

The Golden Age of Video Games



The Birth of a Multi-Billion Dollar Industry

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Roberto Dillon



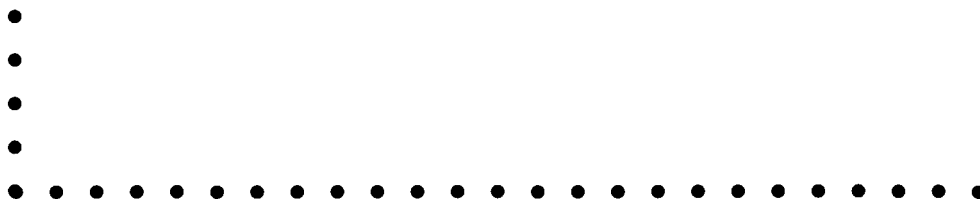
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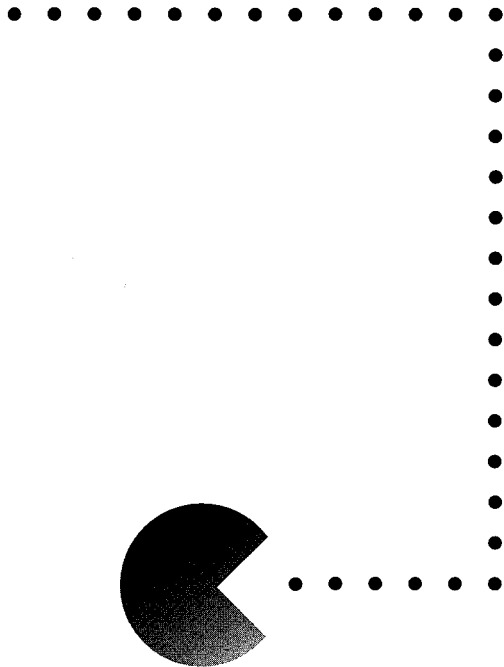
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*To my parents, Giorgio and Elisa,
for having introduced me
to video games and computers
at an early age
(and for not having scolded me
too harshly when I was
playing instead of studying).*

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Foreword



Nolan Bushnell had the idea of a video game. Just because a video game industry *didn't* exist didn't mean that it *shouldn't* exist. Nolan and I would have to create it.

Long before there was a video game industry, there were several brilliant engineers who designed games that were played on a cathode ray tube (CRT), which is a TV without a tuner. Early endeavors required computers that were much too expensive to be commercially viable. The video game industry would have to wait.

There is a lot of controversy over just who invented the first “video game.” Some say it was Ralph Baer while others say it was Nolan Bushnell. The truth is, it was Thomas Goldsmith Jr. and Estle Ray Man in 1947. The real question should be “Who created the video game *industry*?” Nolan and I get the credit for that one. Although *Computer Space* wasn't very successful, it did give birth to this industry. It took the arrival of *Pong* to give the industry significant life.

It should be noted that *Computer Space* has become quite a phenomenon. There are people and organizations that find this piece of work to be historical. They find these 40-year-old games and restore them to perfection. Some remember the 1973 movie *Soylent Green* only because it had a *Computer Space* in one of the scenes.

Bally Corporation of Chicago had paid Atari \$24,000 to create a video game for them. That game became *Pong*, which they subsequently rejected. My question to Al Alcorn and Nolan Bushnell was “Do we want to go into production ourselves or do we want to go home?” None of us wanted to go home, so the adventure began.

The chronicling of video games goes back over 60 years, so this book involves a lot of painstaking research. Sometimes it is very hard to separate truth from myth and legend, but Professor Dillon has worked many hours doing just that.

Xbox, PS3, and Wii enthusiasts, along with those interested in technology, can get a lot of insight from this book. Sometimes it's just fun to know how all this stuff came to be what it is today.

Ted Dabney
Atari Cofounder

Preface



Modern computers and electronic games were born roughly at the same time, though independently, in the 1940s. Several decades have passed since the early days of computers. Many home and business-oriented systems have emerged and faded into oblivion as technology has advanced at an incredible rate.

In this time, many books have been published on the history of computers and electronic games; in the last 10 years alone, many people have taken an interest in video game history and the subject is now even being taught at the university level. Indeed, the idea for this book came when I was preparing the Game History classes at the DigiPen Institute of Technology in Singapore and I started looking deeper into the literature on the subject, expanding my existing library. However, I couldn't find any single text on which to base my course, or to wholeheartedly recommend to my students. Some books were designed as luscious coffee table items, with many beautiful pictures, but were not very practical for serious study. Other books focused only on a specific branch of the industry, such as consoles, arcades, or a particular company or genre.

What I wanted, on the other hand, was something reasonably comprehensive yet agile and well balanced. I wanted to outline the history of both home computers and dedicated game machines, and to feature the most influential and innovative games while also introducing some of the pioneers to whom all of us owe a great debt. Last but not least, I wanted a book that was easy and entertaining to read. In other words, I wanted a book that wouldn't just be for study but that would be read and enjoyed by a broad range of people, any time or anywhere—on the bus or train, on the way to school, or on a relaxing vacation.

The Golden Age of Video Games focuses on the history of video games, consoles, and home computers from the very beginning until the mid-nineties, when some very important changes took place. Those changes were the definitive affirmation of IBM PCs as the standard home computer; the bankruptcy of previous home computer leader, Commodore; and the debut and rise of Sony's Playstation console. All together, they marked an end to the gaming world as it was known previously and started a new era in digital entertainment.

The book is structured in three different parts:

- Part I covers the very early steps of video games in research labs and universities and moves into the beginning of the gaming and home computers industry until 1982.
- Part II is dedicated to the infamous 1983 video game crash, the affirmation of the home computer market, and the start of the video game renaissance thanks to the Nintendo Entertainment System.
- Part III covers 16-bit systems and the different generations that emerged up to the mid-nineties.

Each part ends with a section titled *Games That Pushed Boundaries*. This section briefly discusses and analyzes some of the most relevant games that contributed, in one way or another, to the advancement of video games and, ultimately, defined them as the most influential entertainment medium of the last decades.

In addition to the three main parts of the book, an Epilogue section outlines the events and systems that followed the demise of Commodore and classic machines, and the Appendices provide a brief history of handheld devices and an overview of the retro game collecting scene that is now growing in popularity.

It is my hope that this book will provide an enjoyable read—not only to students of game development, but also to all retro game enthusiasts. I hope this book will help us to understand how the game industry developed through its short but intense history, as well as to remember the good old days when games looked much simpler but were still a lot of fun.

Roberto Dillon
June 1, 2010

Acknowledgments



Every book on an historical subject has to be thoroughly researched by checking countless sources and materials, and this book is no exception. To write it, I went through literally hundreds of computer and video game websites, magazines, and books mostly from the United States, UK, and my native country, Italy, in a never-ending quest to know more about this subject and to find accurate data. I extend my deepest thanks to all the journalists, writers, and passionate people who worked throughout the years to document games, systems, and everything related to this entertainment medium we all love so much and who now keep working to preserve its memory and legacy. Relevant references are listed in the Bibliography.

Special thanks to Ted Dabney for his kindness and invaluable feedback in the early Atari days. Many thanks to Davide Pasca, Matt Casanova, and Randy Knapp and to the editorial staff at A K Peters, in particular to Ms. Kara Ebrahim, for their fundamental help.

Last but not least, big thanks also to my wife, Jing, for her support, patience, and understanding while I was writing this book.

Timeline



The Early Age: 1947–1976

1947:

- Thomas Goldsmith Jr. and Estle Ray Man patent the *CRT Amusement Device*, the first electronic game played by using TV technology.

1952:

- Alexander Douglas discusses his computer game *OXO* for his Ph.D. thesis at Cambridge University.

1958:

- *Tennis for Two* by Willy Higinbotham is showcased at Brookhaven National Labs, NY.

1961:

- At MIT, Stephen Russell and friends start programming *Spacewar!*.

1971:

- Nutting Associates releases *Computer Space* by Nolan Bushnell and Ted Dabney, the first commercial video game.

1972:

- Magnavox releases the Odyssey by Ralph Baer, the first home console.
- Nolan Bushnell and Ted Dabney found Atari.
- Atari releases its first product: coin operated *Pong* by Al Alcorn, the first hit in the video game industry.

1973:

- In the United States, Williams and Midway enter the video game business. Taito does the same in Japan.

1974:

- Namco distributes Atari's coin-ops in Japan.

1975:

- Atari releases *Home Pong*. Many imitators follow.
- Taito's *Gunfight* is distributed in the United States by Midway and is the first arcade game to use a CPU (added by Nutting Associates in the US version).

1976:

- Coleco *Telstar* games released.
- First cartridge-based video game console, Fairchild Channel F, is released.
- Bushnell sells Atari to Warner Communications for \$28 million. The VCS is in the works under the codename Stella.

The Golden Age: 1977–1993

1977:

- ❑ Nintendo releases its first home video game systems in Japan.
- ❑ The Atari VCS is released.
- ❑ The Apple II and the Commodore PET are unveiled at the West Coast Computer Fair. Tandy's RadioShack releases the TRS-80 personal computer.

1978:

- ❑ Magnavox releases the Odyssey², distributed by Philips in Europe as the Videopac G7000.
- ❑ Taito's new game *Space Invaders* provokes a 100-¥ coin shortage in Japan.

1979:

- ❑ Mattel releases the Intellivision console.
- ❑ A game called *Adventure* is released for the VCS and the action/adventure genre is born, together with the first "easter egg."
- ❑ Atari enters the home computer market with the 400 and 800 models to compete with Apple.
- ❑ Vectorbeam/Cinematronics releases *Tail Gunner*, the first 3D game, in the arcades.

1980:

- ❑ Activision is formed to produce Atari VCS games. It is the first third-party software house.
- ❑ Namco releases *Puck-Man* in Japan, aka *Pac-Man* in the rest of the world.

- UK-based Sinclair releases the ZX-80, an extremely basic machine that can nonetheless be regarded as the first low-cost home computer.
- Commodore releases the VIC-20, under the name VIC-1001, in Japan to test the market.

1981:

- In January, Commodore officially releases the VIC-20, the first low-cost home color computer and the first one to break one million units sold.
- Sinclair releases the ZX-81, refining its previous model.
- Video game addiction starts to become a problem in many countries and games are often seen as detrimental to the youth. In the Philippines, on November 19, President Marcos bans video games, giving people two weeks to “surrender” any video game to the army and police forces. Violators faced a fine of \$600 or 6 months to 12 years in jail. The ban was lifted a few years later.

1982:

- Cynex releases the Game Mate 2, the world’s first wireless control joysticks, compatible with the Atari 2600 and Commodore VIC-20.
- The Commodore 64 is released.
- Sinclair releases the ZX-Spectrum.
- Board game giant Parker Brothers enters the video game market by producing cartridges for different systems.
- Coleco introduces the ColecoVision.
- Atari releases the 5200 Super System while restyling and renaming the VCS to the 2600.

1983:

- Due to a number of factors, the industry crashes in North America. Many companies go bankrupt within a couple of years. “Two or three years from now, video games will be considered a piece of history,” according to Richard Stearns, VP for Consumer Electronics at Parker Bros.

- Atari dumps 14 truckloads of game cartridges and other computer equipment in a landfill in Alamogordo, New Mexico. A few million cartridges of *ET: The Extraterrestrial* are included.
- Cinematronics releases *Dragon's Lair* in the arcades.
- In Japan, Sega and Nintendo release the SG-1000 and the Famicom, respectively.

1984:

- Amstrad CPC is released to compete against the C64 and ZX Spectrum.
- Atari discontinues the 5200 system and releases the 7800 instead. The company is split in two and Jack Tramiel buys the consumer division, renaming it Atari Corp. The 7800 is soon pulled out and home computers become the main focus of the restructured company.
- Mattel closes its electronics division. Intellivision rights are sold for \$20 million to the newly formed INTV Corp.

1985:

- At the Summer Consumer Electronics Show, Nintendo introduces the Nintendo Entertainment System (NES). The NES is later officially released in North America at a \$125 price.
- Nintendo releases *Super Mario Bros.* for the NES. It will sell more than 40 million units worldwide.
- Commodore Amiga 1000 and Atari ST computers are released.
- Sega releases the Master System in Japan (under the name Mark III). North American release will follow in 1986.

1986:

- Atari re-releases the 7800 ProSystem in the United States (release in Europe will follow one year later) along with a slim version of the 2600, named 2600 Jr.

- ❑ Nintendo releases *The Legend of Zelda* and *Metroid* in Japan, both destined to become two of the most beloved game series ever.
- ❑ The First Computer Game Developers Conference (dubbed “Symposium”) is organized and takes place in the home of famed game designer Chris Crawford.

1987:

- ❑ In Japan, NEC releases the PC Engine video game system (to be released in North America in 1989).
- ❑ Commodore releases the Amiga 500, the most successful model in the Amiga line.
- ❑ Konami releases *Metal Gear* for the MSX system in Japan while Square releases *Final Fantasy* for the Famicom.

1988:

- ❑ Nintendo of America debuts the *Nintendo Power* magazine in the United States, and 3.6 million copies are given away.
- ❑ Sega releases the MegaDrive in Japan (renamed Genesis for the American market where it was released in 1989).
- ❑ Sony officially enters the video game industry by designing and producing audio chips for the upcoming Nintendo Super Famicom system.

1989:

- ❑ Nintendo introduces the Game Boy handheld game system, selling it in bundle with *Tetris*.
- ❑ Atari introduces the Lynx handheld video game system.
- ❑ NEC releases a CD-ROM add-on for the PC Engine in Japan, turning it into the first console to use CD-ROM data.

1990:

- ❑ Nintendo releases the Super Famicom (renamed SNES outside of Japan) and owns 90% of the total video game market share worldwide.
- ❑ Commodore introduces the 64 Games System. It is a Commodore 64 computer without the keyboard and with the cartridge slot on top.
- ❑ NEC introduces the TurboExpress hand-held video game system in the United States.

1991:

- ❑ Sega debuts the Game Gear portable video game system.
- ❑ Nintendo and Sony announce a cooperation to develop a compact disk player for the Super Famicom. The deal breaks apart right after the announcement as Nintendo decides to partner with Philips instead. Sony will go its own way, leading to the PlayStation a few years later.
- ❑ Atari releases a new version of the Lynx, slashing the price to \$99.
- ❑ Nintendo introduces the SNES in North America, priced at \$199.95.
- ❑ Philips Electronics releases the CD-I multimedia system, using compact disks for games and other interactive applications. Price is \$1,000.
- ❑ Hosted by AOL and developed by Beyond Software, *Neverwinter Nights* is the first Massively Multiplayer Online Role Playing Game (MMORPG) to break away from a text-only interface.

1992:

- ❑ Sega releases its CD add-on for the Genesis.

1993:

- ❑ Atari releases the Jaguar, its last system.
- ❑ Nintendo releases *Star Fox* for the SNES in the United States. The game is the first with the FX Chip for improved visuals and sounds.

-
- ID Software releases *Doom*, and PC gaming reaches new heights.
 - Sega introduces a rating system for its video games: GA (general audience), MA-13 (mature, minimum age 13), and MA-17 (mature, minimum age 17).
 - The 3DO Interactive Multiplayer is released with a price of \$699.

The Modern Age: 1994–present

1994:

- *GamePro* becomes the first video game magazine to sell 500,000 copies of a single issue (January).
- Commodore files for bankruptcy.
- Sony releases the PlayStation in Japan. CD-based games become the norm.
- Sega releases the Saturn in Japan while Sega of America releases the 32X, another add-on for the Genesis.
- In Tokyo, Nintendo announces the Virtual Boy, a new video game system that uses a special virtual reality headset to display 3D red images on a black background. It uses six AA batteries for seven hours of gameplay. It will be later released in the United States for \$179.95, where it will be a commercial failure.
- Apple Computer announces the Pippin video game system, based on the Macintosh personal computer. The system will later be adopted by Bandai Digital Entertainment for its own @World entertainment system but it will go completely unnoticed when officially released in 1996.
- In Japan, Nintendo and St. Giga television announce the Satellaview service, allowing Super Famicom users to download games via cable service starting from April 1995.

1995:

- Activision releases its Atari 2600 *Action Pak Volume 1* for Windows-based personal computers. Nostalgic-emulated retrogaming begins.

- Nintendo of America announces its Ultra 64 game machine. It is going to become the Nintendo 64.
- Sega Saturn is released in the United States at \$349.
- The first Electronic Entertainment Expo (E3) is held in Los Angeles. Three hundred and fifty game companies show 1,300 games for video game systems and personal computers.
- The PlayStation is introduced in the United States and Europe. Price is set at \$299.

1996:

- Nintendo releases the Nintendo 64 worldwide and the Game Boy Pocket portable game system in the United States.
- Capcom releases *Resident Evil*, spawning a new series of survival/horror-themed games.
- Eidos releases *Tomb Raider*, imposing the 3D third-person adventure gameplay to the attention of the general public.
- DigiPen Institute of Technology starts offering B.S. degrees in Real Time Interactive Simulation—the world's first bachelor degree program dedicated to computer and video game development.

1997:

- In Japan, Sony begins selling the Net Yaroze, a programmable PlayStation video game system.
- Sega launches the Saturn NetLink, allowing the Saturn system to connect to the Internet.
- Sony releases the Dual Analog controller for the PlayStation in the United States. The Dual Shock controller will follow one year later.
- Sony releases *Parappa the Rapper*, popularizing music/rhythm-based games.

1998:

- Hasbro buys Atari's home video game assets.
- Nintendo releases the Game Boy Color handheld video game system while also releasing camera and printer accessories for its handhelds.
- SNK releases the NeoGeo Pocket handheld video game system in Japan.
- Sega launches the Dreamcast in Japan while also holding a Gamer's Day in San Francisco. Worldwide release will follow one year later. The Dreamcast is the first system with a built-in modem for online play.

1999:

- Sony Computer Entertainment introduces the PocketStation handheld video game system in Japan. Games are downloaded from the PlayStation in a new format. Price is about \$25.
- In Tokyo, Japan, Sony unveils the specifications of its next PlayStation video game system to 1500 invited guests. Nintendo soon announces its next generation console too, codenamed Dolphin.
- In Weirs Beach, New Hampshire, Billy Mitchell plays a "perfect" game of the arcade game *Pac-Man* in over six hours. It's the highest score that the game allows—3,333,360—and it can only be accomplished by guiding Pac-Man to eat every dot, fruit, and ghost in all 256 levels.

2000:

- Sony releases the PlayStation 2, the first console to have built-in DVD capabilities.
- At the Game Developers' Conference in San Jose, California, Bill Gates announces plans for Microsoft's Xbox video game console.
- Sega launches the SegaNet online gaming network. Dreamcast players can play against other players via the dial-up network. Price is \$21.95 per month.

- At the Media Art Festival in Japan, the local Agency of Cultural Affairs proclaims the video game *Dragon Quest VII*, published by Enix for the PlayStation, as the best work of interactive digital art.

2001:

- Sega announces that it will halt production of the Dreamcast and shift its focus to developing software for other consoles and handheld devices.
- Nintendo releases the Game Boy Advance and the GameCube. Prices will be \$99.99 and \$199.95, respectively.
- Microsoft releases the Xbox, the first major console to use a hard disk and to effectively popularize online gaming. Launch price is set at \$299.
- Sony ships a limited number of Linux kits for the PlayStation 2 in Japan. The kit includes a 40 GB hard drive, keyboard, mouse, VGA and Ethernet adapters, plus a DVD with Red Hat-based Linux OS. Price is 25,000 ¥. All 2,000 units sell out in under eight minutes.
- SNK of Japan shuts down the company. The company was best known for its NeoGeo arcade and home games.
- IBM, Toshiba, and Sony announce an agreement to develop a new computer chip, codenamed Cell, likely to be the heart of the next Sony video game system.

2002:

- Microsoft officially launches the Xbox Live online gaming service in the United States. The service will be available in Europe one year later.

2003:

- Nintendo releases the Game Boy Advance SP while it manufactures the last Famicom system.
- 3DO announces it has filed for Chapter 11 bankruptcy protection in the United States.

- Sony introduces the EyeToy camera for the PlayStation 2.
- Nokia tries to merge a cell phone and a handheld gaming system and releases the N-Gage. Price in the United States is \$300.

2004:

- Sony releases the Universal Media Disc (UMD)-based PlayStation Portable handheld system in Japan (North American release in 2005 for \$249.99), plus a slimmer version of the PlayStation 2.
- Nintendo releases its Nintendo DS dual screen handheld, which can also play Game Boy Advance titles thanks to a special cartridge slot, and announces a new console codenamed Revolution.
- Blizzard Entertainment releases *World of Warcraft*, which soon becomes the most well-known MMO game with millions of active users.

2005:

- Microsoft releases the Xbox 360 with 18 launch titles. Prices start at \$299.99.
- At the Tokyo Game Show, Nintendo shows a prototype wireless controller for its upcoming Revolution video game system. It is shaped like a television remote controller and it interacts with sensors placed next to the television to detect movement.

2006:

- Nintendo renames its new Revolution console the Wii and releases it worldwide. Launch price is \$249.99. The Wii will redefine the concept of playing video games thanks to its easy-to-use motion-based controls.
- Sony releases the Blu-Ray-enabled PlayStation 3. Prices start at \$499. Release in Europe and Australia will follow in 2007.
- Nintendo releases the DS Lite, a slimmer DS, with instant success.

2008:

- Nintendo launches the Wii Fit exercise game for its Wii console. Price is \$90 and it includes a balance board input device that can also be used by other games.
- Nintendo releases the DSi, a new DS with a larger screen and a camera but without the Game Boy Advance slot.

2009:

- Sony releases the PSP Go, removing UMD disk-based games in favor of digital downloads. Also, a new, slimmer version of the PS3 is released.
- Nintendo announces that total shipments of its DS portable consoles have topped 100 million worldwide.

2010:

- Nintendo reveals a new handheld system, the 3DS, which is able to offer a 3D experience without the need of special glasses.
- Microsoft introduces a new slimmer and more reliable version of the Xbox 360.
- Sony and Microsoft release their respective motion controlling devices, Move and Kinect.
- Panasonic announces its intention to get into the handheld gaming market with the Jungle, a system designed to bring MMO games on the go.