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Introduction to Game Development

Edited by Steve Rabin

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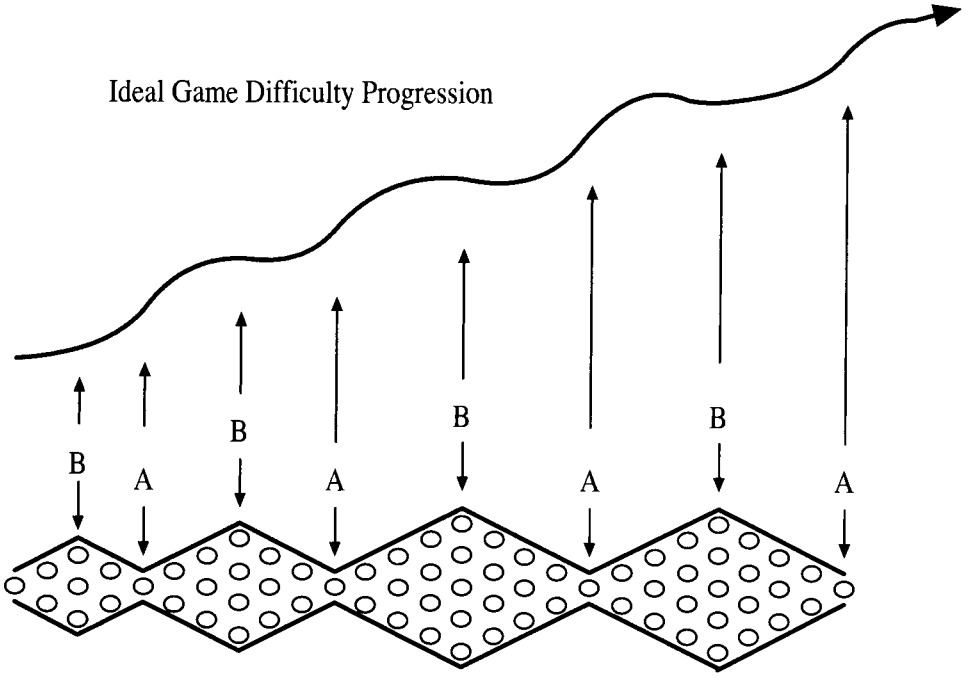
PART

1

CRITICAL GAME STUDIES



1.1 A Brief History of Video Games

In This Chapter

Overview

In the quest to learn about the video games industry and how state-of-the-art games are made, it helps to start with some perspective. How did it all begin? Who were the people who drove the business and what were their inspirations? What significant games of yesteryear shaped the way games are made today?

While a student of filmmaking will study legendary directors like Orson Welles and groundbreaking films like *Citizen Kane*, there is equal reason for game developers to study the work and techniques of Shigeru Miyamoto and influential games like *Donkey Kong* and *The Legend of Zelda*. It is certainly true that games have not reached the status of films as works of art, but this is slowly changing. The skill and artistry involved in making games will soon rival motion pictures, with typical game production budgets skyrocketing upwards of 10 to 20 million dollars with no end in sight.

This chapter travels through time from the first recorded video game in 1958 all the way to the present. There are many ways to view and compare history, so we'll start with a timeline approach, and then break out specific platforms, studios, people, and genres to effectively understand specific lines of innovation.

The First Video Games

The first video games can be attributed to two key people: William Higinbotham and Steve Russell. While William Higinbotham would be credited as the first to design and implement a video game, Steve Russell would be the first to create a game that would inspire the multibillion-dollar video games industry.

William Higinbotham and Tennis for Two

Who invented the first video game? As far as historians can tell, it was the United States Department of Energy. Specifically, it was a man named William Higinbotham who was the head of the Instrumentation Division for Brookhaven National Laboratory. Before Brookhaven, William had previously worked on the Manhattan Project at Los Alamos and had witnessed the very first atomic blast. However, in the 1950s, people were wary of atomic power, and Brookhaven tried to present a friendly image by hosting an annual visitor's day. Hundreds of people would visit the laboratory every fall to see the various exhibits that were set up in their gymnasium. In 1958, William had a brainstorm. On previous visitor days, people weren't very interested in static exhibits, so for this year he came up with the idea for an interactive display. The display would be a video tennis game.

In a matter of three weeks, the very first video game was assembled. William, who drew up the original design in only a couple of hours, worked closely with Robert V. Dvorak, a technical specialist, who wired up the patchboard. Between the two of them, they spent about two days debugging and tuning the game, getting it done just in time for the first tour. *Tennis for Two* was the result and it was a big hit with the visitors.

Running on an analog computer and hooked up to an oscilloscope, the first video game looked sharp and ran fast. Surprisingly, this game was not a top-down perspective like *Pong*, but rather a side view of a tennis court. Two players would smash a ball back and forth, with the ball realistically bouncing off the ground and net, apparently under the influence of gravity. While the game kept no score, clearly there was a winner and loser after each volley. Even without audio speakers of any kind, the game had its own distinct sound effects, even if they were somewhat unintentional. The relays that enabled the device to operate made loud clicking noises with every hit and bounce of the ball.

This game was truly an impressive first attempt, even by today's standards. Yet to William, the fact that he had invented something unique didn't occur to him. The analog computer that he used actually came with examples in the instruction book, showing how to simulate many things on an oscilloscope, such as missile/bullet trajectories as well as a bouncing ball. Therefore, when William made the leap allowing two people to volley a bouncing ball back and forth, he didn't consider it a major breakthrough.

Although several hundred people saw the Brookhaven exhibit in 1958 and 1959, it failed to inspire future video games. The exhibit simply didn't reach the right people to make an impact, and thus is recorded in history as an isolated incident. It was as if the airplane was invented, but nobody recognized the significance or possessed the interest to push the idea further. After the autumn of 1959, *Tennis for Two* was dismantled and replaced with newer exhibits the following year.

Steve Russell and *Spacewar*

In 1961, computers were scarce, but they could be found at the most prestigious schools, such as MIT. Steve Russell was a student at MIT, and over the course of six months and roughly 200 hours he created a two-player video game called *Spacewar* on a DEC PDP-1 computer. The goal of the game was for each player to maneuver his spaceship while trying to shoot the other player's spaceship with torpedoes. Using four separate switches, each player could rotate clockwise and counterclockwise, thrust, or fire a torpedo.

Spacewar was created in 1961, but by the spring of 1962, the game had been expanded. Pete Sampson added an accurate starfield in the background by integrating an existing program called *Expensive Planetarium*. Next, Dan Edwards optimized the game to allow gravitational computations to be performed. Thus, a flickering sun was added to the center of the display that would influence the spaceships and destroy any that flew too close. Finally, J. Martin Graetz added the concept of hyperspace: the ability for a panicked player to warp his spaceship from its current location to a new randomly generated location. With these additions, interesting tactics began to develop, such as slingshotting oneself around the sun to quickly overtake a slow moving opponent. Within MIT, the game was a huge success and created quite a sensation at MIT's annual Science Open House.

Steve Russell never made any money off *Spacewar*, but he did briefly consider the possibility. Unfortunately, the cost of a PDP-1 computer in the early 1960s was about $120,000, and the feasibility of commercially recouping that cost was out of the question. *Spacewar* become a public domain program and quickly spread to other colleges over ARPAnet, an early version of the Internet. In addition, DEC ended up using *Spacewar* as a diagnostics program that shipped with new PDP machines, therefore distributing the game to its customers for free. A re-creation of *Spacewar* in Java can be played at *http://lcs.www.media.mit.edu/groups/el/projects/spacewar/*.

Games for the Masses

While *Tennis for Two* and *Spacewar* were amazing first games, they only reached a select group of people. During the early 1970s, two key people, Ralph Baer and Nolan Bushnell, would bring video games into the home and the arcades for the masses to enjoy. Thus, these two visionaries gave birth to the video games industry as we know it today.

The Advent of Home Video Games: Ralph Baer and the Magnavox Odyssey

The next significant chapter in video games centers on Ralph Baer. Ralph's background was in TV design, but in the early 1960s he was a division manager at Sanders Associates, a military defense contractor based in New Hampshire. While on a business trip to New York in the summer of 1966, he came up with the idea of making games for a home TV. Since Ralph had more than 500 people under him, along with a payroll of almost $8 million, he was able to allow a couple of engineers, Bob Tremblay and Bob Solomon, to work on his ideas without anyone noticing.

When Ralph finally presented his project to the executive board at Sanders, his new invention garnered a cold reception. Most on the board thought Ralph was wasting the company's money and wanted to kill the project. Despite this poor showing, Ralph's boss, Bill Rusch, was impressed, primarily by the rifle game. Rusch was quite adept at shooting the target spot on the television from the hip with the plastic rifle. With a champion in his corner, the project remained alive.

In 1967 and 1968, better games started to take shape with the help of Bill Rusch. Soon, the small group had a respectable ping-pong game working. With a little refinement—removing the net and adding a blue "ice" color for the background—it became known as a hockey game. The game featured three controls: an up/down control for protecting the goal, a left/right control for moving close to the centerline, and an "English control" to put a spin on the puck.

Since Sanders wasn't in the TV or toy business, the next step was to sell the home video game system to a large manufacturer. After several failed attempts with General Electric, Zenith, and Sylvania, the television company Magnavox finally signed contracts with Sanders in late 1971. By 1972, Magnavox dealerships showed the new device, marketed as the Magnavox Odyssey. Unfortunately, the machine was badly overpriced at $100 and went largely unnoticed by the public due to limited marketing.

Breaking into the Amusement Business: Nolan Bushnell and Atari

William Higinbotham was a scientist, Steve Russell was a programming prodigy, and Ralph Baer was a determined inventor. However, for the video games industry to really take off, it needed a salesperson and entrepreneur. Enter Nolan Bushnell. As an engineering major at the University of Utah from 1962 to 1968, Nolan was lucky enough to be at one of the very few colleges experimenting with computer graphics. He learned to program in FORTRAN and became an avid player of Steve Russell's *Spacewar*. Being a charismatic man, he convinced several senior students to help him create video games of their own. He ended up creating seven computer games with the help of his friends.

While the university and *Spacewar* were huge influences, an equal influence was Nolan's experience during those same years working at an amusement park north of Salt Lake City. Starting out on the midway selling balls to knock over milk bottles, Nolan became an expert at convincing people to part with their quarters. Later, he would work at the park's pinball and electromechanical game arcade, learning how the devices worked and how the business operated. These experiences would later prove invaluable. Nolan was an engineer who loved video games, understood the amusement business, and had the charisma to sell his passion. All he needed was a product.

With *Spacewar* on his mind, in 1969 Nolan worked to re-create a *Spacewar*-inspired game as a coin-operated device. Since cheap computers lacked the computational power to make the game work, he resorted to building a custom device that would only play his single game. Once the prototype was completed after a few months, he found a partner to manufacture it: Nutting Associates. Nutting was already in the amusement business with a successful trivia game called *Computer Quiz*, but the company saw promise in the new action space game, *Computer Space*. Nutting licensed the game from Nolan and hired him as their chief engineer.

Soon there were 1,500 *Computer Space* machines manufactured in wildly curvy futuristic cabinets—but the public reaction to the game was poor. Although Nolan personally demonstrated the game at the 1971 Music Operators Association show in Chicago, few arcade operators bought the machines. In the end, the game was too complex and intimidating for early audiences. Thinking that he could do a better job of marketing, Nolan set out to start his own company to produce arcade games. That company would be Atari.

Bringing Games to the Masses

The Atari name is synonymous with video games. However, in 1972, it was a tiny startup with Nolan Bushnell as its visionary leader. While Nolan worked on plans to combine the physics of *Computer Space* with a racetrack concept, he hired an engineer named Al Alcorn. Al's first warm-up assignment was to make a game based on ping-pong with one ball and two paddles. After three months, a working prototype was finished. Al wasn't sure the end product would be successful as an arcade game, but Nolan was impressed and dubbed the game *Pong*. After two weeks of testing at a local tavern, it seemed clear that *Pong* would be a hit.

Soon after Atari started marketing *Pong*, Magnavox took Atari to court. Unfortunately for Atari, Ralph Baer kept impeccable records of his inventing process and had filed numerous patents during the late 1960s. Magnavox alleged that Atari had violated many of Ralph's patents and even more critically had copied Ralph's ping-pong concept. In depositions, witnesses had also alleged that Nolan Bushnell had been given a demonstration of the Magnavox Odyssey at a large trade show in May of 1972.

In the end, Atari settled with Magnavox in 1976 for a one-time license payment of $700,000. After that, Atari was free to produce video games without paying any more money to Magnavox—"a sweetheart deal" as Nolan would later put it. As part of the settlement, Magnavox agreed to aggressively go after other video game makers, demanding royalties on every video game produced. Nolan escaped from this predicament with Atari still intact and still on top.

Pong became the first well-known video game and helped launch the entire video games industry. Atari struggled to keep up with orders for *Pong*, while other companies imitated it and exploited Atari's success. Atari became the premier video game company; however, it was forced to innovate to keep competitors at bay. During the 1970s, this innovation led to Atari creating the first racing game, *Trak 10*, and the first maze chase game *Gotcha*.

The Console Kings

After the success of *Pong*, the next stage in the evolution of video games in the home was the cartridge-based console. Atari was an important player, but was soon joined by other companies with a mark to make of their own.

Atari and the 2600

In 1977, Atari entered the cartridge-based home console market with the Atari Video Computer System (later redubbed the Atari 2600). Despite their reputation for innovation, they were not the first company to release a cartridge-based home system, having been beaten to the punch by two short-lived consoles, the Fairchild VES and the RCA Studio II. While they weren't the first to market, after a rocky Christmas, they became the first giant success (selling well for the next 10 years) and the name of the system became nearly synonymous with video games. Initially released with nine games, it was an innovative system based on the idea of moving costly functionality out of the hardware and into the software. In addition to having brightly colored graphics, and selector switches that selected the games and changed difficulty settings, it also introduced the joystick to the home market.

Part of the reason for its success was the huge variety of games that could be made for it—an unintended consequence of having an architecture built around saving costs in the hardware. Third-party companies formed to take advantage of the open architecture and create games without Atari's blessing. The most famous of these is Activision, which was formed by four ex-employees of Atari. Atari initially tried to stop third-party companies from making games for its system, but later relented and charged royalties on the games instead. This is standard practice in the home console market these days, with massive sums of money in the form of royalties exchanging hands for games to be "licensed" by the console manufacturers.

Video Game Crash of 1983

In 1983, a great shakeup occurred in the video games industry that would have serious repercussions on the fledgling market. There were several factors leading to the crash: a poor economy, natural market cycles, and consumer perception that video games were just a fad. Two of the largest factors leading to the crash were the role of the Atari and the 2600, and the introduction of cheap home computers to the market.

In addition to a glut of poor third-party games released for the Atari 2600 at that time, two infamously bad high-profile first-party titles were released for the system

that year. The home console version of *Pac-Man* was a disappointing rendition of its video arcade counterpart, featuring poor graphics and differing far too much from the beloved original. The game *E.T.*, a tie-in with the blockbuster Spielberg movie, was created in a frantically rushed five weeks by Atari programmer Howard Scott Warshaw. The game rights were purchased for $20 million, with the expectation that the game would be a big Christmas hit. Gameplay was poor, the programming was understandably buggy, and the game was another disappointment for Atari, who had produced more copies of the game than there were 2600s in homes at the time (leading to now-substantiated rumors of New Mexico landfills being filled with millions of cartridges). These two games, given other factors, did irreparable damage to Atari's reputation. Moreover, while Atari alone had created more game cartridges than could be absorbed by the market, the oversupply of third-party game cartridges for the 2600 exacerbated the issue.

Another factor was the influx of inexpensive home computers into the market—particularly the Commodore Vic-20, Commodore 64, and Atari 400. Where computers had long been expensive and the province of specialty stores, the early 1980s saw computers being sold from department stores, toy stores—everywhere that video game consoles were selling. The computers offered a compelling sales pitch, duplicating many of the popular games from the consoles, while also offering software such as word processing and accounting programs. In addition, companies like Commodore offered trade-in deals on used game machines, further encouraging people to abandon their consoles.

As a result of increased competition, the lack of a next-generation console being ready, the huge glut of poor first and third-party games, and a bad economy—the market crashed. The third-party companies, unable to sell their product, were also unable to pay their distributors and had to close doors. Atari, a bulwark against the panic that was setting in, eventually began to dump its product cheaply on the market and then collapsed as well. The consumers, seeing this, began to believe that it all was a fad, and lost confidence in the industry. Companies like Mattel, Magnavox, and Coleco, as well as a host of others, got out of the video game business. The slump lasted for years, until the introduction of the NES console from the Japanese company Nintendo.

Nintendo and Shigeru Miyamoto

Nintendo helped shape the video games industry and pull it out of the slump of 1983, and continues to be a major force and innovator. Surprisingly, Nintendo was founded over 100 years ago, in 1889, and started out making hanafuda cards (Japanese playing cards). By the middle of the twentieth century, Nintendo had done well with Disney-licensed Western-style cards and later expanded into toys. During the late 1970s, toys began to move toward electronic video games, and Nintendo joined the fray with the introduction of the *Game and Watch* series.

The *Game and Watch* series, created by the visionary Gunpei Yokoi in 1980, was a line of over 50 handheld games that featured one or two LCD screens. As the name

implies, each unit had one simple game along with the functionality of a digital watch. Gunpei invented the D-Pad (the plus-shaped directional pad found on most modern-day controllers), and would later go on to create the handheld Game Boy and the groundbreaking NES game *Metroid*.

Around the same time as the *Game and Watch* series, another visionary creator within Nintendo began designing the arcade game *Donkey Kong*. Nintendo had shipped 3,000 *Radarscope* games to the United States, but only 1,000 sold. Desperate to sell the remaining inventory, a young Shigeru Miyamoto was given the task of creating a new game that could be put within the *Radarscope* cabinets. Shigeru started out by creating an elaborate story about a gorilla that had stolen a carpenter's girlfriend. This carpenter, simply named Jumpman (but later known as Mario), would be forced to avoid barrels and flames, while jumping around on steel girders to reach his girlfriend. The converted *Radarscope* units quickly sold out in 1981 and orders continued to roll in. *Donkey Kong* would become one of the most influential arcade games ever, selling more than 65,000 units in the United States, and launching Mario as the enduring corporate mascot of Nintendo.

Shigeru Miyamoto's Mario character has now appeared in more than 80 games, selling a combined total of roughly 200 million games. The most notable are *Mario Brothers*, the *Super Mario Brothers* series, *Super Mario 64*, *Super Mario Kart*, and the *Mario Party* series. In 1983, *Mario Brothers* first introduced Mario's brother, Luigi. The 1985 game *Super Mario Brothers*, which first appeared in arcades and later on the Nintendo Entertainment System (NES), is recognized, next to Tetris, as the bestselling game of all time, with approximately 40 million copies sold in North America alone. In 1996, *Super Mario 64* on the *Nintendo 64* console would again innovate by bringing the platform genre into 3D. For the first time, players could explore Mario's world, running, jumping, swimming, flying, and tiptoeing wherever the player wished.

Although retailers were reluctant to stock home video games after the 1983 video game crash, in 1985 Nintendo was able to position the NES in a manner that made it more palatable to risk-averse retailers. The unit was bundled with a light gun and a robot named R.O.B. (Robotic Operating Buddy), and was labeled as an "entertainment system" rather than a "video game system." Nintendo also guaranteed to retailers that they would buy back all unsold systems, to further put them at ease. This unique positioning worked, and the NES snuck onto retailer shelves and soon became a remarkable success.

During the late 1980s, Nintendo's success was so extreme that at times they owned more than 90 percent of the video game market. As a result of being too successful, internally Nintendo was worried that they might lose their "Nintendo" trademark since it was becoming synonymous with "video game" and "video game machine." However, this fear would fade and by the late 1990s, it was more common to hear "PlayStation" used to obliquely refer to video game machines.

Today, Nintendo remains a fierce competitor in the video games industry. Given the Game Boy Advance, Nintendo GameCube, Nintendo DS, and consistent top 10 franchises like *Pokémon* and *Mario*, Nintendo easily owns the biggest piece of the video games business. Whether Nintendo can hold onto this dominance will depend on how much market share Sony can pull away by entering the handheld arena with the introduction of their PlayStation Portable (PSP). So far, Nintendo has beaten back almost a dozen handheld competitors over the last 15 years, with the latest being Nokia's N-Gage, but Sony has a good reputation and has beaten Nintendo before.

Sega

Japanese company Sega started life in 1952 as Service Games. Seeing a viable market supplying jukeboxes and other amusement devices to U.S. military bases, American creators Dick Stewart and Ray Lemaire soon grew the company beyond their modest ambitions. Changing their name to Sega (the first two letters of each word in their previous company name), they proceeded to take advantage of the recovering Japanese economy. In 1965, they merged with Dave Rosen's Rosen Enterprises, a company formed by another American in 1953 to import arcade machines from the United States into Japanese arcades. They became Sega Enterprises Ltd., and created many of the finest mechanical arcade games ever built.

In the 1970s, they began working on arcade video games, acquiring California company Gremlin, and soon expanding by creating games for the home console market. In the early 1980s, Sega briefly became part of Hollywood moviemaker Paramount, until the video game crash saw them parting ways. Rosen, his head of Japanese operations H. Nakayama, and Japanese investor Mr. Ohkawa bought the company back. Rosen became head of U.S. operations, with Nakayama the president and Ohkawa the chairperson back in Japan.

Sega had been developing a home console during this time, the Sega Master System. After seeing Nintendo's NES revive the video games market, Sega made a distribution deal with Tonka Toys and released the Master System nearly a year after the NES proved that there was still a viable market. Sega had trouble securing third-party software for its new system (Nintendo had locked many developers in with exclusive contracts), and mostly ported its arcade properties to the system.

While the Master System was not a great success, it allowed Sega time to create a 16-bit console to fuel the next generation. By Christmas 1990, Sega had released the Genesis (inspired by a sense of rebirth and the Genesis Project from *Star Trek II: The Wrath of Khan*). Its main competition was the aging NES and NEC's PC Engine (released in the United States as the TurboGrafx-16). Sega won the Christmas battle with its combination of well-known arcade titles and sports games. Ultimately, Sega gained some important support with a third-party deal with Electronic Arts, and the 16-bit console race was on between Sega, Nintendo, and NEC, with all three parties remaining viable throughout.

In 1994 in Japan, Sega released its next system, the Saturn. While the system did well in Japan on release, the May 1995 U.S. release was more problematic. Consumers had become unhappy with Sega because of the release or failed release of add-ons for

the Genesis. The Saturn was more expensive than Sony's PlayStation by $100, and because of a rushed introduction had initial supply problems. All of this ultimately contributed to the system's demise by 1998, despite some innovative games such as Yuji Naka's *Nights* and add-ons such as a modem.

The year 1999 saw the release of Sega's last home console to date, the Sega Dreamcast. An innovative console in many ways, it included a built-in 56k modem, 128-bit graphics, and support for graphical memory cards that could display game objects or mini games on the controller. Despite the innovative nature of the system, it was unable to gain a strong foothold. The PlayStation and N64 were still strong in the marketplace, and when Sony announced the specifications of its next-generation system the PlayStation 2, Nintendo revealed the codename of "Dolphin" for its next project, and Microsoft made clear its intentions to join the console market, the Dreamcast fell by the wayside, ultimately being discontinued before its product life-cycle was over. Sega has since shifted business focus, producing quality software for the other consoles.

While Sega employed many talented people, of special note was Yu Suzuki who drove many of Sega's best arcade games. He was responsible for *Hang-On*, *Space Harrier*, *Out Run*, and *Afterburner*, which were all pseudo-3D arcade games. Then in 1992, he began producing the *Virtua* series of games that relied on real 3D hardware. The most notable was *Virtua Fighter*, the first real-time 3D fighting game. The Smithsonian Institute recognized the *Virtua Fighter* series for its contribution to arts and entertainment, and *Virtua Fighter* has become part of the Smithsonian Institution's Permanent Research Collection (the first Japanese game to receive that honor). Later in 2001, Yu Suzuki finished the console game *Shenmue*, which took five years to develop and roughly $50 million, making it one of the most expensive video games ever created. In development, the game was referred to as *Virtua Fighter RPG*, which characterized the game quite nicely with its mix of *Virtua Fighter*-like battles and RPG elements.

Sony's PlayStation

In 1991, consumer electronics giant Sony contracted with Nintendo to design a CD-ROM game system, but the project was prematurely abandoned. As a result of the knowledge gained, Sony took their newly honed expertise and decided to pursue their own video game console. In December 1994, Sony released the PlayStation in Japan, and in September 1995 released it in both the United States and Europe. Lacking good first-party games, Sony relied on third-party publishers to provide the lion's share of games. While not a huge success at first, the PlayStation increased in popularity and slowly became the dominant home console of its time. This was largely due to exclusive games such as the *Final Fantasy* series, but was also influenced by the cheaper CD game format, which resulted in faster manufacturing times and less money tied up in inventory—both critical factors in getting third-party support.

The year 2000 saw the release of the Sony PlayStation 2 in Japan and the United States (a year before Nintendo's GameCube and Microsoft's Xbox were released).

Incorporating a DVD player, strong third-party support, and maintaining backward compatibility with the PlayStation, the PlayStation 2 dominated the home console market of the early 2000s. Sony hopes to extend that dominance into the handheld market in 2005 with the release of the disc-based PlayStation Portable (PSP), a device that has comparable 3D power to the PlayStation 2, as well as being an MP3 and movie player. Sony's next step after that is the release of the PlayStation 3, in a bid to maintain their hold on the home console market.

Microsoft and the Xbox

Founded in 1975 by Bill Gates and Paul Allen, Microsoft's modest beginnings creating and selling BASIC interpreters have lead to them becoming the largest software development company in the world. The Windows operating system is nearly ubiquitous in the world of personal and business computers. Before 2001, Microsoft was somewhat less known for their games, although they have two strong franchises in *Age of Empires* and *Microsoft Flight Simulator*.

In 1999, they decided to enter the home console market, going head to head against Sony and Nintendo. Released on November 15, 2001, the Xbox has become a very popular system with a strong software lineup topped by the first-person shooters *Halo* and *Halo 2*. Based on the PC architecture, the Xbox is the most powerful of like-generation consoles, and the most expensive to produce (with Microsoft taking a substantial loss on each console sold). Perhaps the Xbox's strongest feature is Xbox Live, a subscription-based online service connecting Xbox users nationwide. Microsoft has sunk billions of dollars into the Xbox and Xbox Live, and is not expecting to make a profit on it for years to come, instead sacrificing money in a long-term bid to gain a foothold in living rooms worldwide.

Home Computers

Simultaneous to the advent of the home consoles is the introduction of inexpensive home computers into the marketplace. Where before, computers had been the purview of universities and businesses, the introduction of the home computer had serious implications for the budding electronic games business.

Apple Computer

Formed on April Fools Day, 1976, Apple Computer began life as a partnership between two California whiz kids and Hewlett-Packard employees, Steve Wozniak and Steve Jobs. "Woz," as he has become known, was a homebrew computer genius. Jobs was a fellow electronics enthusiast and former Atari employee with an abundance of confidence and a strong vision. Woz showed his latest creation at the Homebrew Computing Club, dubbed the Apple I, and Jobs convinced him to start a company together. Seeing some success with the Apple I in local shops, Jobs made a gutsy move and went to Atari's Nolan Bushnell to ask for advice. Bushnell's advice eventually led

Jobs to Mike Markkula, a former Intel employee who had retired as a millionaire. Markkula invested his money in the young dreamers and the company was born.

Their next computer, the Apple II, was released in 1977 and started a revolution. Featuring an integrated keyboard and TV or monitor support, the Apple II was the first computer to gain a real foothold in the home market and found huge support with software publishers. With its open design and hardware slots, the Apple II also allowed the use of a plethora of third-party devices that could improve its capabilities. Various models of the Apple II came out during its lifetime, each improving on its predecessor—the most famous being the Apple IIe. The Apple IIc Plus was the last new computer in the Apple II series, and was produced in 1988. A popular staple in school classrooms, however, the Apple IIgs was produced and sold until 1993. Many classic games were created or ported to the Apple II, including *The Bard's Tale*, *Castle Wolfenstein*, *Choplifter*, the Infocom games, *Karateka*, *Prince of Persia*, *Swashbuckler*, the *Ultima* series, and *Wizardry*. All told, somewhere in the neighborhood of 366 games were produced for the Apple II series.

Commodore

Founded in 1954 by Auschwitz survivor Jack Tramiel, Commodore Business Machines started life as a typewriter manufacturer. Switching from typewriters to adding machines and then calculators before settling on computers in 1977, the company's motto became "Computer for the masses, not the classes." In 1977, they released the Commodore PET, a simple computer with a monochrome monitor, keyboard, tape drive, and metal case. The PET was not a huge success (finding its best market in classrooms because of its durable metal construction). Their next computer would change all that.

The Commodore Vic-20 debuted in 1981 with an ad campaign starring William Shatner that posed the question, "Why buy just a video game?" Although the computer was fairly low-powered for the time, its $299 price point, and placement in department stores and toy stores helped it become the first computer to sell more than 1 million units. Eventually, the Vic-20 would sell 2.5 million units before being discontinued.

The follow-up to the Vic-20 was a significant improvement, with its 64K of memory and a customized sound chip. Selling for $595, the Commodore 64 was released in 1982 in an effort to compete more directly with the Apple II. A three-way battle erupted between Texas Instruments, Atari, and Commodore. Tramiel reduced the price of the C64 to compete with the lowered prices of the TI-99/4a. The plan worked and the Commodore 64 became the best-selling computer in history, moving 22 million units in 1983 alone. The battle did serious damage to the competition, with Texas Instruments dropping out entirely and Atari being seriously hurt. The price war also had consequences at Commodore, though, and Tramiel left the company in 1984.

Commodore tried to pick up the pieces by buying a design for a new computer from a group of ex-Atari designers. In 1985, they released this design as the Amiga. The Amiga was an innovative machine that ultimately had trouble finding its niche in a market dominated by Apple's Macintosh and cheap PC clones. In 1992, the last Amigas, the A4000 and A1200, were released. The third-generation Amigas were powerful computers, offering a compelling alternative to PCs, but were more expensive—dooming them to failure.

IBM

In August 1981, the venerable computer manufacturer IBM introduced the IBM PC (short for "personal computer"). The PC represented a departure for IBM, which had failed to bring an affordable computer to market once before with the IBM 5100. This time around, IBM committed a small team of engineers headed by William Lowe to the project, and gave them free reign for their design. The team came up with the IBM 5150 within a year, deciding to use parts bought from OEMs (Original Equipment Manufacturers) instead of IBM-designed components. Another important aspect of the PC, one that would have important ramifications for IBM, was the use of an open architecture—allowing other companies to create compatible machines or "clones." IBM's goal with the PC was to license their BIOS and keep innovating to dominate the competition.

The PC was released with a price tag of $1,565.00, placing it outside the price range of most homes. However, it made important inroads with business users when the *VisiCalc* spreadsheet program was ported to it. More PC models followed, offering expanded capability (such as internal hard drives). Eventually, the PC and its compatibles would become a significant player in the home market, with most games being ported to it or developed for it.

IBM's plan to license their BIOS and keep an open architecture ultimately backfired when the BIOS was reverse-engineered by several companies that then came to market with compatible clones that were cheaper. Even then, IBM did great business because consumers felt they could trust them. This trust started to erode when IBM released computers that did not maintain 100 percent compatibility with their own specification. Largely, consumers wanted a computer that could run programs branded as IBM PC software right out of the box. When they began to feel that other manufacturers could provide them that security cheaper, IBM's more expensive computers fell by the wayside.

Today, the term *PC* has become a generic term for personal computers, and IBM has completely removed itself as a player in the home market. The modern PC architecture is still very similar to that originally created by William Lowe's team, although more powerful by leaps and bounds. The IBM-Compatible PC (running some variant of Windows or Linux) largely dominates the personal computer market, with only Apple providing a significant alternative.

The Designers

In addition to the companies that create the hardware for games to run on, someone must create the games themselves—enter the designers.

Maxis and Will Wright

Will Wright has created one of the most enduring software legacies around. In 1984, Wright created the successful game *Raid on Bungeling Bay* for Brøderbund. His next project, inspired by the books *Urban Dynamics* and *System Dynamics* by Jay Forester, was a Commodore 64 game initially called "City Builder" or "Micropolis." Eventually, teaming with fledgling company Maxis (created by Jeff Braun, Ed Kilham with a desire to develop video games that adults would enjoy), the game would be renamed *SimCity*.

In February 1989, it was released for the Apple® Macintosh® and Commodore™ Amiga. An article in *Newsweek* and good press all around helped the innovative city simulation game become a success. People loved the game, in which you managed many aspects of a city's development. The "Sim" appellation, suggested by Maxis writer Michael Bremer, helped defined a brand.

Wright followed *SimCity* with a somewhat less successful game called *SimEarth* in which you guided the ecosystem, geology, and climate of Earth. The follow-up to that was a somewhat more playful game called *SimAnt*, an ant colony simulation. Wright's next project was *SimCopter*, an ambitious simulation that allowed you to fly a helicopter through *SimCity 2000* cities. Maxis published other *Sim* titles (including *SimTower*, *SimFarm*, and *SimLife*), but Wright's next project wouldn't debut for a few years. When it did, it would cement the *Sim* name in popular culture.

While working on *SimAnt* and *SimCopter*, Wright was inspired by books once more—*Understanding Comics* by Scott McCloud provided the idea for a level of abstraction in representation that would allow players to put more of themselves into a game; the architecture book *A Pattern Language*, by Chris Alexander, led to the idea of making placement of household elements fun. The game, codenamed *Project X* for much of its early life, was eventually called *The Sims*.

The Sims, a "God game" of sorts, is a simulation of the lives of virtual people. You guide them in many of the daily elements of their lives—cooking, eating, hygiene, jobs, learning, sleeping, and so forth—while outfitting their house based on the money they earn. The game has become a phenomenon—selling more than 6 million copies since its January 2000 debut. It has an unprecedented number of expansion packs, as well as an outright sequel, and has become one of those rare video games played by people who traditionally do not purchase or play video games.

MicroProse and Sid Meier

MicroProse began life as something of a dare. On a company trip to Las Vegas, Sid Meier and J. W. "Wild Bill" Stealey met over a game of *Red Baron*, an arcade dogfight machine. Wild Bill had been beating all comers until Sid Meier plugged in his quarter. Meier impressed Stealey by trouncing the game—one that Meier had never played before. Meier followed up his impressive performance with a boast, telling Stealey that he could program a better game in just one week. Stealey countered by saying that if Meier could program it, he could sell it.

It took Meier two months, but he created a game called *Hellcat Ace*. Stealey followed up on his end of the bargain and successfully sold 50 copies right away, so they joined forces and created a company. They named it MicroProse as a nod to the microprofessionals working on the games and the idea that they would be creating works of art. More games were created and the money started coming in. They quit their jobs at the Baltimore defense contractor that had sent them on that fateful Vegas trip, and started working on MicroProse projects full time.

Solo Flight (1984) was their first national success, and its combination of fun and realistic gameplay helped to define what the company was shooting for. More strategic simulations followed, games putting the player in planes, submarines, or in control of armies in hex-based board game conversions as in 1985's *Decision in the Desert*.

Then, in 1987, came the first game to bear Sid's name right on the cover—*Sid Meier's Pirates!* A clever mix of role-playing, action, and swash-buckling adventure, *Pirates!* is largely regarded as one of the best games of all time (demand for a visit back to the sun-splashed Caribbean game world was so strong that Meier even remade it in 2004 with updated graphics and modifications to a few gameplay elements). More signature games would follow, the next being *Railroad Tycoon*—a "God game" where you controlled the nation's budding transportation system and economy during the golden age of railroads.

In 1991, Sid expanded on ideas from *Railroad Tycoon*, threw in a little *SimCity* and *Empire*, and came up with *Sid Meier's Civilization*. The game was an instant classic, with gameplay that inspired many a late-night session with its addictive "one more turn" style. In the game, the player guided a budding civilization through all the technologies of the ages—from bronze working and pottery to computers and nuclear power. The ultimate goal of the game was adaptable to the style of the player, with peaceful strategies and gameplay being just as viable as ones that were more warlike. The game has sponsored numerous sequels; some with Meier's guiding hand, and others that just carried the name and spirit. In 2001, Sid's new company Firaxis obtained the rights to the series and created *Civilization III*, expanding and updating the classic game with new elements while retaining the same addictive play.

MicroProse had many hits with other talented game designers in their stable. Particularly of note are the games *Master of Orion*, a space exploration game created by Steve Barcia's SimTex group, and 1994's turn-based UFO-inspired squad combat game *X-Com* by Mythos Gaming.

Spectrum Holobyte acquired MicroProse in 1993, with Sid leaving to form Firaxis games some time after. In 1998, Hasbro Interactive purchased MicroProse, closing both California and North Carolina studios in 1999. In 2001, French company Infogrames (which later purchased Atari and renamed itself to the classic brand) acquired Hasbro Interactive and discontinued the MicroProse label, eventually closing the Maryland offices where MicroProse started.

Sierra and Ken and Roberta Williams

One of the most enduring computer game companies of all time, Sierra literally got its start on a kitchen table. Programmer Ken Williams had created a company named On-Line systems in 1979, doing odd programming jobs for the financial sector. His wife, Roberta, with newborn in tow and too much time on her hands, played a computer game called *Colossal Cave* on a mainframe through a connection from Ken's TRS-80. Inspired by this simple line-text adventure, she started planning a computer adventure game of her own, mapping it out with pieces of paper strewn across their kitchen table. One romantic dinner later, Roberta convinced Ken to help her with the project and a legacy was born.

Mystery House, the world's first graphical adventure game, was their first product. Released in 1980—and distributed by hand to stores in Ziploc® bags—*Mystery House* eventually sold 80,000 copies. Their output was prolific in those first few years; making a variety of re-creations of arcade games, graphical adventures, and licensed titles. Their real claims to fame, though, were the graphical adventure titles that Roberta scripted, such as *The Princess and The Warrior*. Ken was also an innovator, doing things with graphics that hadn't been done before, drawing complex scenes programmatically, rather than relying on premade graphics stored on the disk (a technique that saved tremendous amounts of space).

In 1982, they changed their name to Sierra On-Line and moved their offices to Oakhurst, California. IBM approached them soon after to create a computer game that would show off its new computer, the PCjr. Roberta made an important leap at this point. With the advanced capabilities of the PCjr, she saw a way to place the player on the computer screen, rendered in third-person. Given the change in focus, her story writing took off, and the IBM-commissioned game became the now-classic *King's Quest*.

Released in 1984, *King's Quest* was a huge success, eventually spawning seven sequels. Other *Quest* titles by other designers followed, including *Space Quest* and *Police Quest*. Each started a successful franchise and Sierra became hugely profitable. In addition to the *Quest* lineup, Sierra had success with several other franchises as well, including the adult-aimed comedy series *Leisure Suit Larry*, supernatural detective *Gabriel Knight's* adventures, *Phantasmagoria* (a mature horror series), the futuristic *EarthSiege*, and the blockbuster first-person shooter *Half-Life*.

In 1994, they moved their headquarters to Bellevue, Washington in an effort to place themselves in more of a technological hub. In the 1990s, Sierra started acquiring other studios to add to its growing stable of talent (Impressions and Dynamix being the most notable). In 1996, they were acquired themselves by CUC, later merging with HFS to become Cendant Software. Cendant was, in turn, purchased by French publisher Havas Interactive, and then eventually became part of the Vivendi empire.

Today, Sierra Entertainment exists only as a brand of Vivendi Universal games. Ken left Sierra a year after the sale to CUC. Roberta's last production credits were in 1999, although she has not ruled out coming back to computer games. The Bellevue offices were closed in 2004.

Origin Systems and Richard Garriott

Inspired by *Dungeons & Dragons*, J. R. R. Tolkien's *The Lord of the Rings*, and his love of computers, Richard Garriott built an RPG empire. Garriott created his first commercial game, *Akalabeth*, as a teenager working one summer at a Computerland store. Based on a game he had created at school, *Akalabeth* was a first-person dungeon crawl where players received quests from a character named "Lord British" to kill progressively harder monsters. The Ziploc-bagged adventure caught the attention of California Pacific Computer, who struck a deal with Garriot that gave him $5 per game sold. Garriott made $150,000 and then started work on a game called *Ultimatum*.

Ultima I, as it was later called, was published in 1981, and put the player on a quest to bring down the evil wizard Mondain. *Ultima I* was later republished by Sierra On-Line when California Pacific went out of business. In 1982, Sierra published *Ultima II*, a grand time-traveling adventure sending the player on a quest to thwart Mondain's lover, Minax. A signature element of the *Ultima* series was a cloth map contained in each box (one of the reasons Garriott went with Sierra as a publisher was their willingness to include the map). By the time *Ultima III* came out, though, Garriott had become disenchanted with the deal with Sierra and created his own company, Origin Systems.

While the early *Ultima*s were good games, with *Ultima IV*, Garriott (or "Lord British" as he was known in and out of his games) raised the bar. Garriott has acknowledged that the first three games were really a process of him learning to program, and that with *Ultima IV* he concentrated on the story for the first time. It contained an element of morality and ethics to it, an element that Lord British worried would ruin the game's chances for success, but *Ultima IV* went to the top of the software charts. In the game, the player's goal was to become a prophet, the paragon of the Eight Virtues of the Avatar. This was a departure from most previous RPGs, in which the goal was to dispose of some evildoer. The next two *Ultima*s continued the story started in *Ultima IV*.

EA acquired Origin Systems in 1992, around the time that production was started on *Ultima VII*. In 1997, *Ultima Online*, one of the first massively multiplayer online role-playing games (MMPORPGs), was released. The game was enough of a success that EA decided in 1999 that Origin would become an online-only company. Garriott left soon after. While many expansion packs to *Ultima Online* were released, that last single-player *Ultima—Ultima IX: Ascension*—was released in 1999. *Ultima IX: Ascension* was released before it was finished, and was notorious for its bugs and incomplete storyline. Origin Systems was disbanded in 2004 by EA, although they still retain rights to the brand.

Origin's Other Blockbuster: *Wing Commander*

Ultima was not the only famous series to come out of Origin Studios. In 1990, Chris Roberts created *Wing Commander*. The games featured an epic storyline based on intergalactic war. The story was told through a series of starfighter missions and cut-scenes.

Later installments of the game featured full-motion video cut-scenes starring Hollywood actors such as Mark Hamill and Malcolm McDowell. In 1996, Chris Roberts left Origin to form his own studio, Digital Anvil (although EA has continued to produce *Wing Commander* games). He revisited the *Wing Commander* universe in 1999 when he directed a live-action movie version set during the timeline of the first game.

The Phenomenons

While there are many success stories in the history of video games, there are a few breakouts that reach above and beyond the status of mere success. These phenomenons speak to the incredible innovation and spirit of discovery that has defined the industry.

Space Invaders

In 1978, the Japanese company Taito, with distribution partner Midway, introduced the U.S. market to the arcade machine *Space Invaders*. While not the first Japanese import, *Space Invaders* was the first big Japanese success. The game, created by Taito's Toshihiro Nishikado, featured a never-ending stream of airborne alien invaders attacking the player's lone base on the ground. The player used three destructible shields for cover while firing at the rows of aliens as they descended. All levels were essentially the same, but the aliens got progressively faster as the game went on, thus ensuring that the player would ultimately never win. The music was simple, but effective, keeping pace with the aliens' attack and increasing the tension. The graphics were simple—black and white with a color overlay on top of the video screen.

Despite its seemingly simple premise, presentation, and gameplay, the game was a huge success, creating a shortage of 100-yen coins in Japan when it was released. The game later went on to be successfully reproduced on a variety of home consoles, including the Atari 2600. Perhaps its most notable contribution to the world of video games is its introduction of the High Score, a saved list of the highest scores achieved during gameplay that was then displayed while the game was in attraction mode.

Pac-Man

Inspired by the Japanese folk hero Paku (who was known for his large appetite) and a pizza with one slice missing, Namco's Toru Iwatani created the most popular arcade game of all time. Originally dubbed "Puckman," the game was Iwatani's attempt to create a completely nonviolent arcade game, one that would appeal to both men and women.

In the game, players use a simple four-position joystick to guide the yellow protagonist around the mazelike playing field. Pac-Man's mission is to eat all the little white dots, while trying to avoid four ghosts (named Inky, Blinky, Pinky, and Clyde) that chase him around the screen. On each screen are four larger dots that Pac-Man can eat to turn the tables—the ghosts become blue for a brief period, during which Pac-Man can eat them. The game was a huge hit in Japan, and with a slight name change to prevent vandals from easily turning the hero's name into something improper, *Pac-Man* debuted on American shores in 1981.

The Bally/Midway-distributed *Pac-Man* was a huge success in arcades, generating some $100 million worth of sales during its lifetime. The *Pac-Man* craze was not limited to arcade coin-ops, however, as a fevered nation bought everything from *Pac-Man* cereal and t-shirts to albums featuring songs about the hungry fellow. To date, there have been 10 sequels to the game, with likely more to follow that feature the enduring yellow hero, as well as Ms. Pac-Man and the ghosts Inky, Blinky, Pinky, and Clyde.

The Tangled History of *Tetris*

In 1985, Russian programmer Alexey Pajitnov created the game *Tetris*, based on a puzzle game called *Pentominoes*. Pajitnov decided to take the concept onto the computer (specifically an Electronica 60 in the Computer Center at the Academy of Sciences in Moscow), making some important alterations to the concept in the process. Pajtinov first limited the blocks on his pieces to four instead of five, which reduced the number of shape permutations to seven. He then made the playing field two dimensional and vertical, allowing the pieces to drop into place. While writing the code that rotated pieces, Pajitnov was impressed with the speed he was getting and decided the game needed to be in real time. Lastly, Pajitnov solved the problem of what to do when lines were filled in by removing the finished lines completely, allowing play to continue and new plays to open up. Renaming it to *Tetris* (from the Greek word for four, "tetra"), he had Vadim Gerasimov port it to the PC. Gerasimov's port started spreading across Moscow, and then on to Budapest, Hungary. From there, things got more complicated.

Hungarian programmers had ported Pajitnov's game to the Apple II and Commodore 64. One of these ports caught the attention of Robert Stein of Andromeda, a British software company. Stein started working with Pajitnov to get the rights, but sold the PC rights to Mirrorsoft UK—and its U.S. affiliate Spectrum Holobyte (a subsidiary of Pergamon, headed by Robert Maxwell)—before the deal was inked. The deal with Pajitnov fell through and Stein contacted the Hungarian programmers, attempting to license it through them. Spectrum Holobyte's PC version was released and quickly became a hit.

Stein later went to Russia and eventually came back with home computer rights to *Tetris*—but no contract. Before Stein could work his other angle and secure rights from the Hungarian programmers, the *CBS Evening News* did a piece on *Tetris* that firmly established Pajitnov as the inventor of the program. Stein's negotiations with the Russians then started going through ELORG (Electronorgtechnica), the trade organization of the Soviet government. ELORG threatened to cancel any deals with Stein when they learned about his involvement with the Hungarian programmers. Eventually, they reached terms, with Stein getting the rights to do computer versions of *Tetris*, but specifically not arcade or handheld versions.

Things got further complicated, however, when Spectrum Holobyte sublicensed Japanese computer game rights to Bullet-Proof Software (under the leadership of

Henk Rogers), and its UK division Mirrorsoft licensed home console and arcade rights to Tengen (an Atari company). These were rights that they did not actually possess. In November 1988, Bullet-Proof software released *Tetris* for the Nintendo FamiCom in Japan.

Rogers contacted Stein at the request of Nintendo of America president Minoru Arakawa. The Game Boy was in development and Nintendo wanted to offer *Tetris* as a bundle with the new handheld. Months passed and Stein failed to get the rights for Rogers, so Rogers flew to Moscow to try to secure the rights directly. Stein flew to Moscow as well, having guessed that Rogers had lost faith in his ability or willingness to secure the handheld rights and was attempting to take matters into his own hands. Spectrum Holobyte approached Nintendo at the same time, wanting to develop *Tetris* for the Game Boy. Kevin Maxwell, Robert Maxwell's son, flew to Moscow to attempt to gain the rights so they could create their handheld version.

Maxwell, Rogers, and Stein converged on Moscow at the same time. Rogers met with ELORG before the others, and secured the handheld rights. In the process of meeting with ELORG, the Russians were surprised to realize that a console version had already been developed (*Tetris* for FamiCom). Stein had never discussed with ELORG that he had sold console rights he didn't possess to Atari. Rogers pushed on, thinking he might be able to secure all console rights with Nintendo's muscle behind him.

Stein met with ELORG after Rogers and signed a document with the Russians that slightly altered his contract—a brief passage defining a computer in such a way that consoles and arcade games were clearly not covered by his contract. ELORG then told Stein that he could not get the handheld rights, but could get the arcade rights—so he did just that.

Maxwell made his way to ELORG. Maxwell was shown the FamiCom cartridge and, not realizing that his company had licensed it, told ELORG that it must be a fake. He didn't get the handheld rights he came for, and was then offered the chance to bid on any Tetris rights remaining.

When all was said and done, Rogers had secured the handheld rights for Nintendo, and had opened a door so Nintendo could bid on the console rights; Stein had secured the arcade rights, and signed a contract that defined very specifically what a computer was; and Maxwell had asserted that no legal console version existed, and secured for his company the opportunity to bid against Nintendo for console rights.

Nintendo's bid was too high for Maxwell's company to match, and Nintendo secured the home console rights. A lawsuit ensued, with Tengen suing Nintendo, alleging that a version of *Tetris* would violate their copyright. Nintendo countersued Tengen. Tengen then released *Tetris* for the NES, despite the legal issues. Tengen's contention was that the FamiCom was a computer, and a *Tetris* version on the platform violated their rights. Nintendo's assertion was that the Russians had never planned to give out video game rights until Nintendo had bid on them.

Nintendo won the lawsuit after many years, but an initial injunction favored them strongly. Tengen was forced to pull its version of *Tetris* for the NES off the shelves. Nintendo released *Tetris* for the NES, and then as a bundle with the Game Boy. Both versions sold phenomenally well, with the Game Boy pack-in version helping to sell Game Boys in the 10s of millions.

In 1996, Pajitnov partnered with Rogers to form The Tetris Company LLC, which maintains and controls *Tetris* rights worldwide, allowing Pajitnov to see money from his sensational game—nearly 17 years after its creation.

Capcom and Resident Evil

Founded in 1979, Japanese Capsule Command (Capcom for short) is one of the premiere Japanese video game developers and game publishers. Over the years, they have created many memorable games, appearing on virtually every video game platform and in arcades, and have created three series of special note. First is the *Street Fighter* series of fighting games, immortalized in arcades and feature film. Second is the immensely popular platformer series *Mega Man*. Finally, is the series that popularized a genre, *Resident Evil*.

Resident Evil (known as *Biohazard* in Japan) coined the term "survival horror" in describing the genre it has come to define. In *Resident Evil*, you are part of an elite commando team sent in to retrieve another team that was lost investigating a series of gruesome murders outside Raccoon City. The game throws all manner of puzzles, zombies, and other undead things at the player, with the player's goal being to stay alive and solve the mystery of what's happened. The game has spawned 15 variations, updates, and sequels since its release on the Sony PlayStation in 1996, as well as two Hollywood movies (2002's *Resident Evil* and 2004's *Resident Evil: Apocalypse*).

Square and Final Fantasy

In 1987, in a last ditch effort to stave off bankruptcy, Japanese software company Square Co., Ltd. released what they thought would be their last game. They were wrong, and happily so—their next game was *Final Fantasy*, a console role-playing game for the FamiCom. Created by Hironobu Sakaguchi, the game proved successful enough that Square sought a distribution deal with Nintendo for the North American market.

Fifteen games later, and 40 million copies sold so far, the *Final Fantasy* series is the king of the console RPG. Games from the *Final Fantasy* series have appeared on nearly every platform since the NES (despite a feud between Nintendo and Square that saw no *Final Fantasy* games on the N64). Although most games in the series are not sequels as such, the complex stories, graphic quality, and superb art direction clearly define games with the *Final Fantasy* name. The *Final Fantasy* series is so popular that a computer-animated motion picture was released in 2001, called *Final Fantasy: The Spirits Within*. In 2004, *Final Fantasy: Advent Children*—a computer animated movie like *The Spirits Within*—was produced as a sequel to the most popular game in the series, *Final Fantasy VII*.

Final Fantasy is not the only popular series from Square; the series *Dragon Quest* (known as *Dragon Warrior* in the United States) is incredibly popular in Japan, with

each installment setting sales records over the previous ones. The *Kingdom Hearts* series, featuring a mix of Square and Disney characters, has also proven very popular.

Cyan and *Myst*

Working from their studios in Spokane, Washington, the brothers Robyn and Rand Miller created one of the most popular games of the 1990s. The Millers had made a couple of modestly successful games when Japanese company Sunsoft approached them to create a game for adults. Anticipating a CD-ROM add-on for the N64 (that was never released in the United States), Sunsoft was only interested in the console rights. The Miller's budgeted $400,000 and paid for the overages themselves. Starting work in 1991, the game *Myst* was created on Macintosh computers as a very large *HyperCard* stack, with each card being a 3D-rendered scene of atmospheric, ethereal beauty. The scenes were punctuated with short live-action video clips that helped move the story along. The user clicked through each screen, navigating the world and solving puzzles that lead to unraveling the mystery of the island.

Released in 1993 on the Macintosh, and then on the PC quickly thereafter, *Myst* became a critical darling and the kind of game that everyone had to own in the beginning of the CD-ROM age. The immense success of *Myst* led to the sequels *Riven*, *Myst III: Exile*, *Uru: Ages Beyond Myst*, and *Myst IV: Revelation* as well as remakes, three books, and a host of clones attempting to capture the essence of the groundbreaking adventure-puzzle game.

Pokémon

When avid insect hunter Satoshi Tajiri earned the nickname Dr. Bug from his friends as a boy, little did he know that he would create one of the most lucrative video games franchises ever. Satoshi would search the ponds and fields near his home in a suburb of Tokyo for any insects he could find, classifying them as he caught them. Sometimes he would trade them with friends and they would let them fight. As a teen, he went to technical school to become an electrician at his father's request, but haunted the local arcades in his spare time. In 1982, he formed a magazine called *Game Freak* with his friends. In 1991, Satoshi bought a Game Boy and, seeing a Link Cable, imagined insects crawling along them between the Game Boys. The idea for *Pokémon* was born. Striking a creation deal for initial funding from the studio Creatures, and then bringing his idea to Nintendo, Tajiri worked for the next six years to create his game.

Originally called *Pocket Monsters* (*Pokketo Monsuta* in Japanese), the name was shortened to *Pokémon* when it was discovered that there already existed a Pocket Monsters toy in the United States. *Pokémon Red* and *Green* were released in 1996 in Japan and localized as *Pokémon Red* and *Blue* for the North American release. In the game, the player sets about collecting the mythical monsters and having them battle each other. Each version (*Red* and *Blue*) features different subsets of the entire collection of *Pokémon* monsters. This aspect has added to the addictiveness of the games—indeed, the first motto for *Pokémon* was "Gotta catch 'em all!" Since its debut, each version of

Pokémon has broken the sales records set by the previous versions. The game has become hugely popular, and has branched out into several other forms of media, including comic books, cartoons, anime, movies, manga, and collectible card games.

The Rise and Fall of the Video Game Mascot

Shortly after the dawn of video game history came the mascots. Pac-Man and Frogger were popular, but the first real breakout character was Mario. Starring as "Jumpman" in the arcade game *Donkey Kong*, Mario soon starred in titles of his own. *Super Mario Bros.*, which came as a pack-in with the NES, rocketed Mario to the heights of popularity—the Italian plumber even became more well-known to kids of the era than Mickey Mouse.

Others mascots would follow, first up being Sega's Sonic the Hedgehog. Conceived as competition for Mario, Sonic became the flagship character for Sega. Soon after its release, *Sonic the Hedgehog* replaced *Altered Beast* as the Sega Genesis pack-in title. Sonic was the first of the anthropomorphic animal characters such as Crash Bandicoot, Spyro the dragon, and Blinx.

As Mario was to Nintendo, and Sonic was to Sega, Crash Bandicoot became the original mascot for the Sony PlayStation. Featured in a variety of games and humorous commercials, Crash was never quite as popular as his competing console hawkers were. In recent years, long since making the leap from the PlayStation (Vivendi Universal currently owns the rights to the character), Crash has been seen on Nintendo's systems and Microsoft's Xbox.

Another mascot of mythic proportions (no pun intended) is Lara Croft, the braided heroine of the *Tomb Raider* games. She has appeared in six *Tomb Raider* games covering the various platforms and PC. She is a strong female character that nevertheless comes under a lot of criticism for her overtly sexualized persona. Despite the criticism, she has become immensely popular, and has had two live-action movies (*Tomb Raider*, and *Tomb Raider: Cradle of Life*) that chronicle her adventures as well as books and comic books.

Other mascots have become popular to varying degrees over the years. Nintendo has the lion's share with Samus Aran, star of the *Metroid* series (and one of the few non-sexualized females in video games); Link, the yellow-haired hero of Hyrule in the *Zelda* series; Kirby, the pink ball-shaped creature who stars in his own cartoon now; Donkey Kong, the original arcade ape; and Pikachu, the electrifying yellow hero of the *Pokémon* games, movies, and cartoon series. Sony has had their own sets of heroes with *Jak and Daxter* (now in their third video game appearance); Solid Snake from *Metal Gear Solid*; *Ratchet and Clank* (also in their third game appearance); and Spyro the dragon. It is worth noting that many of Sony's once-exclusive mascots have since appeared on other systems. Microsoft has just a few mascots for its relatively recent system, including the Master Chief from *Halo* and *Halo 2* and Blinx the time sweeping cat.

Many consider the heyday of the mascots to be over. There are several reasons why mascots may not be as popular as they once were. One is the possible over-

saturation of existing characters. At the apex of a character's popularity, there seems to be no upper limit to how much attention a mascot can garner and sustain, but when a character is not at its apex, this same attention level can appear to be far too much. In the 1980s, after the initial introduction of characters such as Sonic and Mario, everyone jumped on board the mascot bandwagon. Everything from soft drink to pizza chain mascots made it into video games, creating an influx of characters without much depth to them that the public didn't get behind (cheapening all mascots as a result).

Another possibility is the advancing age of the audience: the audience that first fell in love with Mario's adventures in 1985 has had roughly two decades to grow up and move on to other concerns. An audience not present for a character's defining games may not view the character in the same light as those present for the character's introduction (as in the case of *Tomb Raider* where Angelina Jolie's movie representation of Lara Croft may far overshadow the games that made the character popular in the mid-1990s).

Marketing can also be a factor in the popularity of the mascots. If a particular console is skewed toward an older audience and doesn't possess any strong mascots, it benefits them to characterize the mascots and other consoles using them as "kiddy." Calling a system "kiddy" is a disingenuous way of denigrating a particular system, as it has no technological basis in the ability of the console.

Perhaps the largest factor in the perceived decrease in popularity of the video game mascot is the increased realism and immersion level in video games. Most mascots have appeared as brightly colored third-person characters manipulated within the games, while the trend is toward games where the player is the main character in the game, seeing through the eyes of an on-screen persona (as in most first-person shooters) or treating the character as a sort of alter ego (*Grand Theft Auto*). As technology advances, the opportunities for immersion increase as the game playing field becomes far more realistic. The president of Nintendo, Satoru Iwata, underlined the problem at his E3 2003 speech when he pledged that Mario would never start shooting hookers. While on the one hand, this promise takes a stand in addressing the trend of increasing violence in games, it also points to the idea that the video game mascot might just be of a different era—an era now gone.

The Studios

In the games industry, hits, innovation, and great design do not necessarily mean that a company will experience long-term success. Indeed, the history of video games is littered with once-successful companies that no longer exist. It takes a particular combination of success and business savvy to last.

Activision and Infocom

Formed by four former Atari programmers and Jim Levy, a former music industry executive, Activision was the first third-party game developer. David Crane, Larry Kaplan, Bob Whitehead, and Alan Miller were among Atari's best and brightest, but

they'd become disillusioned with practices at Atari. The new company created some of the best-known Atari 2600 games ever, including such hits as Bob Whitehead's *Chopper Command*, Carol Shaw's *River Raid*, and David Crane's *Pitfall!* (Activision prided itself on giving its designers credit, featuring them in much of its marketing—a practice that Atari had eschewed). A lawsuit from Atari resulted in Activision and all other third-party companies agreeing to pay royalties on each game sold, but Activision had become so successful that this hardly damaged their bottom line.

After Activision's initial success, they merged with popular text adventure creator Infocom. Infocom had created the beloved *Zork* franchise, as well as other popular text-based games, but had fallen on difficult financial times. The merger soon created issues for the combined companies, however, when new CEO Bruce Davis took over. Davis had been against the merger and made changes that eventually led to the closing of Infocom's studios in Massachusetts, losing most of the Infocom staff in the process.

A name change to Mediagenic, a change in focus to business software, an eventual bankruptcy, a merger, and a name change back to Activision leads us to the present day, where Activision continues to make and distribute popular PC and console game titles like *Doom 3*, *Tony Hawk's Underground*, and *Spider-Man*.

Electronic Arts

Originally starting life as Amazin' Software, Electronic Arts (EA) was founded in 1982 by former director of product marketing for Apple Computer, Trip Hawkins. Acquiring $2,000,000 in venture capital and putting up $200,000 of his own money, Hawkins was able to bring to life ideas he'd had for seven years. The business plan developed by Trip was visionary and had three key elements: first, that the creative talent at the company would be treated like artists, involved in the marketing, and generally revered more than at other companies in the industry; second, that they would develop proprietary tools and technology that would enable them to quickly develop their titles cross-platform; and third, that they would handle the distribution to stores. Hawkins brought many of his former colleagues at Apple onboard and the company was off and running. Nobody liked the name Amazin' Software, though, and at an early company retreat—and inspired by Hollywood's United Artists—the company was renamed to Electronic Arts.

In May 1983, Electronic Arts released its first five titles: *Hard Hat Mack* for the Atari 800 and Apple II; *Archon* for the Atari 800; *Pinball Construction Set* for the Atari 800 and Apple II; *Worms* for the Atari 800; and *M.U.L.E.* for the Atari 800. The last four of these are seminal titles in the history of video games. *Archon* was an innovative chess-like game with action elements to it. *Pinball Construction Set* allowed you to create your own pinball playing fields. *Worms*, the first entry in the venerable series, was a strategic war game with worms as your troops. *M.U.L.E.* was an economic simulation set on a space colony that was masquerading as a game.

While EA wouldn't develop their own internal games until 1988's *Skate or Die!*, they had a knack for finding external development houses with great ideas. Some other early classic EA titles include *One on One: Dr. J vs. Larry Byrd* (1983), *The Seven*

Cities of Gold (1984), *The Bard's Tale* (1984), *Mail Order Monsters* (1985), Bullfrog's *Populous* (1989), and Maxis' *SimCity* (1991). True to Trip's business plan, these titles were developed for multiple computer platforms and eventually consoles.

Trip Hawkins left EA in 1991 to help found the 3DO company, a console and game maker that eventually filed for bankruptcy in 2003. Larry Probst became the next CEO of EA, guiding it to reach profits of $1 billion in 1994—the first for a video game publisher. The outspoken Probst has been criticized for his reluctance to create games such as Take Two Interactive's ultraviolent (but ultrasuccessful) *Grand Theft Auto* Series. Despite that, in 2005 EA is expected to reach $3 billion in profit.

Under Probst's leadership, EA has found a knack for acquiring external development houses that rivals Microsoft's. In 1992, they acquired Richard Garriot's Origin Studios, creators of the *Ultima* series. In 1995, they added Peter Molyneux's Bullfrog (makers of *Populous*, *Dungeon Keeper*, and *Magic Carpet*) to their list of studios. In 1997, Maxis (all things *Sims*) joined their stable. Finally, in 1998, Westwood Studios (creators of the *Command and Conquer* series) came on board. Consolidating their external studios, EA now publishes some of the most famous franchises in games through their three brands (EA Games, EA Sports, and EA Sports Big). Some of these franchises include *James Bond 007*, *The Lord of the Rings*, *Madden NFL*, *Tiger Woods Golf*, *Need for Speed*, *Medal of Honor*, *Battlefield 1942*, *Harry Potter*, and *The Sims*.

Interplay

Formed in 1983, Interplay Productions created a few odds-and-ends game products and ports until striking it big with *The Bard's Tale* in 1985. *The Bard's Tale* was a dungeon crawl similar to the *Wizardry* series, but featured innovative quasi-3D graphics. Two sequels followed in the immensely popular series, further expanding on adventures in the town of Skara Brae.

In 1987, Interplay created one of the finest entries ever into the CRPG (Computer Role-Playing Game) genre using the *Bard's Tale* engine. *Wasteland* was set in a post-apocalyptic desert world, the universe created by the tabletop role-playing game *Mercenaries, Spies, and Private Eyes*. The innovative game allowed players to solve problems in the game based on their variety of skills, not just brute force. *Wasteland* has become a steady staple of "best of" lists since its release.

Founder Brian Fargo realized around that time that they could make more money by publishing their own games. The company released *William Gibson's Neuromancer* and *Battle Chess* on their own label in 1988. In 1990, amidst financial troubles, they released *Castles*, which did well enough that they could release their next hit—*Star Trek: 25th Anniversary*. *25th Anniversary* broke the curse of licensed *Star Trek* games, and became very successful, eventually being rereleased in a CD-ROM version with voiceovers recorded by the original actors.

In 1997, they released *Fallout*, the spiritual successor to *Wasteland*. *Fallout* showcased a retro-futuristic style that was a marvel of art direction. Coupled with a combination of real-time and turn-based gameplay and a strong dash of humor, *Fallout* was

a classic CRPG that, in turn, spawned its own sequel (*Fallout 2*). Like *Wasteland* before it, *Fallout* has become a steady fixture in lists of the best games of all time.

One of Interplay's most important and lucrative partnerships was with a Canadian company called BioWare. Formed by three medical doctors, BioWare has specialized in creating superb CRPGs, including the *Baldur's Gate* series, *Neverwinter Nights*, and *Star Wars: Knights of the Old Republic*—the latter two published by Infogrames and LucasArts, respectively. The *Baldur's Gate* series, in particular, spawned several immensely popular games, including *Baldur's Gate: Tales of the Sword Coast*, *Baldur's Gate II: Shadows of Amn*, and *Baldur's Gate II: Throne of Baal*.

In the late 1990s, despite the success of *Baldur's Gate*, Interplay's fortunes began to wane. After becoming a public company in 1998, Interplay then announced losses covering several years. The company divested itself of its publisher duties and signed with Vivendi Universal. Soon after, Titus Interactive gained control of the company, prompting the departure of founder Fargo. The company has since been de-listed from the NASDAQ, threatened with eviction from their offices, and, for all intents and purposes, become defunct.

LucasArts

LucasArts started in 1982 as the Games Group, an offshoot of Lucasfilm Ltd. Using $1 million in seed money from Atari, they set to work on creating two games, *Ballblazer* and *Rescue on Fractalus*. The games were completed, but before they could be released, they were pirated. In the meantime, Jack Tramiel had taken over at Atari, and the Games Group didn't like the terms he was offering. In 1984, Epyx published the games, and Lucasfilm Games (as they were now known) had its unique and innovative product on the shelves.

While their early games were creative and well made, it wasn't until 1987, with the release of *Maniac Mansion*, that LucasArts began to define themselves. *Maniac Mansion* was essentially the first point-and-click adventure game. All the game verbs were located on the screen, so interaction was accomplished by clicking on combinations of on-screen items and words—no typing was needed. The engine used to create the game was called SCUMM (Script Creation Utility for *Maniac Mansion*), and typified the sense of humor that went into the games themselves. SCUMM was used for the next 10 years in every adventure game by LucasArts until *The Curse of Monkey Island* was produced in 1997. With SCUMM, LucasArts built a powerful reputation as a maker of witty and original adventure games.

LucasArts wasn't known only for its adventure games, though. In the early years, they had produced a few strategic simulations, and, after working on adventure game ports, programmers Larry Holland and Noah Falstein were anxious to return to their roots. In 1988, they released *Battlehawks 1942*, the first in a series of World War II air combat games. They followed up with *Their Finest Hour: The Battle of Britain* and then the classic *Secret Weapons of the Luftwaffe*.

In 1992, rights to produce games set in the *Star Wars* universe reverted to LucasArts from Brøderbund, and Holland seized the opportunity to apply his combat

simulation experience to a new genre. *Star Wars X-Wing* was the result of this first effort—a space combat game that skillfully captured the feel of the beloved movies and put you in the pilot's seat of an X-Wing fighter. *Star Wars TIE Fighter* followed, which told the story from the Empire's point of view, providing shades of gray to the evil Empire. The next game in the series, *Star Wars X-Wing VS. TIE Fighter*, brought the series to the Internet in an ambitious multiplayer experience—complete with death match and co-operative missions. The final game in the venerable series was *Star Wars X-Wing Alliance*, which allowed the player to pilot the Millennium Falcon for the first time.

LucasArts has had other notable games in other genres. They brought The Force to the first-person shooter with *Dark Forces*, released in 1995. Sequels to *Dark Forces* followed in the form of the *Jedi Knight* series and saw the lead character, Kyle Katarn, go from mercenary to Jedi Knight to Jedi Master, adding light sabers and force powers to his arsenal along the way. The 1998 *Grim Fandango* saw them revisiting familiar territory with an amazing 3D adventure game featuring skeletal Manny Calavera on his journey through the land of the dead. Finally, the popularity of the action game *Star Wars Rebel Assault* (which was released only on CD-ROM) is credited with helping bring CD-ROM drives to the masses. LucasArts has continued to produce many great games over the years, many of which are set in the *Star Wars* universe.

Blizzard

Starting life in 1991 as Silicon & Synapse, the company later to be known as Blizzard Entertainment was founded by Mike Morhaime, Allen Adham, and Frank Pearce. Using ties with Brian Fargo at Interplay, they spent their first three years creating console games like *The Lost Vikings* and *Rock & Roll Racing*. They were acquired in 1994 by Davidson & Associates and soon thereafter released the game *Warcraft*—their first big hit. *Warcraft* was one of the first real-time strategy games (along with Westwood's *Command & Conquer*), and helped to define the genre.

The development house Condor had been shopping around a game idea called *Diablo*—and finding no takers—when they talked to their old friends at Blizzard. Blizzard liked the idea, and contracted Condor to make it happen. While Condor was working on *Diablo*, Blizzard was applying the finishing touches on the sequel to their biggest success. *Warcraft II* was released in 1995, and was a blockbuster hit. In 1996, they purchased Condor and renamed it Blizzard North. Blizzard has had an unprecedented number of blockbuster hits since then, each game outselling the last; their latest game, the MMORPG *World of Warcraft* has become the fastest selling PC game in history.

id Software

id Software formed on February 1, 1991, when the game development group at Softdisk (a monthly software newsletter) quit nearly en masse.

John Carmack, Adrian Carmack (no relation), John Romero, and Tom Hall had created a shareware game called *Commander Keen*. *Keen* was distributed by Apogee, who had figured out that splitting a game into three parts and charging for the second and third parts was a way to make shareware pay off well. Seeing the success of *Keen*, Scott Miller of Apogee encouraged the id team to create a 3D game. In December 1991, they completed some final obligations to Softdisk and began work on a 3D game. The game was *Wolfenstein 3D*, a first-person shooter based on *Castle Wolfenstein*. Within the first month after release, Miller paid the id team $100,000 in royalties on the smash hit.

Inspired by the movies *Evil Dead* and *Aliens*, id parted ways with Apogee and created the phenomenon *DOOM*. While not the first first-person shooter (Carmack's contributions to Softdisk earning that place in history), *DOOM* became the ultimate expression of it. Featuring a state-of-the-art graphics engine, *DOOM* was a compelling combination of action, puzzle-solving, art, multiplayer LAN play, and inspired level design. Like their previous products, *DOOM* was distributed using the shareware model that had helped make *Commander Keen* and *Wolfenstein 3D* lucrative.

Each successive product since *DOOM* has been a showcase of genius programming and 3D engine design, with id making massive profits licensing their engines to other game companies. On the heels of *DOOM* followed success with *DOOM II*, *Quake*, *Quake II*, *Quake III: Arena*, and their latest, *DOOM III*, a dark, atmospheric return to the demon and zombie-filled world of their first giant success.

A Brief Overview of Genres

Most modern video games can be assigned to a particular genre, or classified as a hybrid of two or more genres. These genres have come about over the years, often as a result of trial-and-error, but more often as an evolution. The following is a description of some important genres and the games that either introduced or popularized them.

Adventure

In the adventure game genre, there have been two important subgenres: the text-based adventure and the graphical adventure. For text-based breakouts, one need look no further than *Zork* by Infocom. On the graphical adventure side, one of the series that defined the genre was the *King's Quest* series from Roberta Williams at Sierra.

Action

The action game is the superset of many other genres. First-person shooters, action-adventure, combat simulations, fighting games, even platform games are all parts of the action genre. Games in the action genre are typified by fast-paced combat and movement. Some of the earliest examples of video games such as *Spacewar*, *Pong*, and *Space Invaders* defined the genre and were also its earliest successes.

Action-Adventure

Action-adventure games are similar to adventure games, but incorporate action elements. Nintendo's *The Legend of Zelda* was the first breakout hit of the genre, but

there have been many more since. Recent games like *Jak 3*, *Metroid Prime 2 Echoes*, and *Resident Evil 4* continue the tradition of action with strong puzzle solving.

Platformer

The original platform games involved the character running and jumping in a side-scrolling playing field. While the definition has been expanded now to include 3D playing fields, the genre is still fairly true to its roots. Some of the most famous platformers have been *Super Mario Bros.*, *Sonic the Hedgehog*, *Pitfall!*, and *Super Mario 64*.

Fighting

In fighting games, the player fights other players or the computer with martial arts or swordplay. These games originated in the arcades, where players could signify their intent to challenge one another by placing quarters on the top of the cabinet. *Double Dragon* is one of the most famous games from the genre, allowing players to fight side by side through a scrolling landscape. *Street Fighter* and *Mortal Kombat* are two of the most famous of the 2D fighting games in which players choose characters and fight against each other (called a "versus fighter"), while *Virtua Fighter*, *Soul Calibur*, and *Tekken* are the leading examples of the 3D version of this subgenre.

First-Person Shooter

The first-person shooter is an action game that places the player "behind the eyes" of the game character. In the games, the player is able to wield a variety of weapons, and dispatches enemies by shooting them. The genre took hold with id Software's *Wolfenstein 3D* and *Doom*.

Real-Time Strategy (RTS)

In a typical RTS, the goal is for the player to collect resources, build an army, and control his units to attack the enemy. The action in these games is fairly fast-paced and because of the continuous play, strategic decisions must be made quickly. While 1984's *The Ancient Art of War* and 1989's *Herzog Zwei* were early examples of the genre, the games that popularized it were Westwood's *Dune 2* and *Command and Conquer*, and Blizzard's *Warcraft*.

Turn-Based Strategy

These games are similar to real-time strategy games (indeed, they were the precursors to them), but the players take turns in which they make their moves. For example, most board games (like Chess and Checkers) are turn based. In the era of the RTS, turn-based games are less frequently made, but there are some notable games in the genre, namely *Civilization*, *X-COM*, *Master of Orion*, and *Jagged Alliance*.

Role-Playing Game (RPG)

The video game version of pen and paper games like *Dungeons & Dragons* differs from its tabletop counterpart mostly in its ability to create a world that doesn't require imagination. Most differentiations from the formula are hybrids with other genres. Some of the most famous RPGs to grace computer and TV screens are the *Final Fantasy* series, the *Baldur's Gate* series, and *Wasteland*.

Massively Multiplayer Online Role-Playing Game (MMORPG)

The MMORPG is a role-playing game set in a persistent virtual world populated by thousands of players simultaneously connected over the Internet. The MMORPG was predated by text-based games called Multi-User Dungeons/Dimensions (MUDs), but in modern times is largely graphical. In the games, the player is represented by an on-screen character called an "avatar." The first modern MMORPG was *Meridian 59* in 1996. The first popular implementation, however, was *Ultima Online* in 1997.

Stealth

Stealth games (sometimes called "sneakers") are characterized by their focus on subterfuge and their planned-out, deliberate gameplay. They are generally similar to first-person or third-person shooters, but are less action-oriented and more methodical in nature. The first stealth game was the original *Metal Gear* in 1987, but other notable stealth games include the *Thief* series, the *Metal Gear* series, and the *Splinter Cell* series.

Survival Horror

Survival horror is a subgenre of action-adventure and first-person shooter games. Typically, they involve exploring abandoned buildings or towns where various monsters and undead creatures lurk. The survival elements are stressed by never giving the player quite enough bullets or health, thus increasing the tension. The horror aspect defines the theme and pacing, commonly directing the player to explore quiet, deserted, bloodstained hallways until a monster comes crashing through a window, or a seemingly lifeless corpse begins to stir. Players are often startled and can become visibly shaken from the experience, much like a good horror movie. While 1992's *Alone in the Dark* is recognized as the first in the genre, *Resident Evil* in 1996 popularized the "survival horror" term and set the bar for subsequent games.

Simulation

Simulation games are based on the simulation of a system. This system can be anything from the workings and economy of the railroads (such as in *Railroad Tycoon*) to a combat scenario where the player controls large movements of troops, or even single fighter craft. *SimCity* is one of the breakout simulation games, allowing you to micromanage a city. *Wing Commander* and *X-Wing* are two of the defining space combat

simulation games. *Microsoft Flight Simulator* is one of the most famous airplane simulation games. In recent years, *The Sims* is one of the more popular games in the genre, with its complex simulation of human life and social interactions.

Racing

Racing games involve competing in a race in vehicles ranging from racecars to motorcycles to go-karts. This genre is a little different from others in that the games essentially try to re-create as best they can a real-world activity. The first breakout racing game was *Pole Position* from Atari.

Sports

The sports game genre covers the myriad of games that simulate the sporting experience. As with racing games, sports games are mostly an attempt to re-create the complex interactions in a real sport. Some of the breakout series in the genre have been *John Madden Football* and *Tiger Woods Golf.*

Rhythm

Rhythm games gauge a player's success on his ability to trigger the controls in time to the beat of music. Some games, such as Konami's *Dance Dance Revolution (DDR)*, require the player to step on floor pads in time to music, while Nintendo's *Donkey Konga* for the Nintendo GameCube comes with a specialized bongo drum controller—although not all rhythm games require specialized controllers. For example, *PaRappa the Rapper* is regarded as the first significant rhythm game, appearing on the PlayStation in 1996, and only required the standard controller. However, *DDR* is the most recognized and enduring game in the genre, appearing in both arcades and on home consoles.

Puzzle

Puzzle games combine elements of pattern matching, logic, strategy, and luck—often with a time element. *Tetris* is easily the most popular puzzle game ever, and serves as a fine example of the genre with its frenetic pattern-matching action.

Mini-Games

Mini-games are typically short, simple games that exist within a larger traditional game. They are sometimes used as a reward for completing a challenge or unlocked by discovering a secret. Alternately, the larger game can be a thin veil for a collection of mini-games, as in the *Mario Party* series or the *Wario Ware* series. The *Wario Ware* series is of special note since each title contains more than 100 games, with each lasting only several seconds. Many games on the Internet used for advertising purposes could also be described as mini-games.

Traditional

Traditional games include computerized versions of card games and board games. The first traditional game implemented on a computer screen was *Noughts and Crosses* (tic-tac-toe) by A. S. Douglas at the University of Cambridge in 1952. Throughout the years, chess has long been a staple of traditional video games, with *Chessmaster* being the most recognized series. In 1988, Interplay developed *Battle Chess*, which was just normal chess, but when each piece took another, there was a unique (and often humorous) animation of the "battle." Sierra's *Hoyle* series is one of the most dedicated efforts to bring traditional games to a computer format, with its faithful translations of card, board, casino, word, table, and puzzle games.

Educational

Educational games are designed to teach grade-school concepts to children and young adults in an entertaining manner. The first notable educational game was *Oregon Trail*, originally designed in 1971 for teletype machines at Carleton College, but made popular in the 1980s and 1990s by a version running on Apple computers in the public schools. Other notable games in this genre include the *Carmen Sandiego* series and *Mavis Beacon Teaches Typing.*

Serious

The serious game genre has emerged in the past couple of years as a cheaper and more entertaining way of teaching real-world events or processes to adults. These games are usually privately funded for specific uses, with the U.S. government and medical professionals being the largest users. For example, game developers can develop training simulators relatively cheaply, while infusing the simulation with entertainment value. The fun value is important so that users are motivated to replay the game often and thus become better trained. The Game Developers Conference has recognized the strong interest in serious games and in 2004 added a two-day Serious Games Summit as part of their annual event, focusing on "the intersection of games, learning, policy, and management." [GDC]

Summary

While the history of video games tells a story of men and women driven by innovation and creativity, it as often tells the story of bad business moves and failure to capitalize on opportunities. Innovation doesn't necessarily lead to success, and success doesn't necessarily lead to longevity. True success and longevity in the video game world often rely on a combination of creativity, business acumen, and luck. Just as in any emerging media, there is an evolution that takes place, as genres are defined and capabilities are explored. The consoles and computers of the year 2000 enable ways of game playing that weren't possible in the early 1980s, while some classic games still remain classic games despite featuring outdated technology. Ultimately, as advanced

as video games have become, the medium must still be considered in its infancy. This does not invalidate the lessons learned from the designers and companies that have made a success in it, but serves to inform the future.

Exercises

1. A graphical computer version of tic-tac-toe (*Noughts and Crosses*) was developed by A. S. Douglas at the University of Cambridge in 1952. Why do many historians not consider this the first video game? Research the game on the Internet and make an argument why it should be regarded as the first video game.
2. Why was Atari successful with the 2600 while Fairchild and RCA both bowed out of the console race early?
3. Do you believe that the video game mascot is in decline? If so, why? If not, why not?
4. Having read stories of companies that were both successful and unsuccessful, what are some of the elements that would lead to having a successful video game company and some pitfalls to watch out for?

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