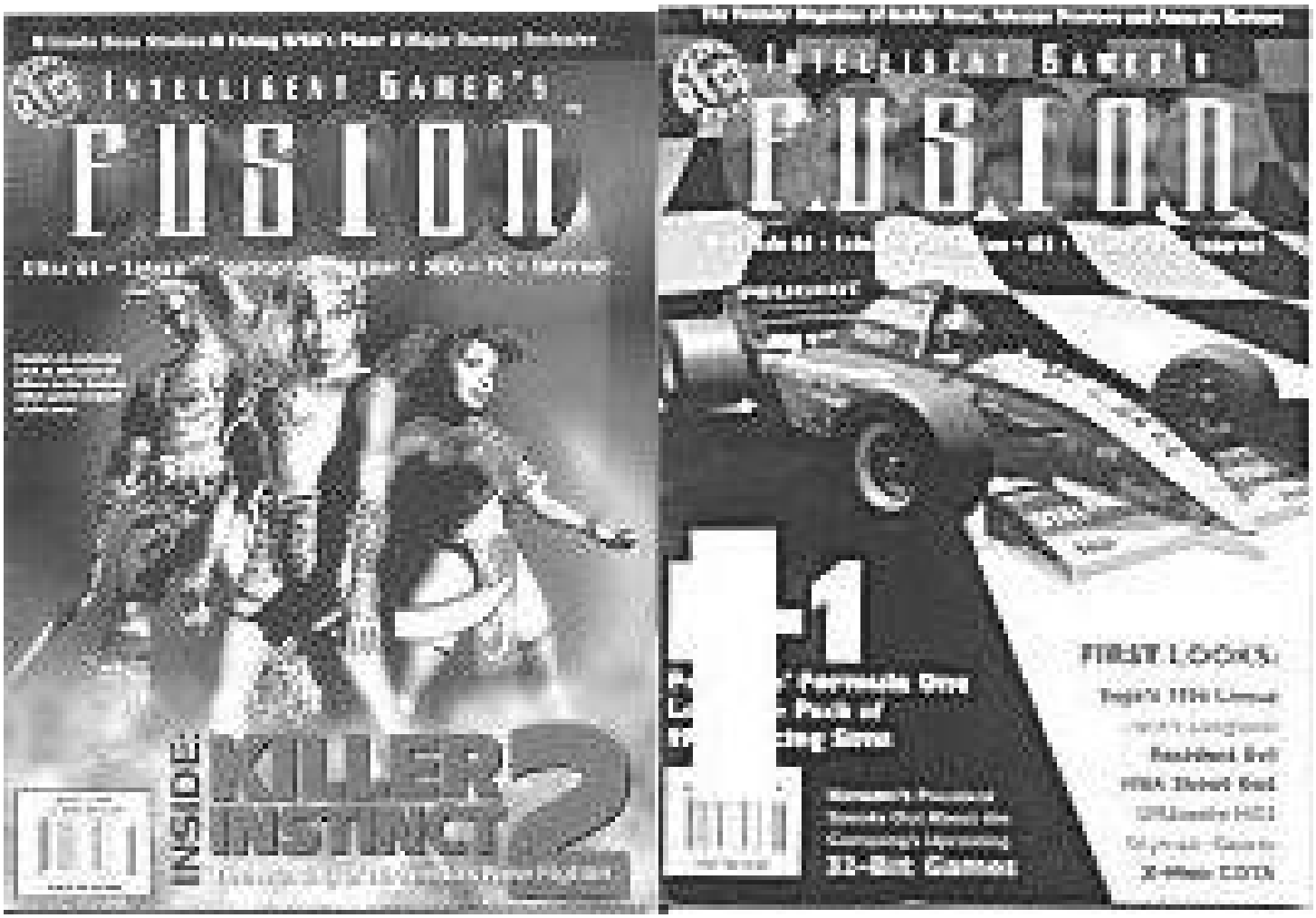


Fusion
8/95 - 2/96



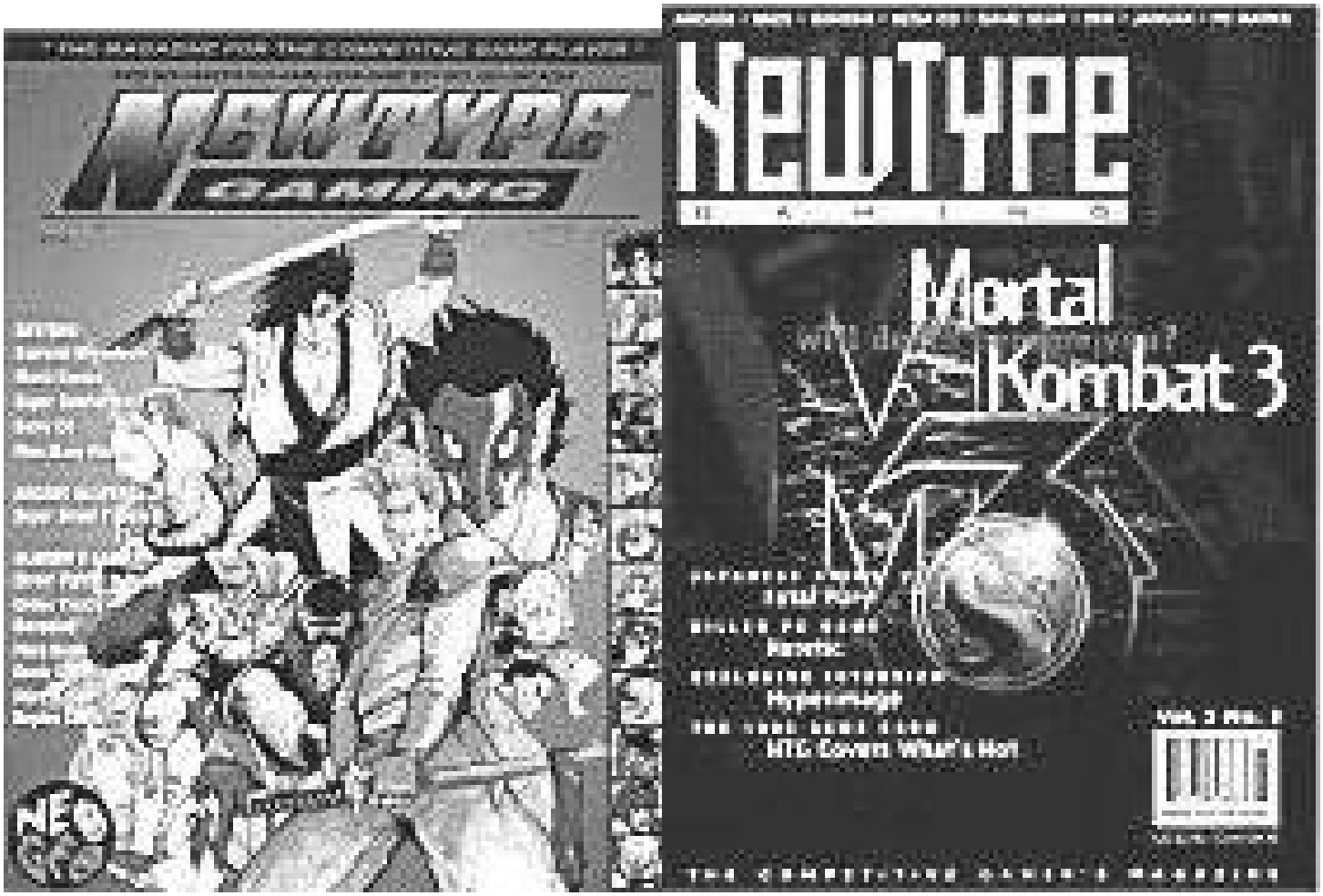
Intelligent Gamer's Fusion
3/96 - 5/96

replaced by

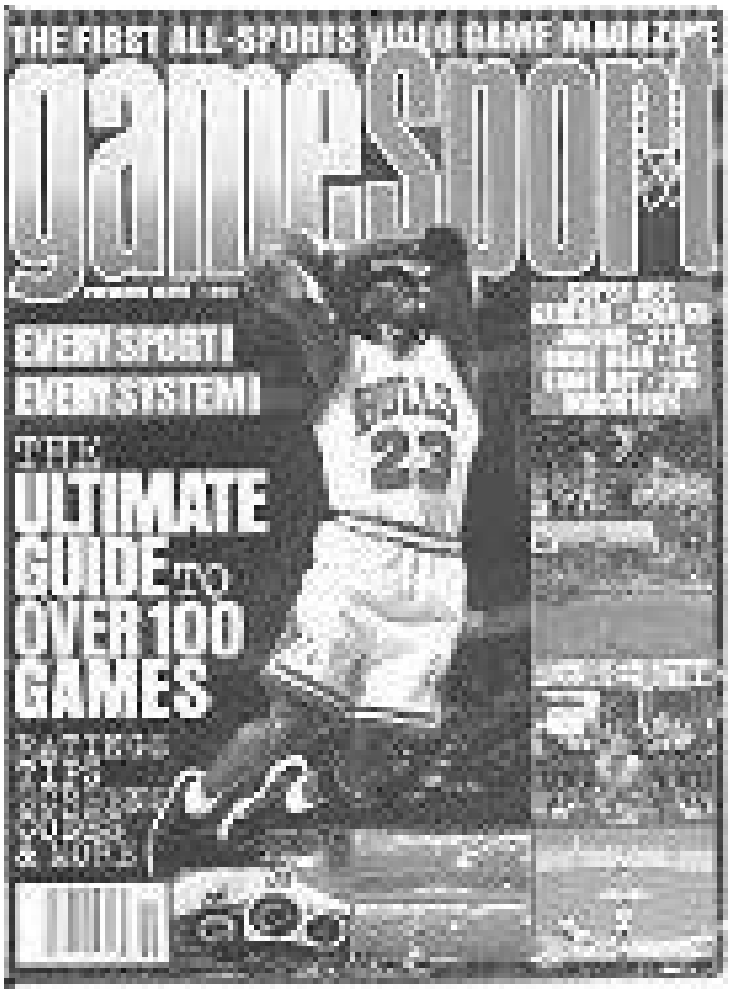
Intelligent Gamer
6/96 - 1/97

Flux

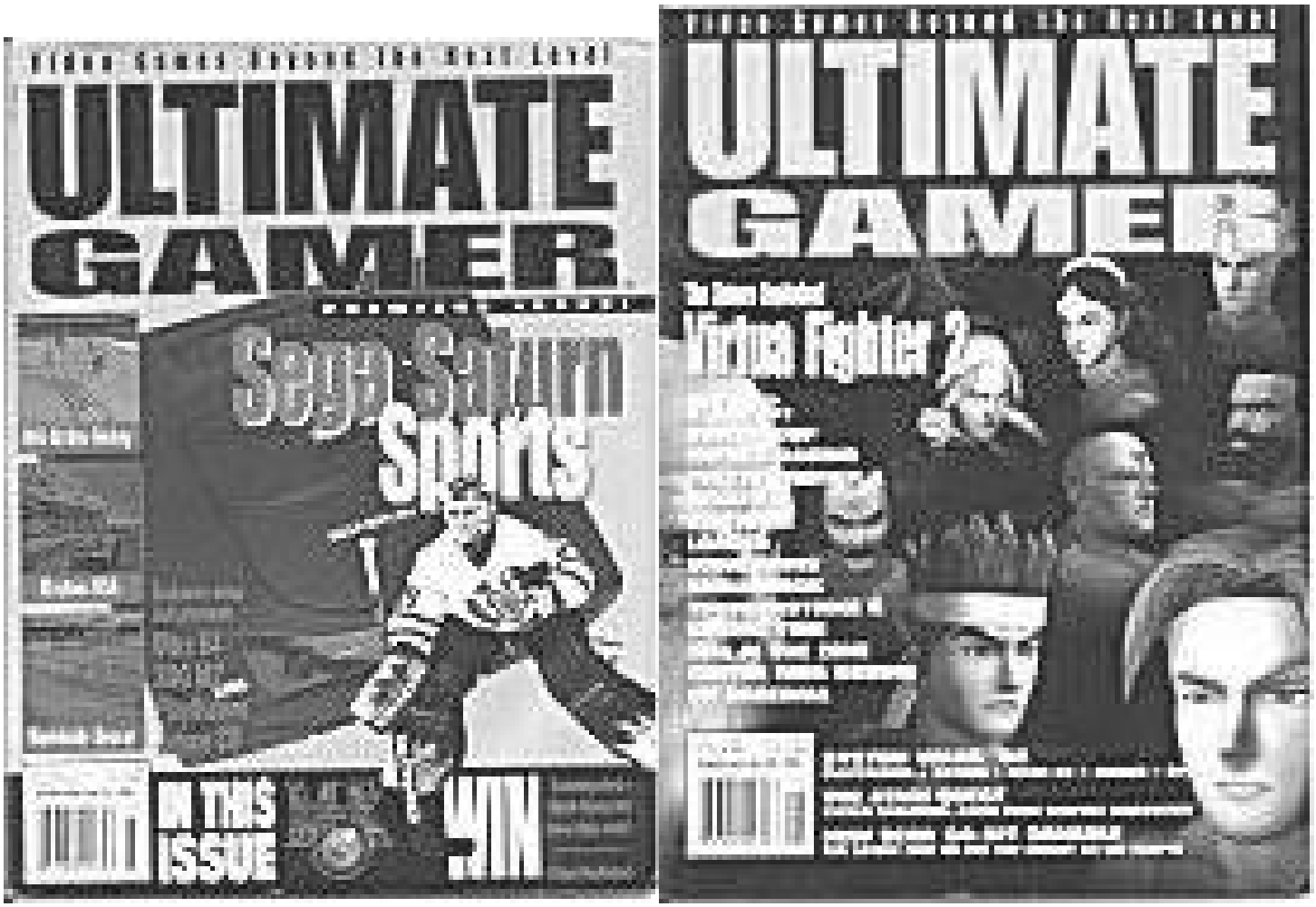
6/94 - 12/95



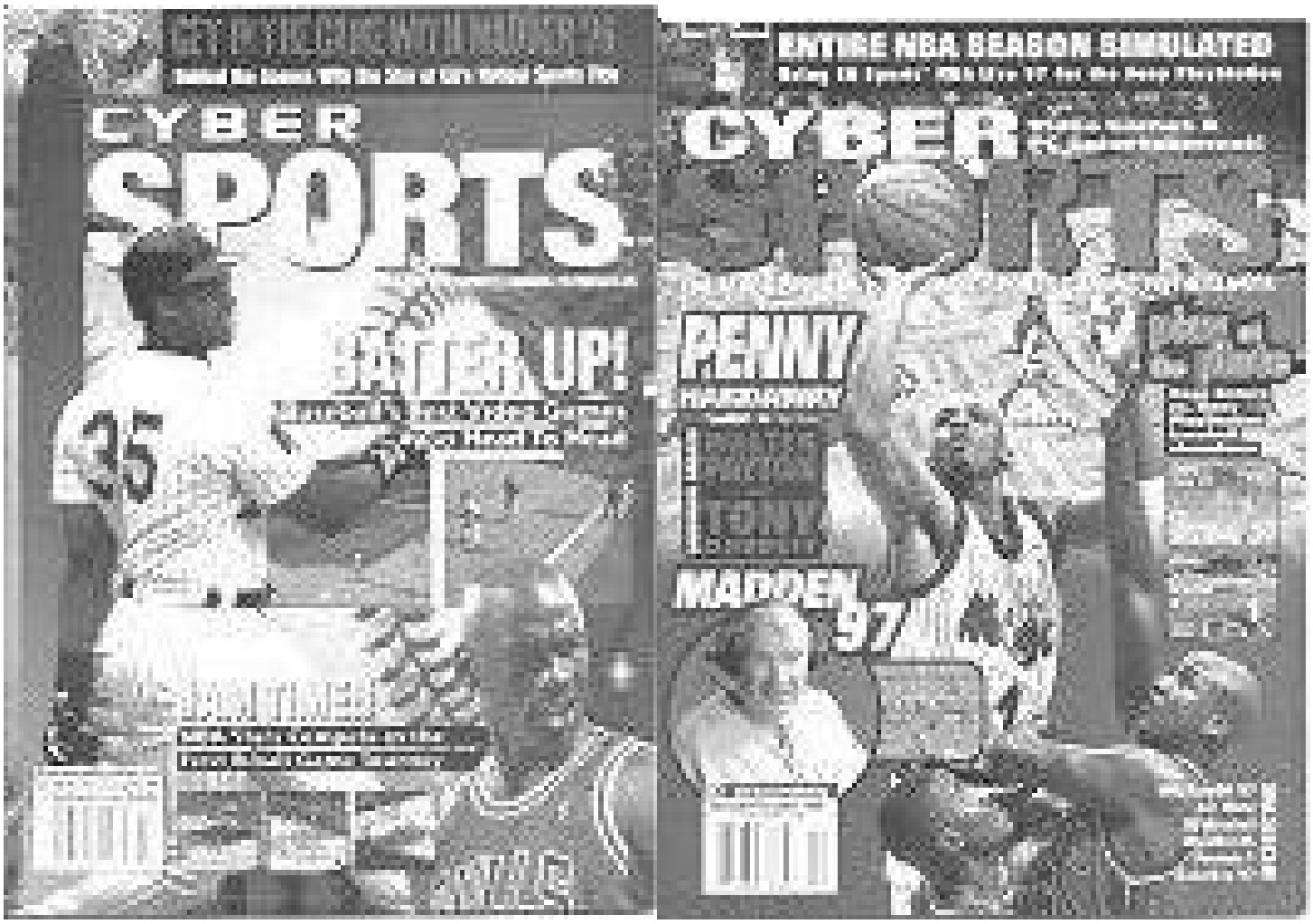
Newtype Gaming
Dates Uncertain



Game Sport
1995

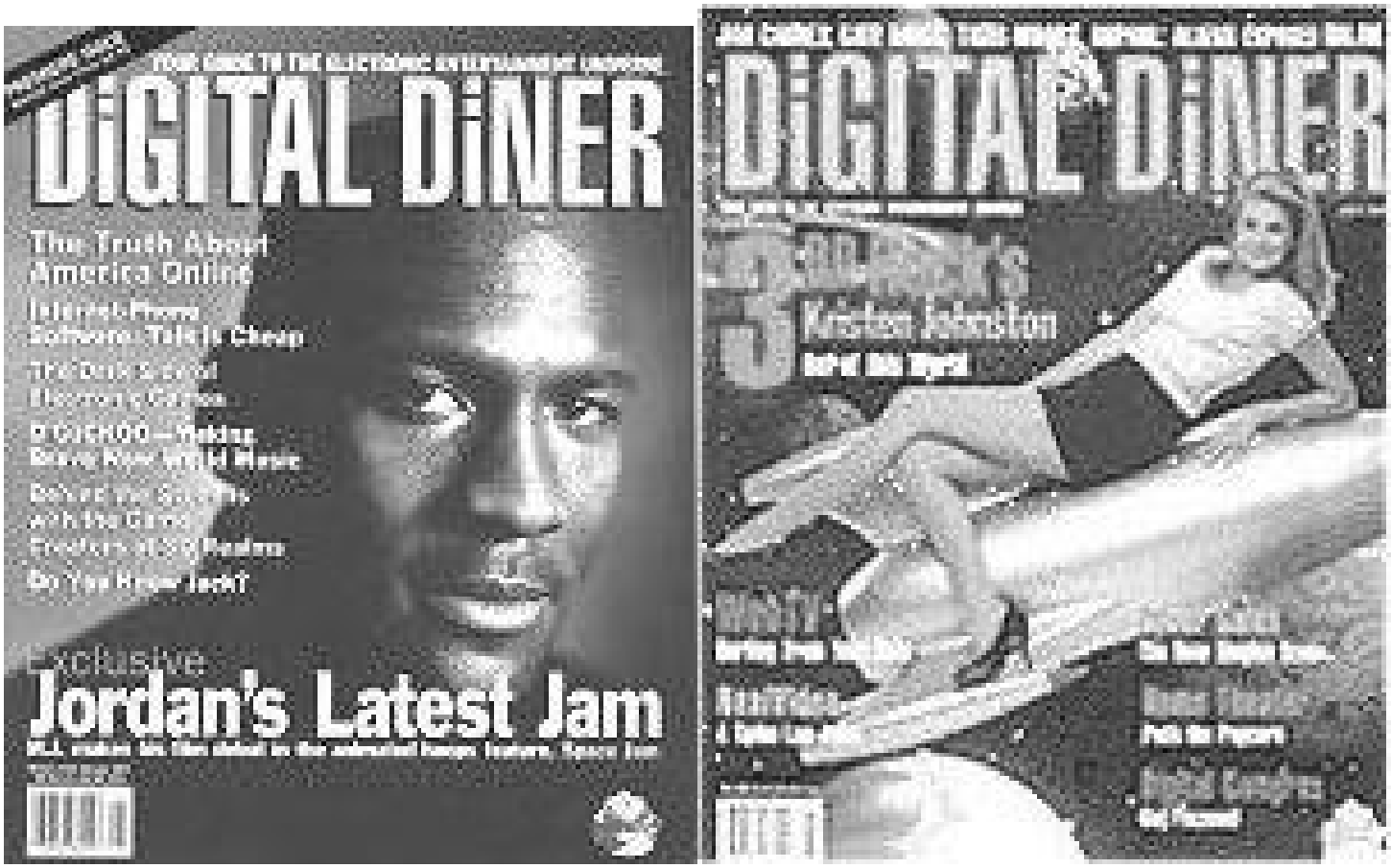


Ultimate Gamer
7/95 - 1/96



Cyber Sports
Fall 1995 - 11-12/96

EGM 3D
11/95

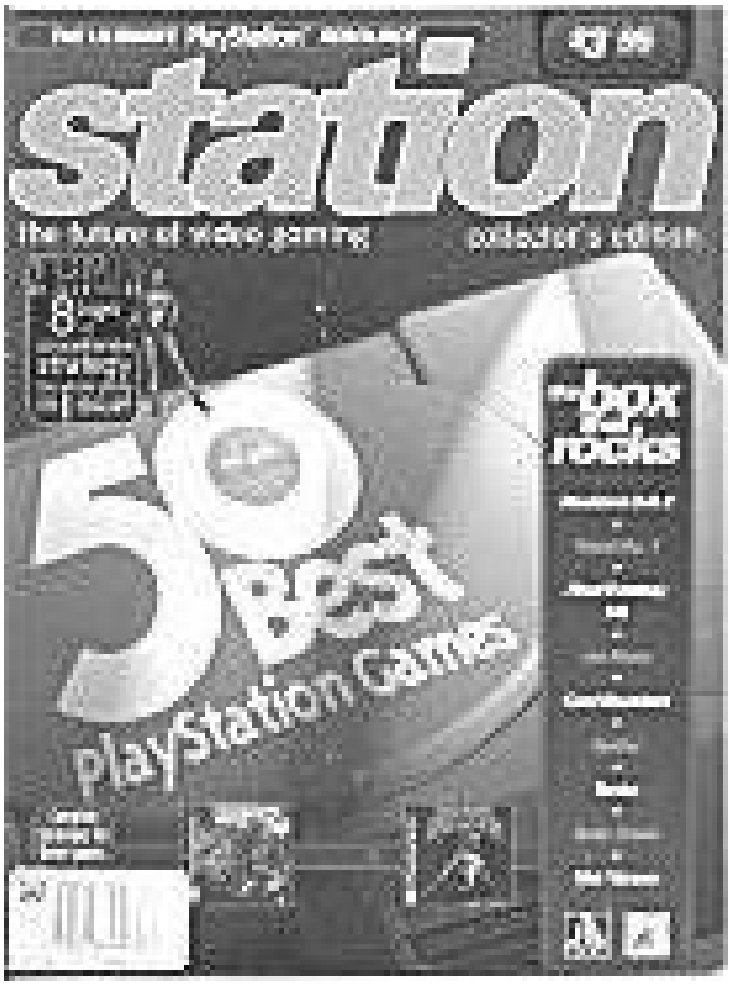


Digital Diner

1/97 - 7/97

Q64

Summer 1997 - Winter 1999



Station
1997

Gamer's Republic
6/98 - 3/01

Game Buyer
7/98 - 10/98

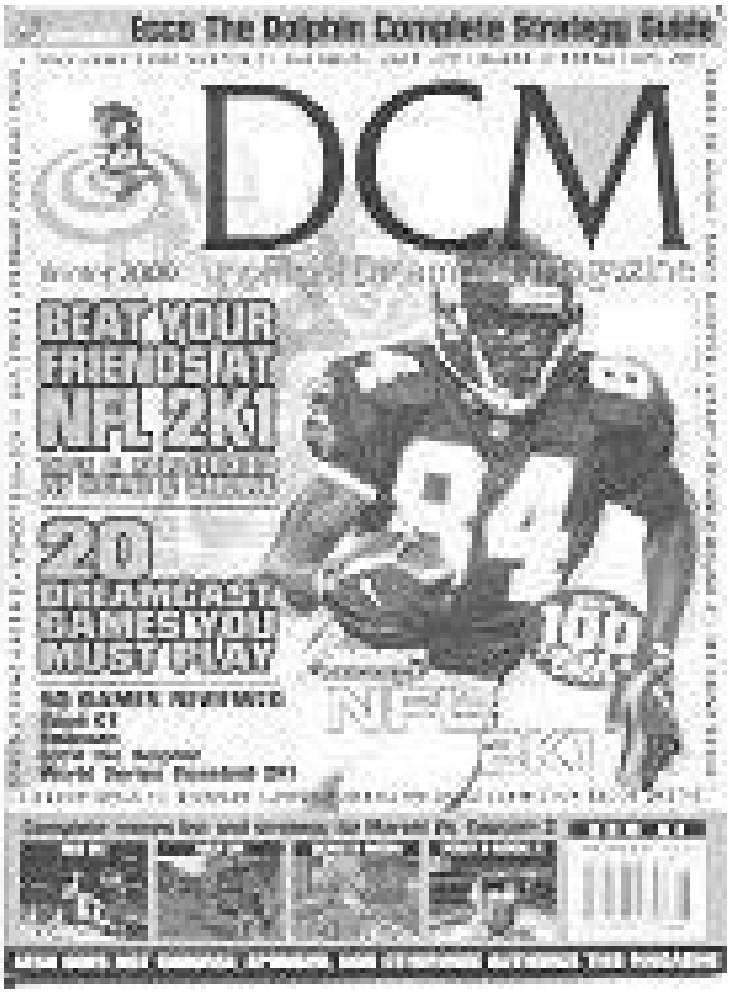
EGM's Player's Guide to Summer Gaming
Summer 1998

Handheld Video Games

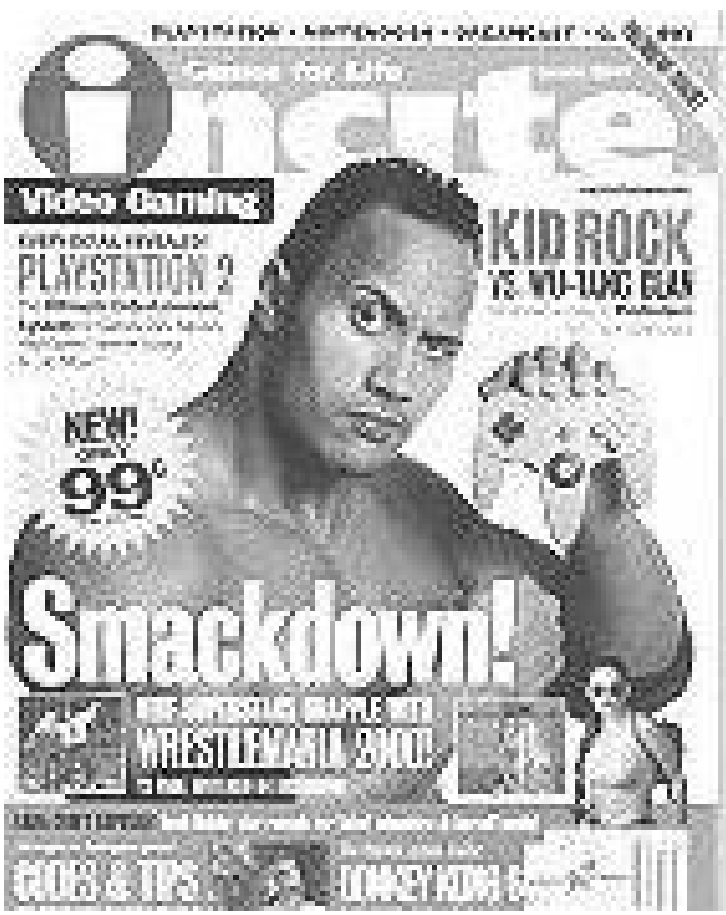
Winter 1999

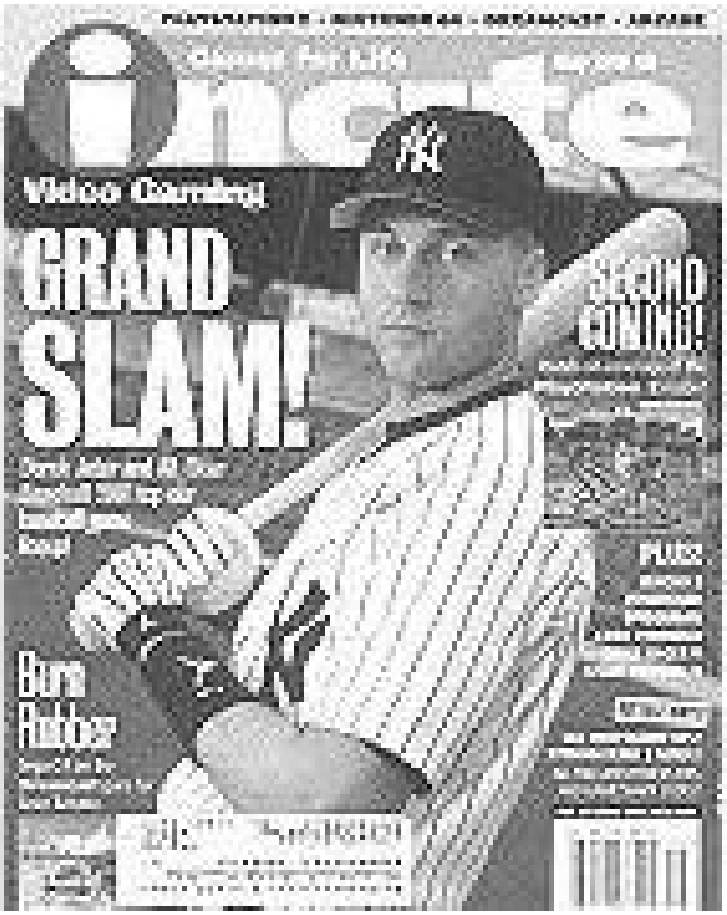
Official Sega Dreamcast Magazine

9/99 - 3-4/01



DCM
Fall/99 - Winter/00





Incite

12/99 - 5/00

Pocket Gamer
8/00 - 11/00

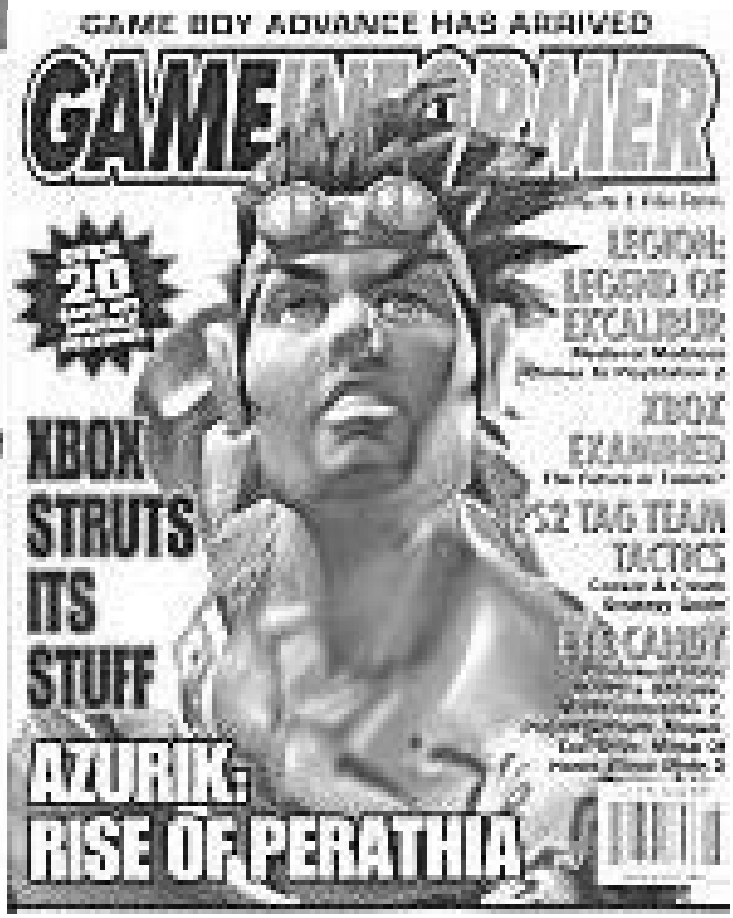
Ngamer
12/99 - 01/00

Games Insider
Holiday 1999

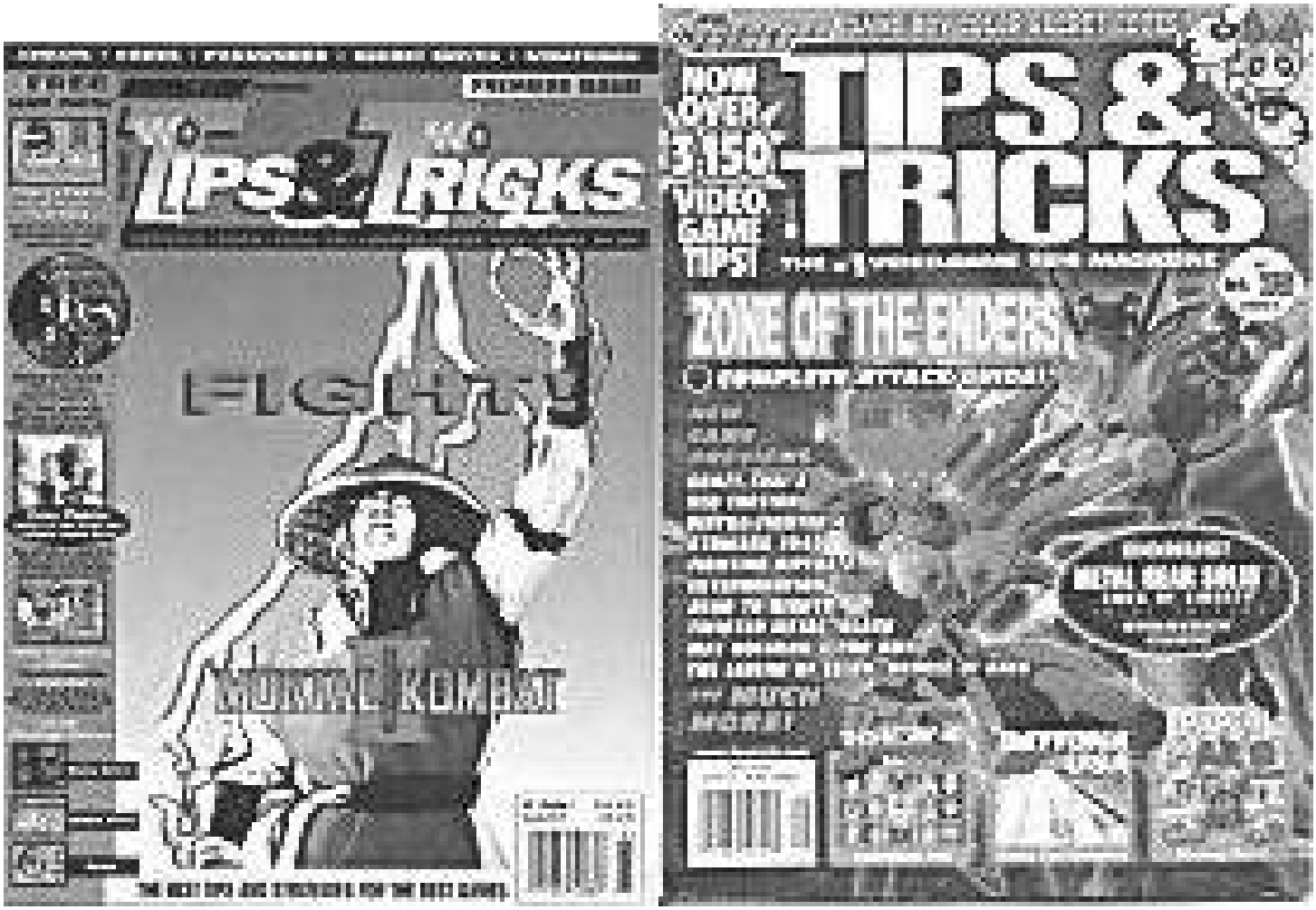
Nintendo Power
8/88 - Present (1)

Electronic Gaming Monthly
5/89 - Present (2)

Gamepro
5/89 - Present (3)



Game Informer
Fall 1991 - Present (4)



Tips & Tricks Magazine
Spring 1994 - Present (5)

Next Generation
1/95 - Present (6)

EGM²
7/94 - 7/98

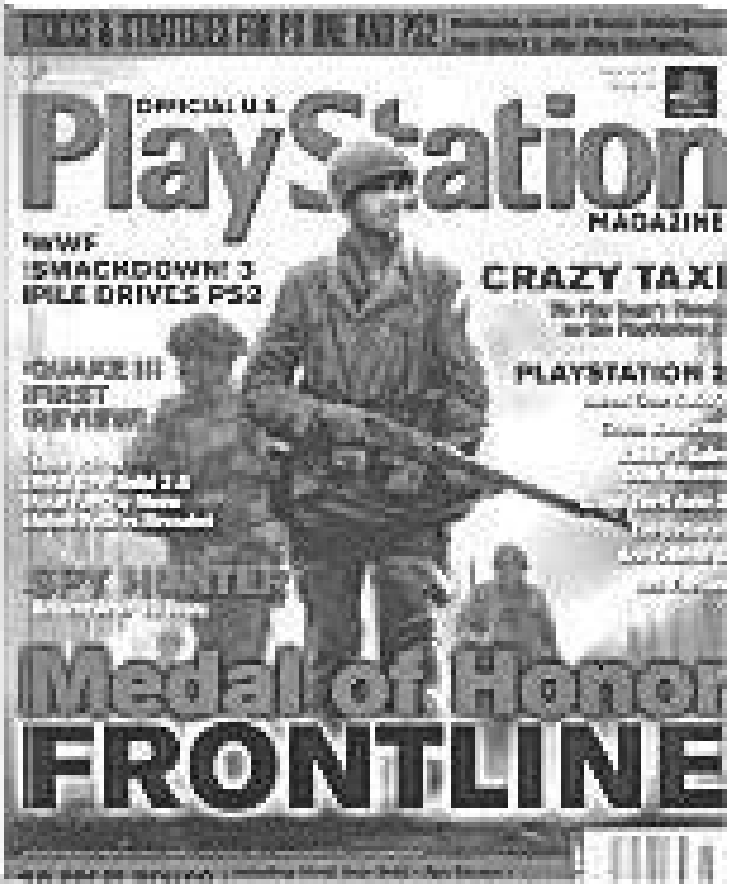
becomes

Expert Gamer
8/98 - Present (2)

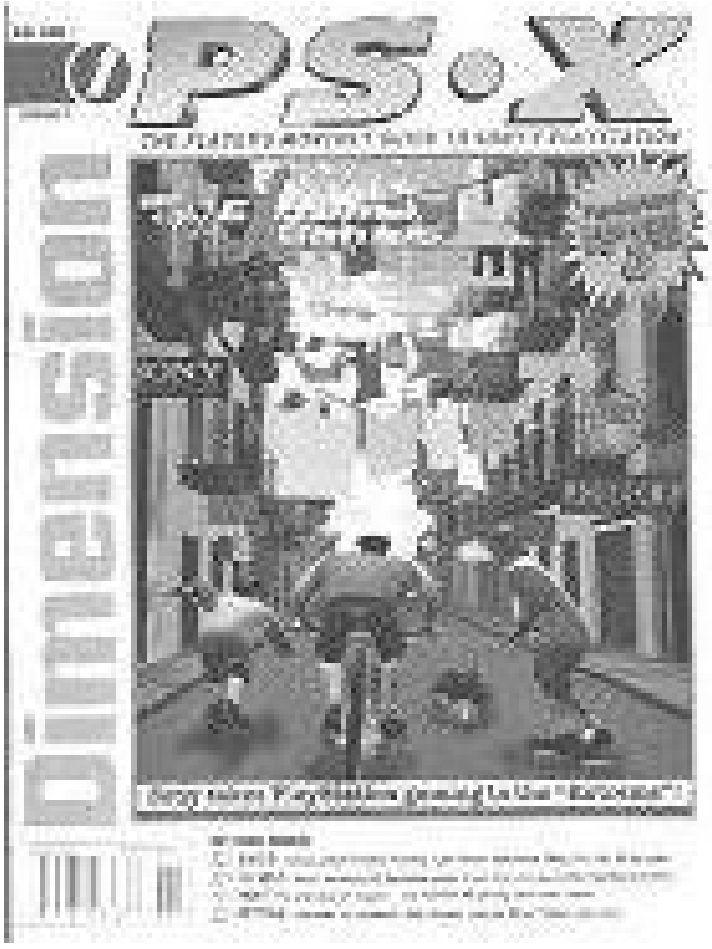
PSX

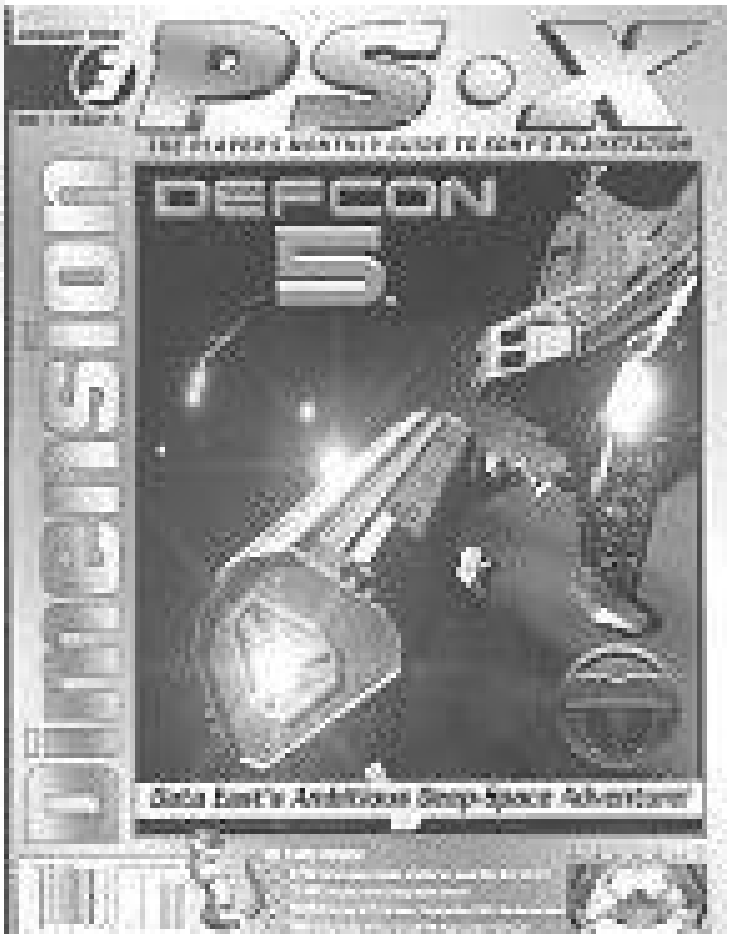
Fall 1995 - 9/97

becomes



Official U.S. Playstation Magazine
11/97 - Present (2)





Dimension PSX

11/95 - 1/96

becomes

PSExtreme

Feb-Mar/96 - 9/00

PSE2

10/00 - Present (8)

PSM

9/97 - Present (6)

Pocket Games
Summer 1999 - Present (2)

(1) **Nintendo of America Inc.**
4820 150th Avenue NE
Redmond, WA 98052
www.nintendo.com

(2) **ZD Inc.**
PO Box 3338
Oak Brook, IL 60522-3338
www.videogames.com

(3) **IDG Communications Inc.**
501 Second Street
Ste 500
San Francisco, CA 94107
www.gamepro.com

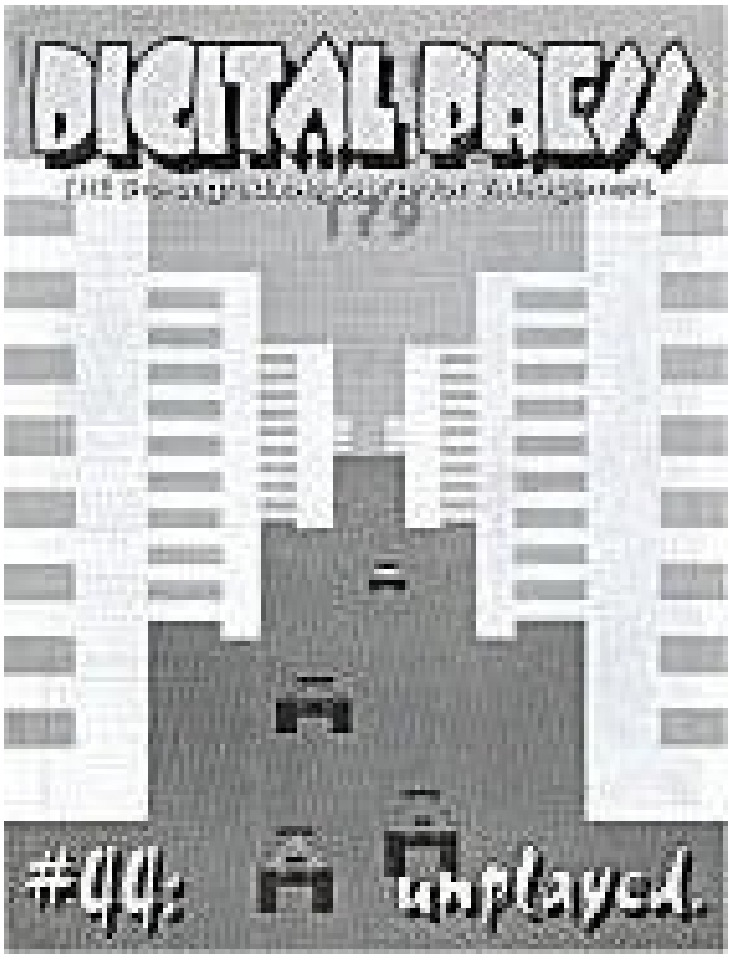
(4) **Sunrise Publications**
10120 W. 76th Street
Eden Prairie, MN 55344
www.gameinformer.com

(5) **L.F.P.**
8484 Wilshire Blvd, Suite 900
Beverly Hills, CA 90211
www.tipstricks.com

(6) **Imagine Media Inc**
150 North Hill Drive
Brisbane, CA 94005
www.next-generation.com

(7) **Dimension Publishing Inc.**
1175 Chess Drive
Suite E
Foster City, CA 94404
www.psextreme.com

2600 Connection
Russ Perry Jr
2175 S. Tonne Dr. #105
Arlington Hts, IL 60005
www.atari2600connection.com

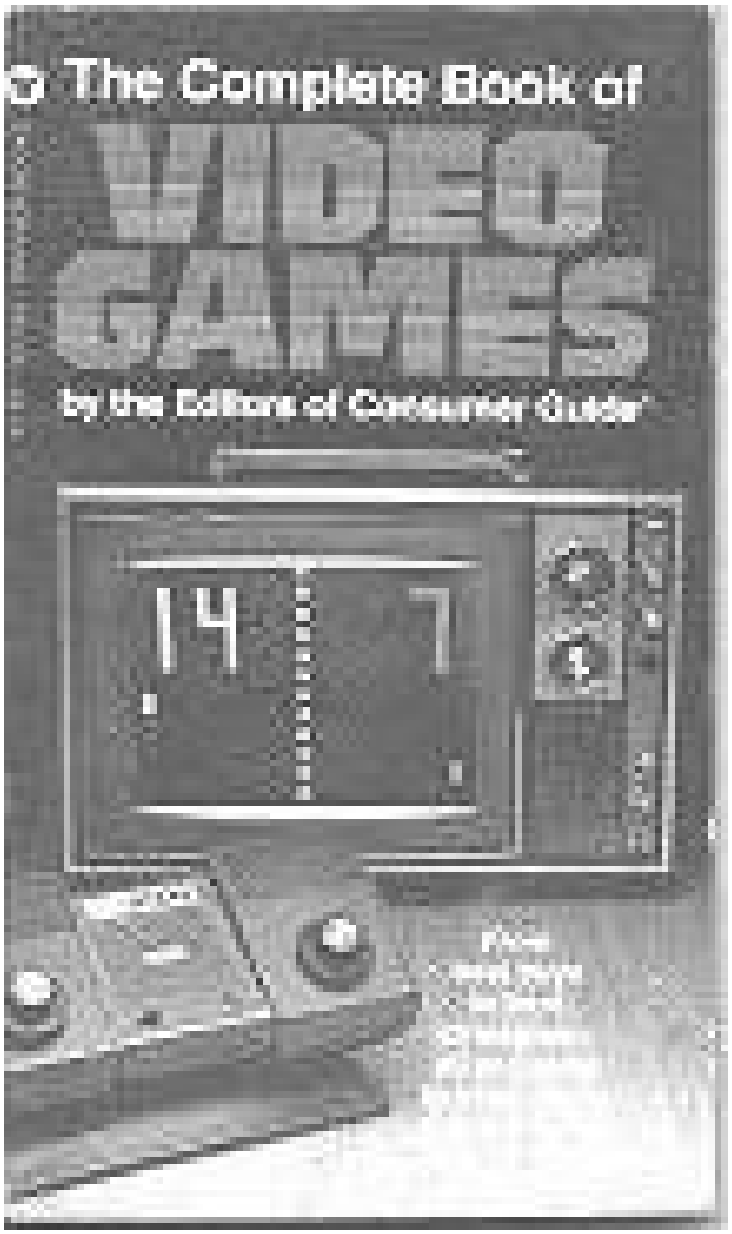


Digital Press
Joe Santuilli
44 Hunter Place
Pompton Lakes, NJ 07442
www.digitpress.com

Classic Gamer Magazine
Chris Cavanaugh
7770 Regents Road #113-293
San Diego, CA 92122
www.classicgamer.com

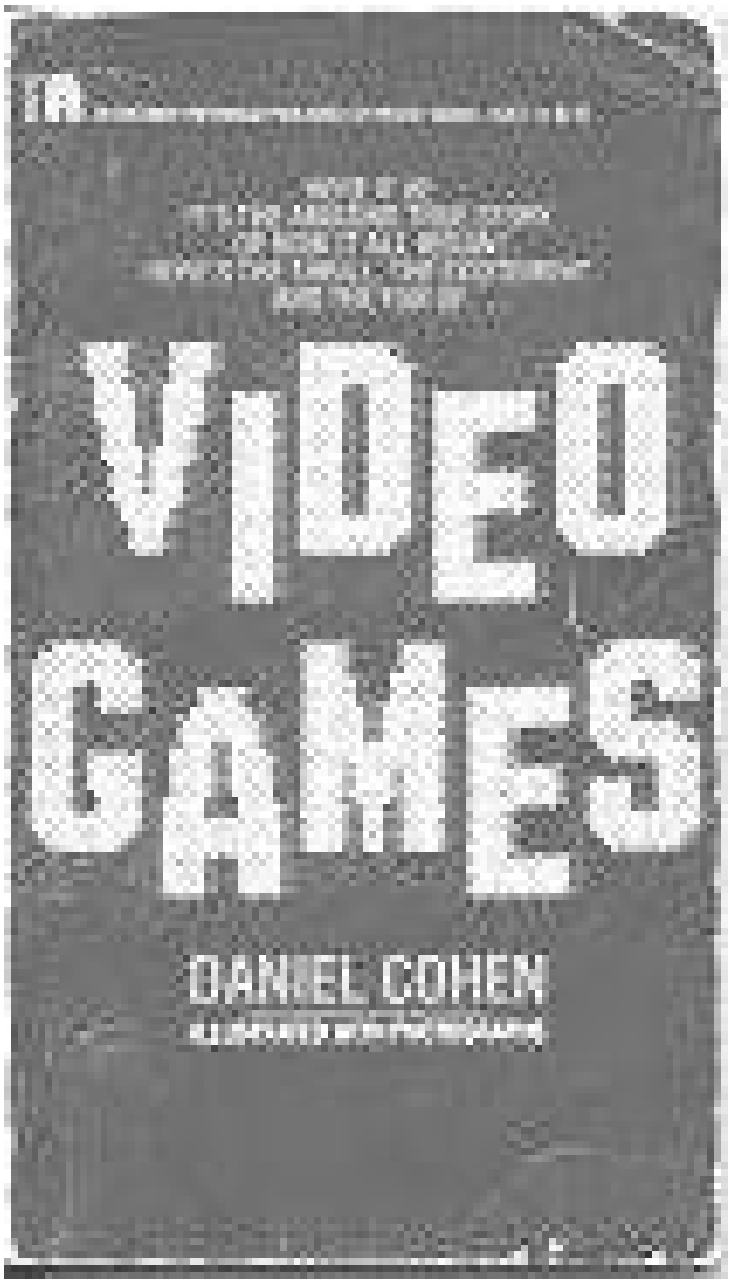
syzygy
Jason Cody
PO Box 512
Flagler Beach, FL 32136
www.syzygy-magazine.com

APPENDIX E
BOOKS

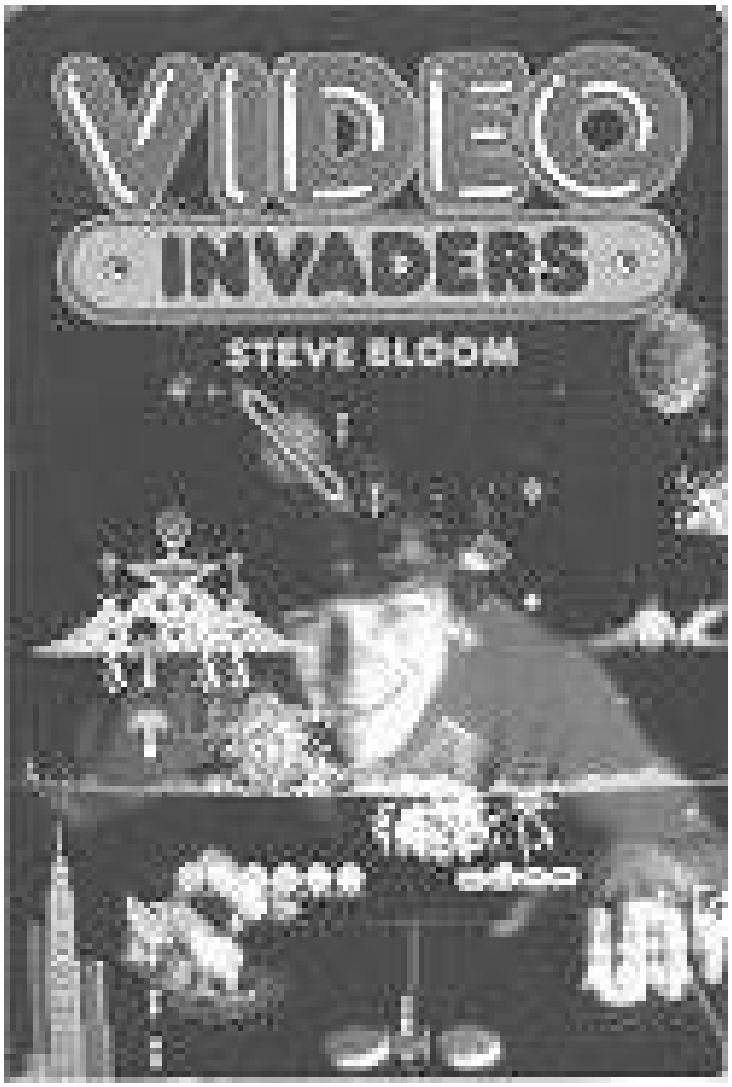


The Complete Book of Videogames
1977

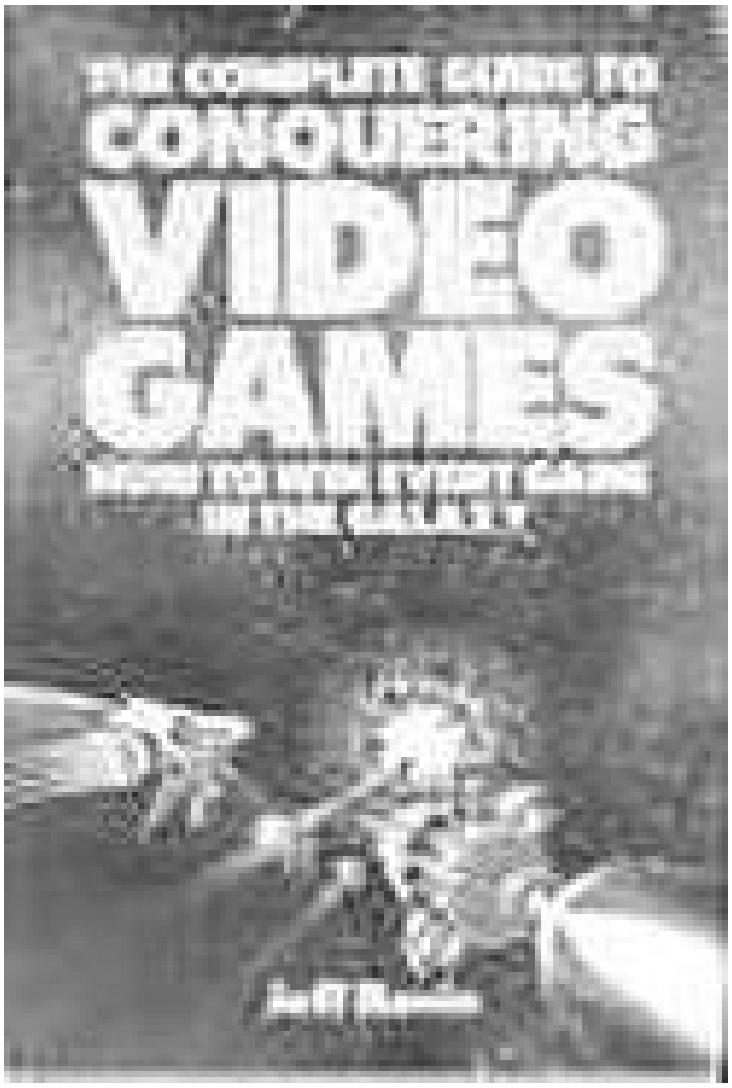
Video Games
Len Buckwalter
1977



Video Games
Daniel Cohen
1982



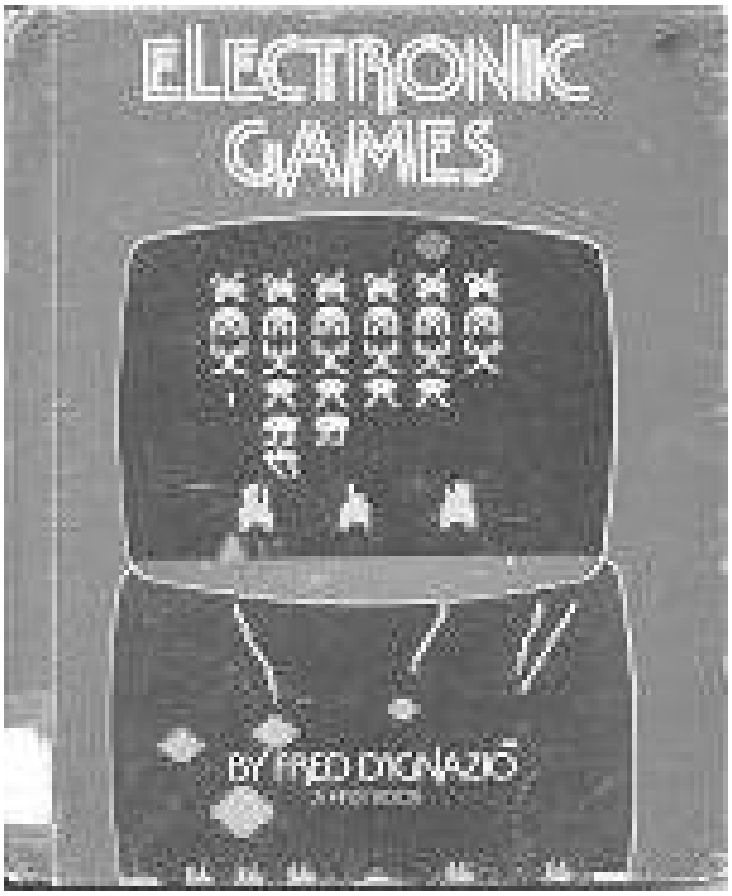
Video Invaders
Steve Bloom
1982



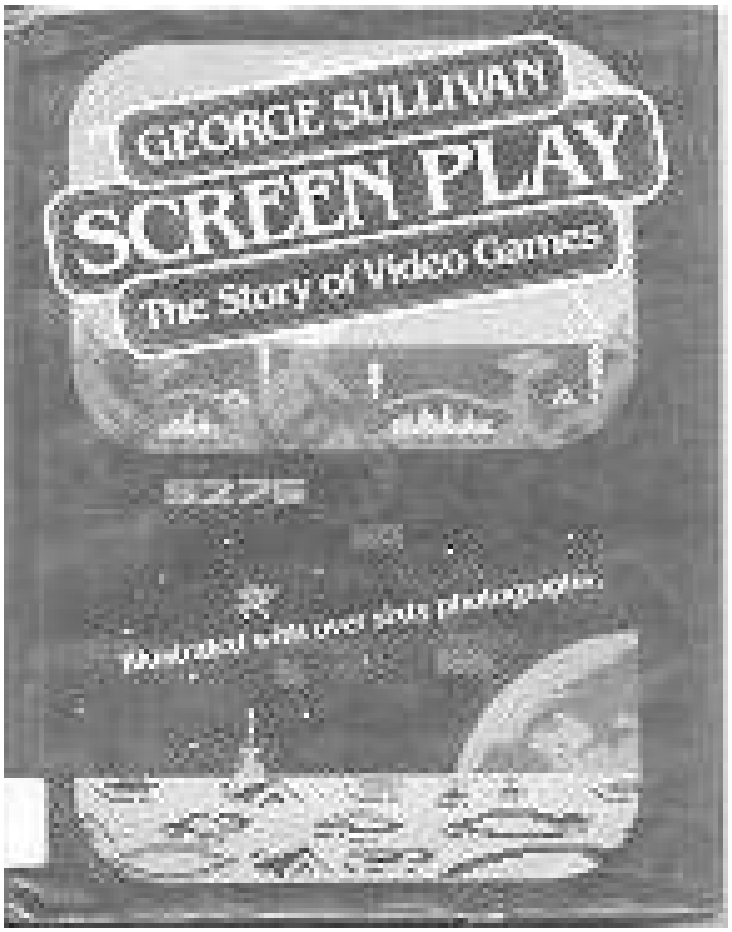
The Complete Guide to Conquering Video Games:How to Win at Every Game in the Galaxy

Jeff Rovin

1982

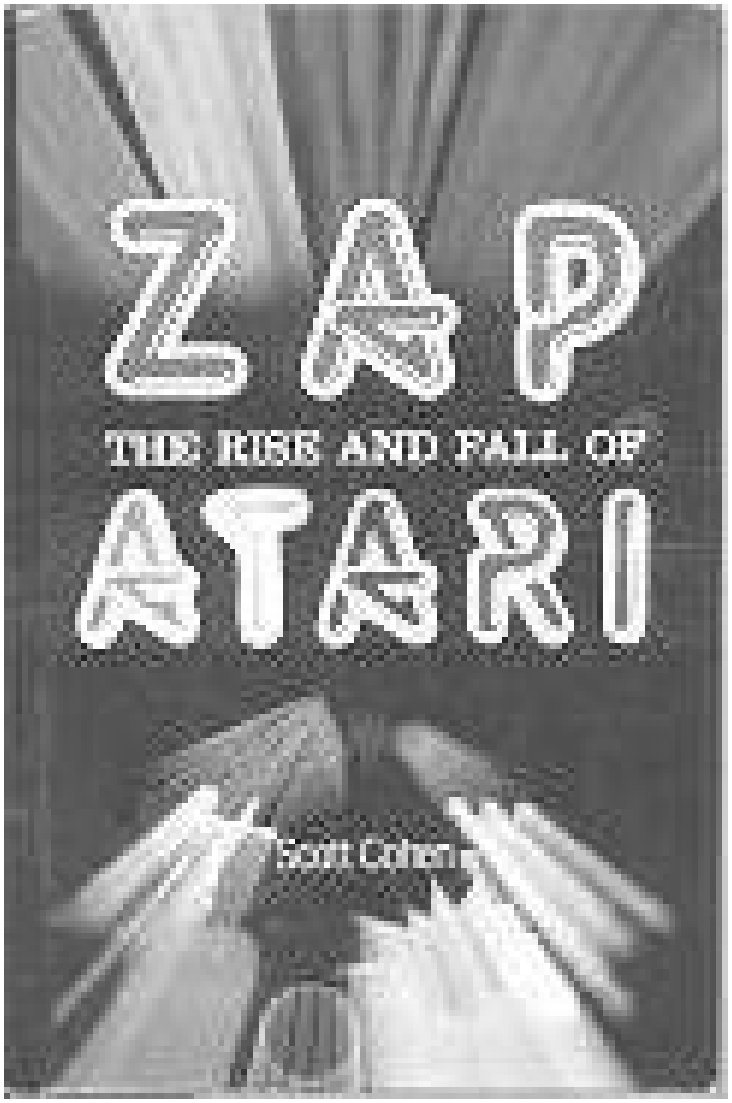


Electronic Games
Fred D'Ignazio
1982

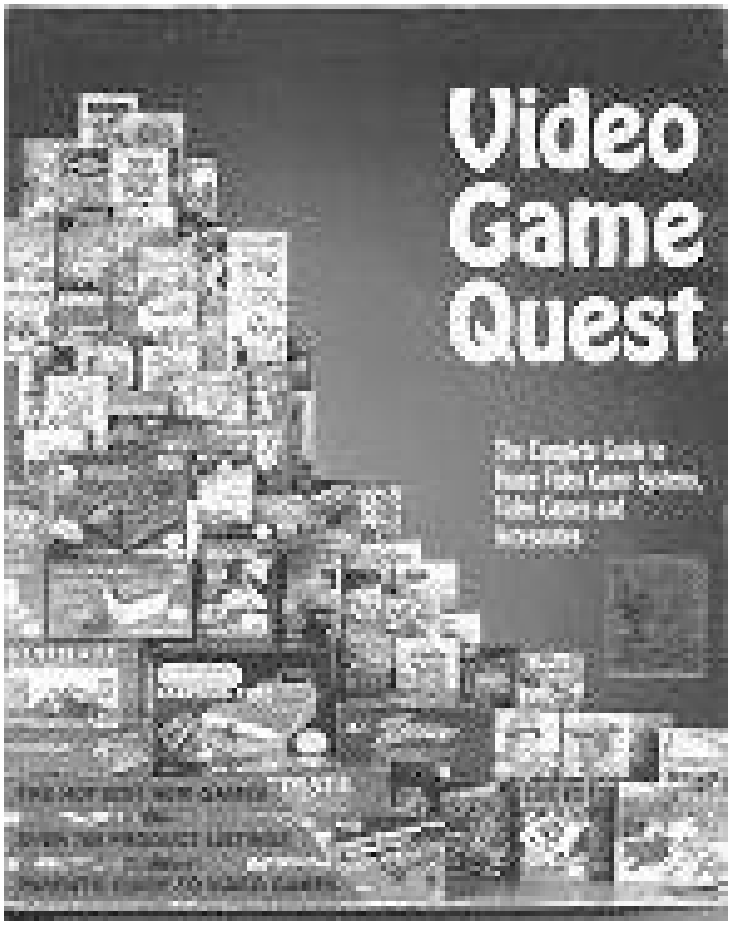


Screen Play: The Story of Video Games
George Sullivan

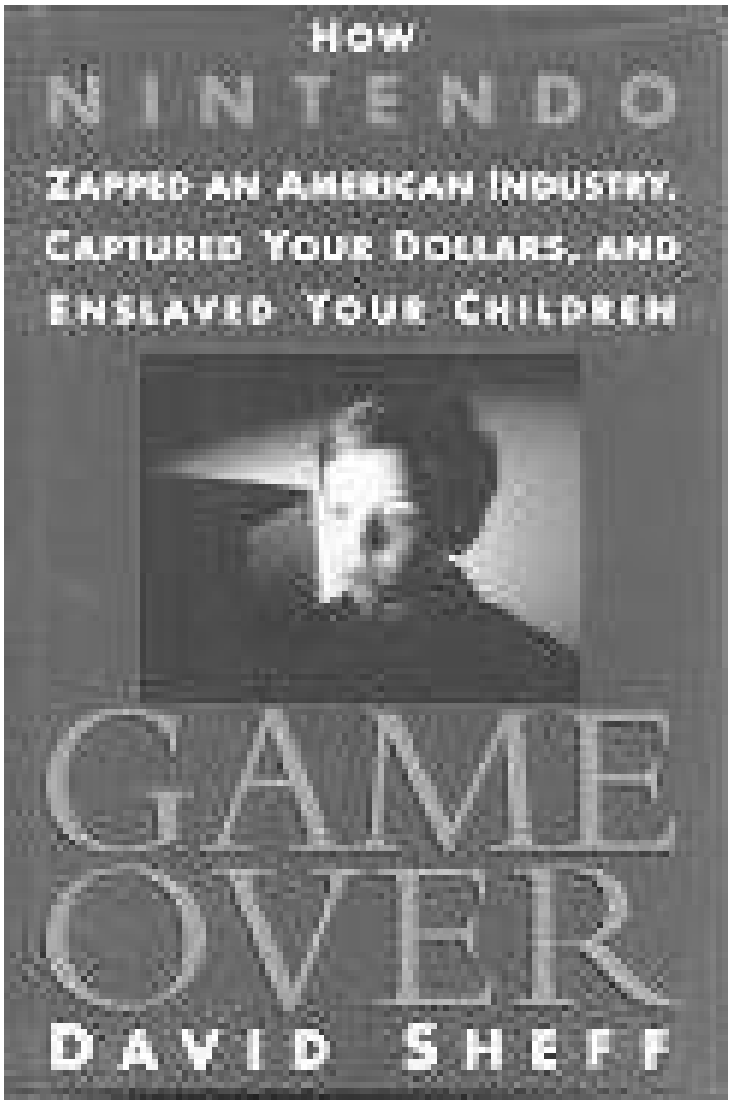
1983



Zap: The Rise & Fall of Atari
Scott Cohen
1984



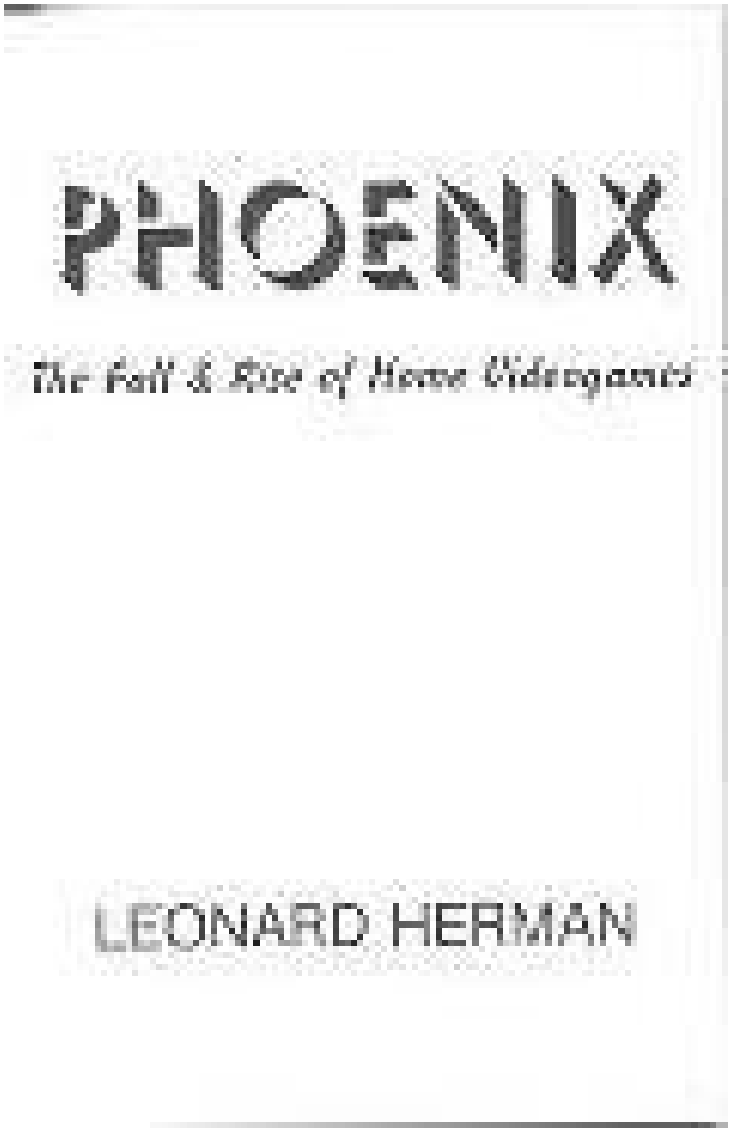
Video Game Quest
1990



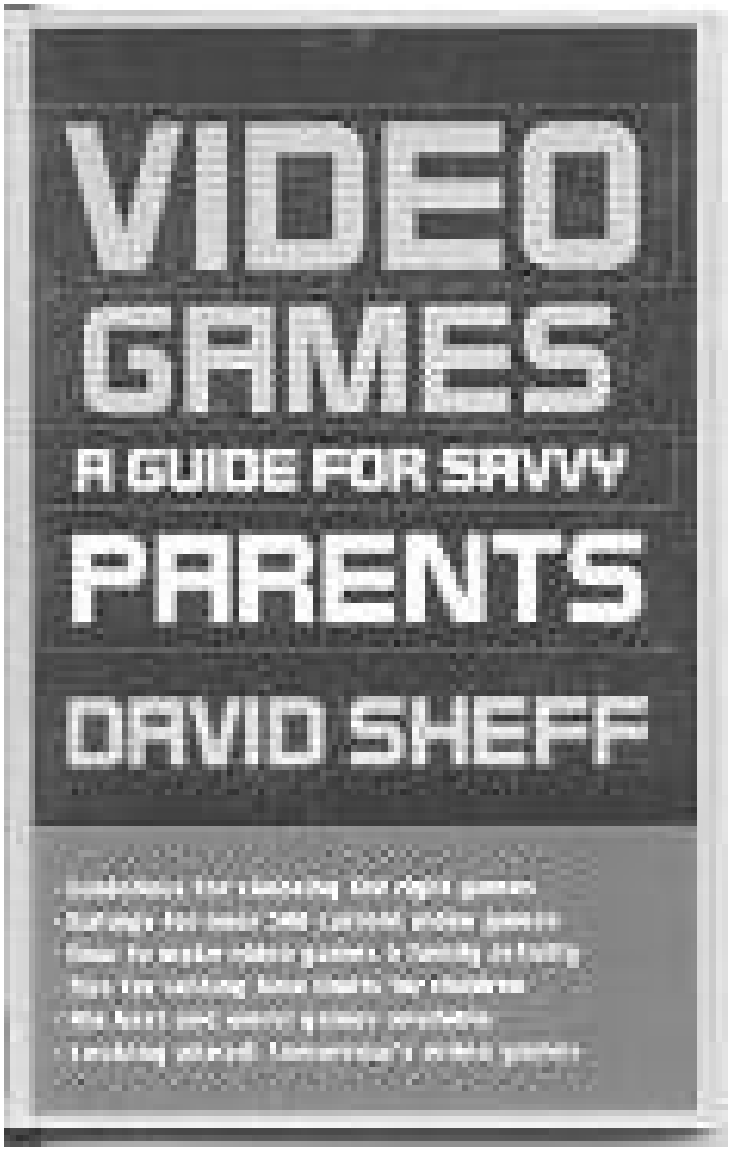
Game Over: How Nintendo Zapped An American Industry, Captured your Dollar, and Enslaved Your Children

David Sheff

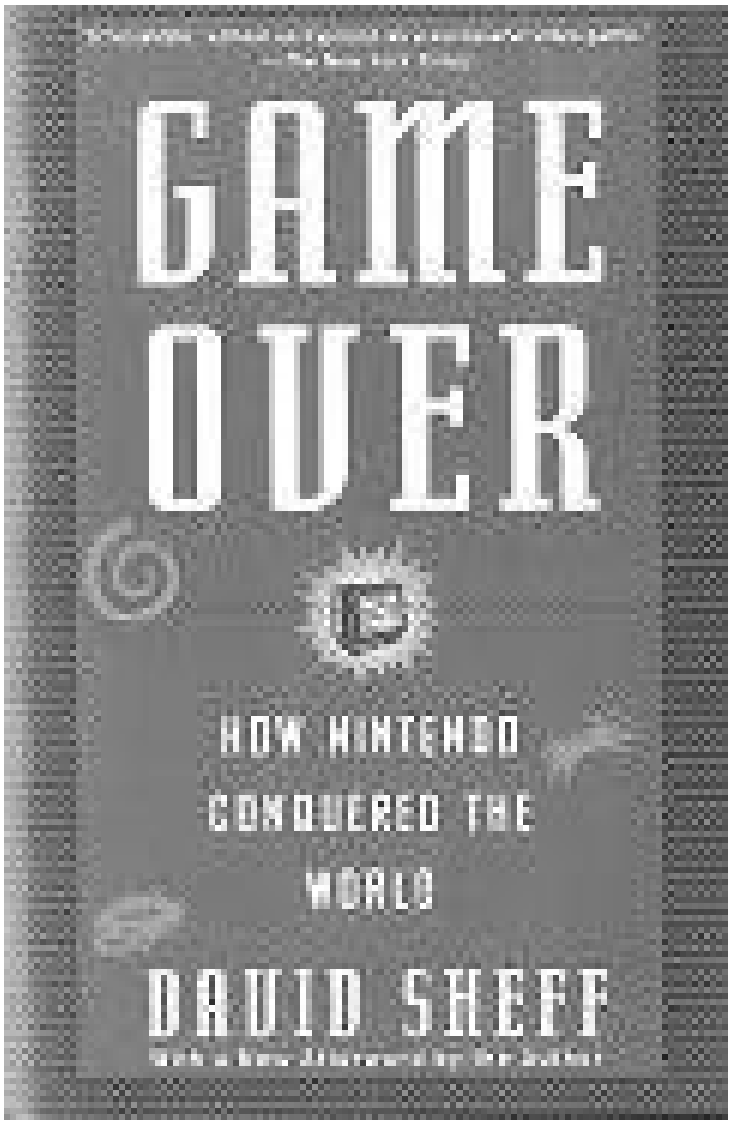
1993



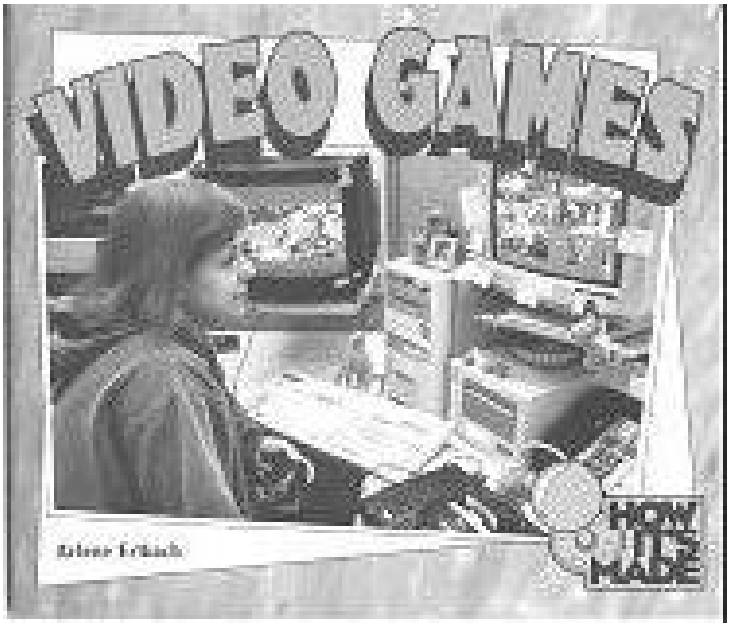
Phoenix: The Fall & Rise of Home Videogames
Leonard Herman
1994



Video Games A Guide To Savvy Parents
David Sheff
1994

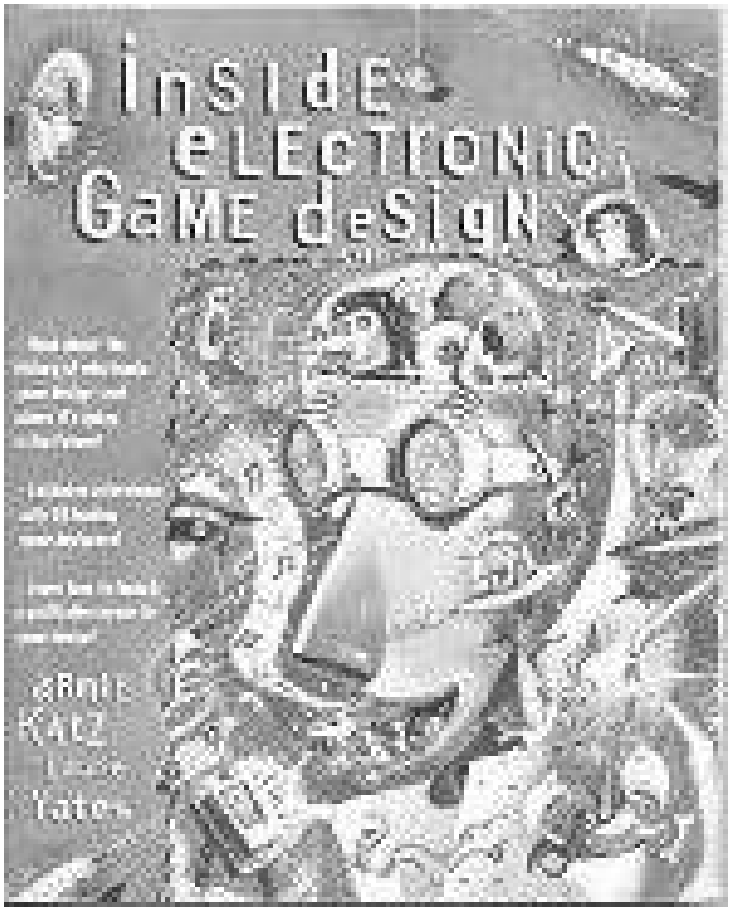


Game Over: How Nintendo Conquered The World
David Sheff
1994

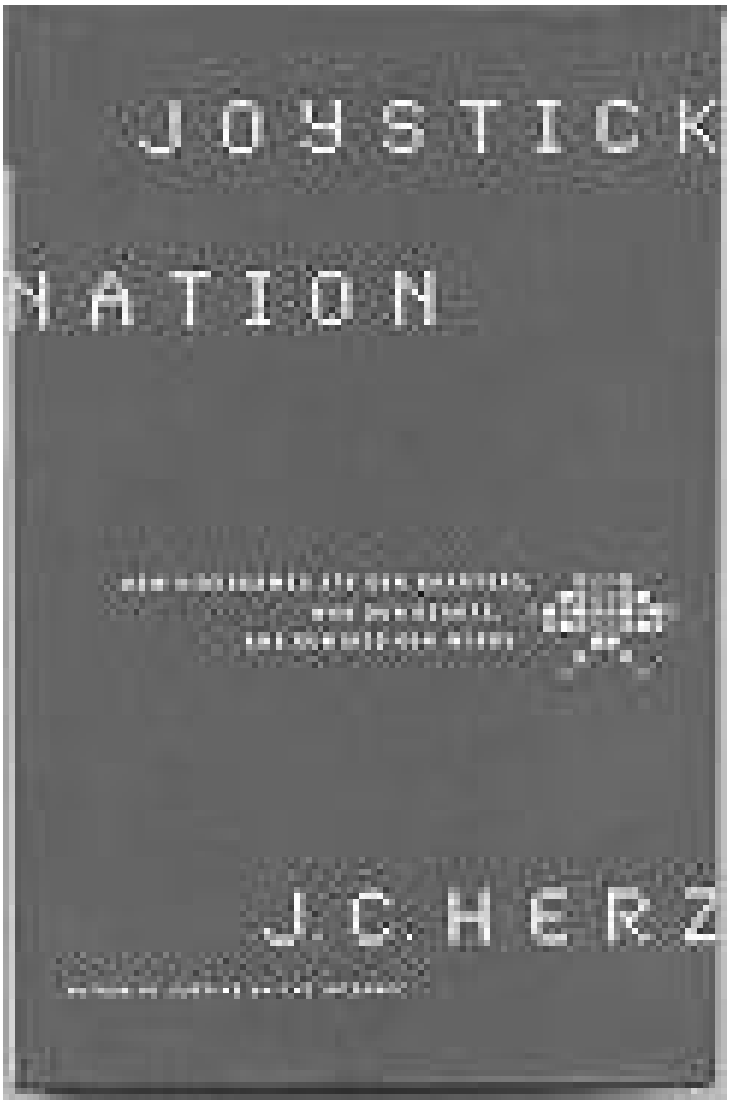


Video Games
Arlene Erlbach
1995

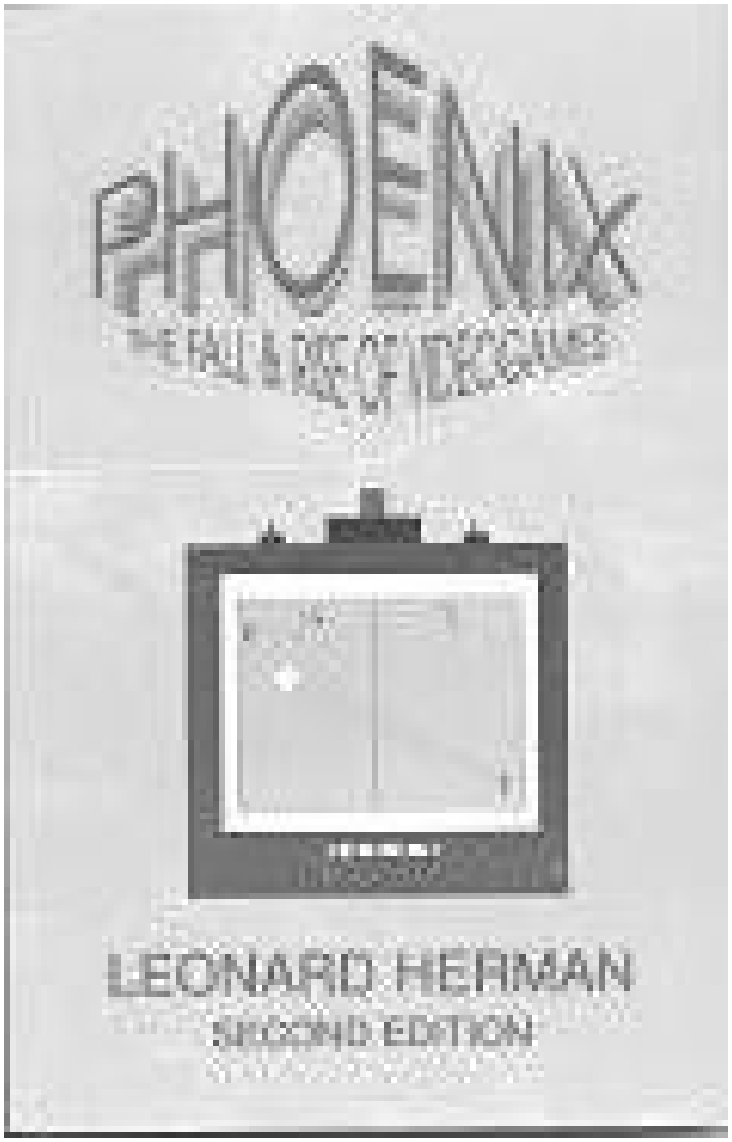
Games War
Michael Hayes & Stuart Dinsey
1995



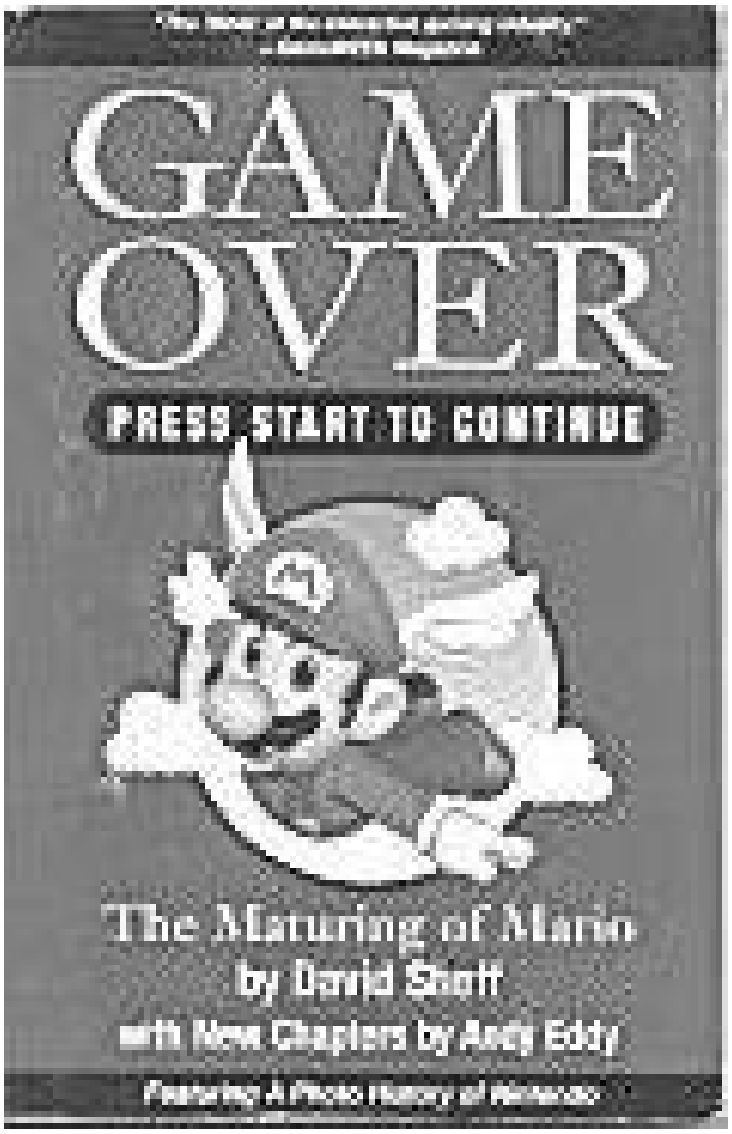
Inside Electronic Game Design
Arnie Katz & Laurie Yates
1996



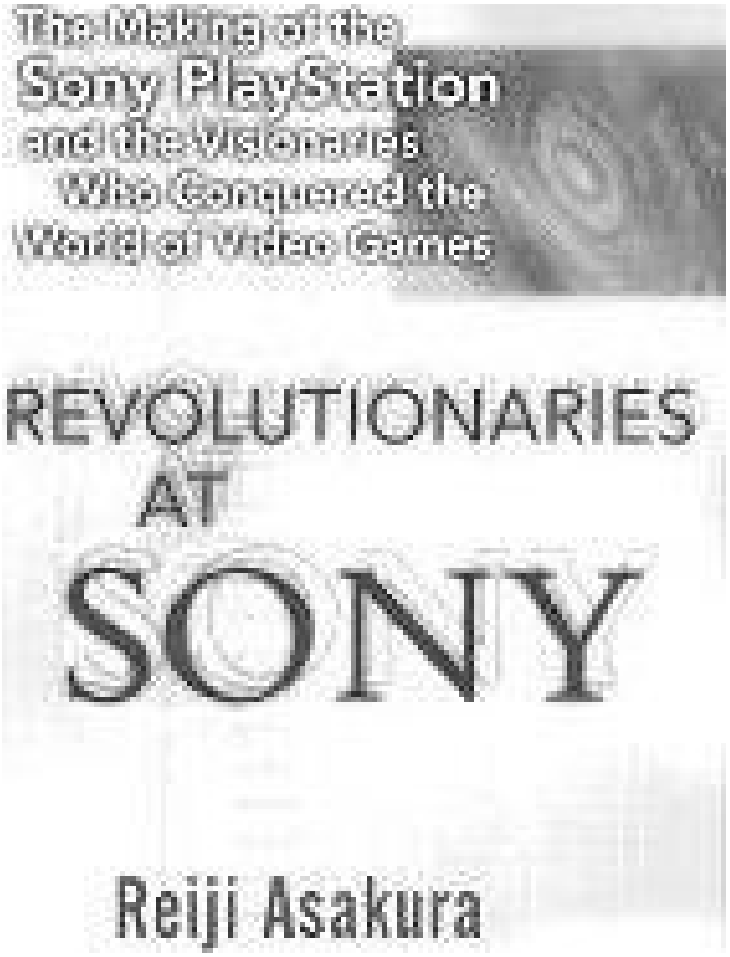
Joystick Nation
J.C. Herz
1997



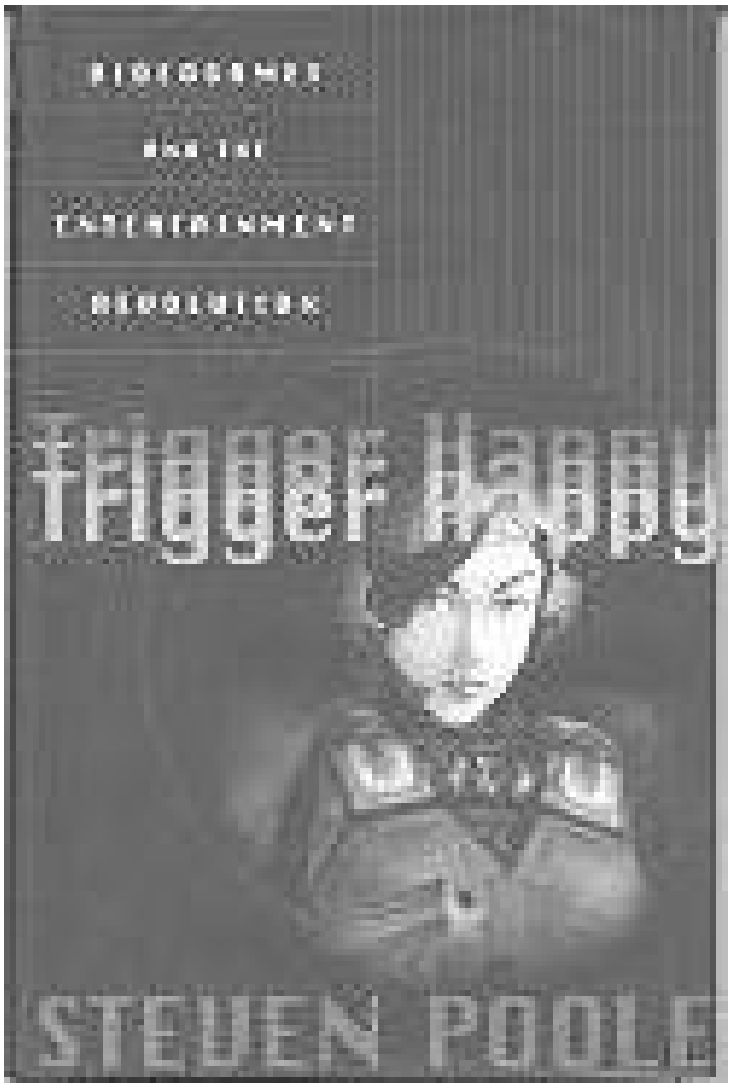
Phoenix: The Fall & Rise of Videogames
Leonard Herman
1997



Game Over: Press Start To Continue
David Sheff
1999



Revolutionaries At Sony
Reiji Asakura
2000



Trigger Happy
Steven Poole
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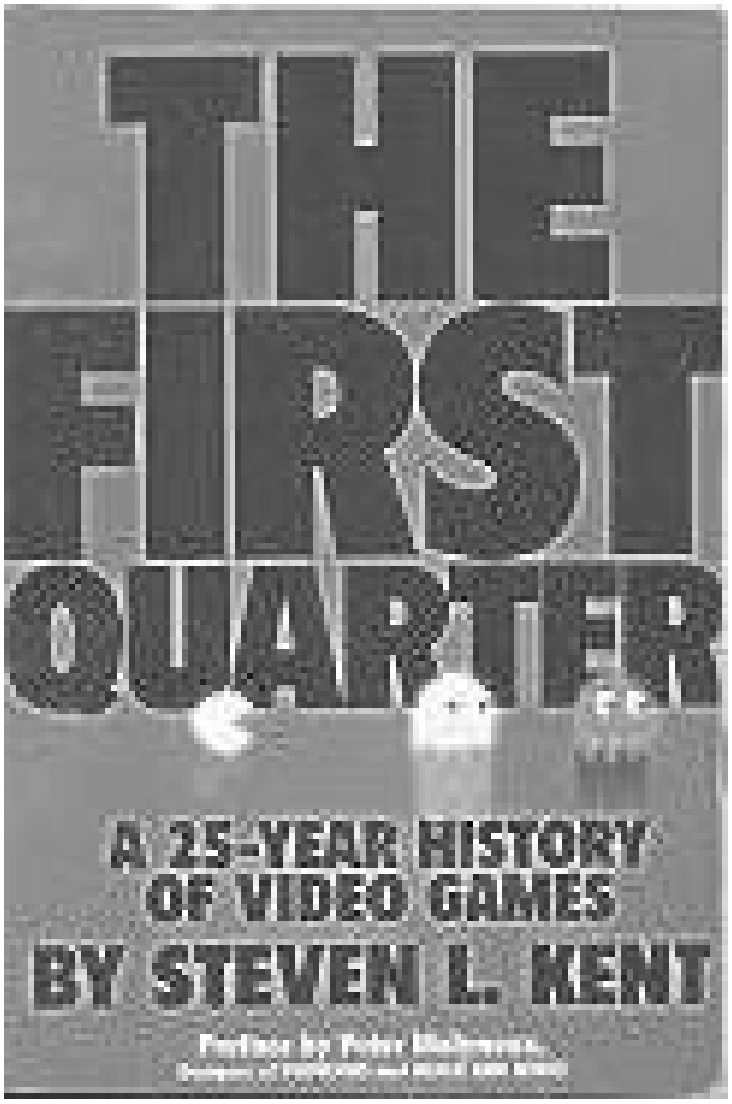

The First Quarter
Steven L. Kent
2000

Electronic Plastic
Jaro Gielens
2001

Supercade: A Visual History Of The Videogame Age 1971-1984
Van Burnham
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APPENDIX F
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