Harvard Business School **9-795-102**
Rev. July 12, 1995

Power Play (A): Nintendo in 8-bit Video Games

One strong company and the rest weak.

Hiroshi Yamauchi, President, Nintendo Co., Ltd.[1]

The origins of home video games went back to 1966, when an engineer at Sanders Associates, a U.S. military systems consulting firm, developed a ball-and-paddle game called *Odyssey* that could be played on a TV set. But the industry really began in 1972 with the founding of Atari Corporation, which enjoyed huge success with a table tennis video game called *Pong*. By 1982, the U.S. home video game industry reached $3 billion in retail sales. Then the market collapsed, with sales plummeting to under $100 million in 1985. A flood of low-quality software was blamed for the bust, and home video games were dismissed as yet another toy fad.

The Japanese company Nintendo (the name means something like "Work hard, but in the end it is in heaven's hands") began life in 1889 as a manufacturer of handmade playing cards. In the post World War II period, the company expanded into a variety of novelty toys and games. In 1977, Nintendo began making a home video game system in Japan under license from U.S. television manufacturer Magnavox—which had licensed the Sanders technology back in 1971.

In 1983, Nintendo launched a new video game system, the Famicom ("Family Computer"), in Japan. The company also developed games specially tailored to its new piece of hardware, such as the hits *The Legend of Zelda* and *Metroid*. In 1985, Nintendo released the smash hit *Super Mario Brothers*. "Nintendomania" had begun. The U.S. launch of the Famicom, under the name Nintendo Entertainment System (NES), followed in 1986.

By 1990, home video games had become a $5 billion worldwide industry. A Nintendo Famicom/NES could be found in one out of every three households—in both Japan and the United States. Cumulative sales of the *Super Mario Brothers* game series alone topped 40 million copies.

[1]David Sheff, *Game Over: How Nintendo Conquered the World* (New York: Vintage, 1993), p. 71.

Professor Adam M. Brandenburger prepared this case as the basis for class discussion rather than to illustrate either effective or ineffective handling of an administrative situation. *The case draws on reports by Anna Minto (MBA'93), Michael Maples, and Michael Tuchen (MBAs'94). Assistance from Research Associate Monique Burnett, Rena Henderson, Brad Ipsan, and Research Assistant Julia Kou is gratefully acknowledged.*

A survey that year found that the Nintendo character Mario was more popular than Mickey Mouse among U.S. children.

From mid-1990 through mid-1991, Nintendo's stock market value exceeded that of Sony or Nissan. (Refer to **Table A** below, and to **Exhibit 2** for further financial data on Nintendo.)

Table A Average Stock Market Values, July 1990 through June 1991

Company	(¥ trillions)
Nintendo	2.406
Sony	2.212
Nissan	2.032

Source: Datastream

Home Video Game Systems

Video games were a form of home entertainment targeted principally at 6- to 14-year-old boys. Players of video games controlled game characters on a TV screen, vanquishing foes, seeking hidden treasure, playing sports, and the like.

A home video game system consisted of three types of component: a console, controllers, and cartridges. The console was essentially a microprocessor-based computer optimized for graphics processing capabilities. It was designed to receive information from the controllers, process it according to instructions contained in the game cartridge, and send signals to the TV monitor. Controllers were hand-held devices used to direct the on-screen action. Often, more than one controller could be attached to the console allowing for game play among several people. When a player pushed the buttons or joystick on the top of the controller, a signal was transmitted to the console. Cartridges contained chips encoding the instructions for a particular game. They were designed to be inserted into the console.

At the broadest level, three technical factors determined the quality of the games that a particular video game system could run: data width (in bits), clock speed (in MHz), and the amount of RAM (in bytes). Early machines were 4-bit systems. Later-generation machines were 8-bit, then 16-bit, and, by the early 1990s, 32-bit systems. Early machines ran at 2 MHz and had up to 16 kilobytes of RAM. Newer machines ran at 12.5 MHz and had up to 2 megabytes of RAM. **Exhibit 1** lists technical specifications of various home video game systems and—for the sake of comparison—those of leading personal computers of the same period.

The technical limitations of early video game systems restricted on-screen objects to two-dimensional shapes that could move only from side-to-side. Sounds were limited to beeps, bells, and bursts. For example, *Pac-Man* (home version introduced in 1982) was an 8-kilobyte game that contained fewer than 20 different scenes and depicted only outlined shapes in a narrow range of colors. By the mid-1980s, 256-kilobyte games became available that boasted more realistic graphics and sounds, and were both faster and much more complex. Nintendo's *The Legend of Zelda*

(1987), for example, contained 600 separate scenes, including forests, lakes, mountains, and deserts. In the game, it could take several weeks to rescue the imprisoned princess.

Atari

Atari (which means "Check" in the Japanese game Go) was founded in 1972 by entrepreneur Nolan Bushnell. A computer addict from an early age, Bushnell had previously worked as an engineer in Silicon Valley. In his spare time, he had conceived the idea of a fixed-purpose game-playing computer.

The Arcade Game Business

In the early 1970s, coin-operated game machines were electromechanical devices, costing around $1,000, that played games such as pinball, shuffleboard, and football. Manufacturers sold the machines to distributors, who sold or leased them to operators who, in turn, placed the machines in arcades, malls, bowling alleys, and other locations. Players of arcade games were predominantly youths of elementary and high-school age.

At Atari, Bushnell and his team developed a computer-based arcade machine called *Pong*, in which two players batted a light beam back and forth between on-screen paddles. At a time when the best arcade game grossed $45 a week, *Pong* machines brought in $200 a week.[2]

Less than three months after *Pong* came out, arcade game manufacturers started putting out *Pong* look-alike games. By 1974, copying was rampant. Of the 100,000 *Pong*-like games produced that year, only about a tenth were made by Atari itself.[3]

The Home Market

Bushnell decided it was now time to target the home market. The *Pong* machine was compressed down to a few integrated circuits, designed to be hooked up to a TV. In 1975, Bushnell introduced *Home Pong* at the toy industry show. A total of 150,000 *Home Pong* games were sold in the first year.

In 1976, the U.S. electronics company Fairchild (which had been a pioneer in semiconductor technology) came out with the first video game system capable of playing multiple games. The Fairchild system used the console and plug-in cartridge format that would become the standard. A similar system, the 2600 VCS ("video computer system"), was under development at Atari. Bushnell decided he had to sell Atari to a cash-rich company able to push the VCS project to completion. The purchaser was U.S. media company Warner Communications. Atari's VCS was launched onto the market in late 1977 at a $200 retail price. Associated cartridges cost $5-$10 to manufacture and retailed for $25-$30.

By the 1978 Christmas season, the home video game business had attracted the electronics companies RCA, National Semiconductor, and General Instrument, and the toy maker Coleco, among

---

[2]Scott Cohen, *Zap! The Rise and Fall of ATARI* (New York: McGraw-Hill, 1984), p. 34.
[3]*Ibid.*, p. 39.

many other players. But unexpectedly low sales led to a big shakeout, with only Atari and Coleco surviving. Bushnell stepped down from Atari soon afterwards.

As of 1979, the VCS had a two-thirds share of the installed base of home video game systems in the United States. The same year, four of Atari's engineers left to set up their own firm, Activision, to make VCS-compatible video games. Activision's quick success stimulated other programmers to defect from Atari and set up independent houses making games for the VCS.

Fueled by the runaway success of the arcade game *Space Invaders* (invented by the Japanese arcade game company Taito), the home video game market quickly bounced back from the 1978 crash. Atari licensed *Space Invaders* for the VCS. It had other hits with *Asteroids*, adapted from an Atari arcade game, and *Pac-Man*, licensed from the leading Japanese arcade game maker Namco. Coleco and rival toy maker Mattel, a recent entrant into video games, came out with second-generation game systems boasting improved graphics. Coleco also developed an expansion module which allowed its machine to play Atari games. Atari and Mattel, in turn, adapted Coleco games to their platforms.

By 1982, a total of 17% of U.S. homes had a video game system. Retail sales of video game products that year hit $3 billion. Atari came out with a second-generation system, the 5200 Super VCS. Featuring improved game play, the Super could not, however, run cartridges for the VCS.

Then the U.S. home video game market collapsed again, with retail sales plummeting to under $100 million in 1985. A flood of low-quality software was blamed for the bust. Atari itself was brought down as a result of an overbuilt inventory—losing as much money on the way down as it had made on the way up. During this period, Nintendo approached Atari with a view to licensing the non-Japanese rights to the Famicom. But with Atari unraveling, the negotiations fizzled out. Warner sold off Atari's hardware divisions, which were re-formed under the name Atari Corporation. The coin-op business was sold, as Atari Games, to Namco.

While home video games were dismissed as yet another toy fad, the arcade business proved more resilient. In the mid-80s, around $5 billion was being spent annually at coin-op machines in the United States.

Nintendo in Japan

Nintendo, based in Kyoto, Japan, was controlled by the old, established Yamauchi family. In the early part of this century, the company was the largest maker of Japanese playing-cards, introducing Western-style cards and building a sales force that called on shops all over Japan. The third president of Nintendo, Hiroshi Yamauchi, took over the reins in 1949 and looked for ways to expand operations. In 1959, Nintendo entered a licensing agreement with Walt Disney to produce cards backed with pictures of Mickey Mouse and other Disney characters. A new distribution system was created to get the cards into toy and department stores throughout Japan. In the late 1960s, the company began putting out a series of toys, including mechanical hands, pitching machines, periscopes, and a shooting game that used a light beam and solar cells. The next move was converting former bowling alleys into shooting ranges that used the company's light beam/solar cell technology.

Finding his company overextended in the wake of the 1973 oil crisis, Yamauchi looked around for new business opportunities. He acquired a license to manufacture and sell Magnavox's home video game system in Japan and, in 1977, teamed up with electronics giant Mitsubishi to

launch a machine that played variations on *Pong*. The following year, Nintendo started putting out coin-op video games. In 1980, Nintendo put out Game & Watch, a handheld combination of video game and digital clock. The product sold strongly, although counterfeiting was a continual problem. In 1981, Nintendo had its first smash hit with the coin-op video game *Donkey Kong*, designed by ace Nintendo designer Sigeru Miyamoto.

The Famicom

By 1983, there were several players in the Japanese home video game industry, including Atari and the computer manufacturer Commodore from the United States and Casio and Sharp from Japan. The game systems sold for around ¥50,000-80,000 ($200-350).

At Nintendo, Yamauchi was directing work on an entirely new video game system that would be cheaper than the competition's, while at the same time having superior graphics (52 colors and 256×240 pixels) and faster action. The plan was to find a way of reproducing the "feel" of Nintendo's arcade games on a much less powerful home machine. Considerable effort went into extracting the necessary performance from a standard 8-bit microprocessor (dating back to the 1970s). The sole feature of the system not aimed specifically at maximizing image quality was a connector that allowed for future addition of a modem or keyboard. The cartridges contained several chips. One held the game program itself. A second, the "security" chip, ensured that only Nintendo-approved cartridges would be able to run on the system. To keep the hardware cost down, each cartridge also included some code (needed for console operation) that was common across games, and which was read into the system's memory each time a game was loaded.

All manufacturing for Nintendo's new game system was subcontracted, with final assembly alone taking place at the company's facilities. Specialized chips were sourced from electronics giant Ricoh, which had spare capacity at the time. Nintendo extracted a rock-bottom ¥2,000 ($8) price for the chips by placing a three-million unit order.

Launched in 1983, Nintendo's Famicom looked more like a toy than a computer. At a ¥24,000 ($100) price, widely believed to be at or below cost, the Famicom significantly undercut the competition.

Game Development

Games for the Famicom were designed by an R&D team at Nintendo. As a matter of policy, R&D personnel were kept insulated from the marketing people. Yamauchi believed that this improved the chances of coming up with truly fresh game concepts. Once the concept for a game was in place, development involved preparing the art, the audio, and the actual computer code. Dedicated tool sets and utilities were developed to accelerate software programming for the Famicom.

Development costs ran up to ¥100 million ($500,000) per game title, and marketing expenses to several hundred million yen. Nintendo's approach was to focus resources on trying to come up with one or two hit games per year rather than with several minor successes. Teams of up to 20 people worked on a new game over a 12- to 18-month period. Manufacture of game cartridges was subcontracted—at a unit cost of around ¥1,500 ($6-$8). Cartridges retailed for around ¥8,000 ($40) apiece.

Over time, the Nintendo engineers learned to make more and more complex games by using powerful new chips in the cartridges to take over processing activities from the console. Among the

hit games put out by the Nintendo team were *Super Mario Brothers* (1985), *The Legend of Zelda* (1987), and *Metroid* (1987)—the first two, further creations of Miyamoto. As Nintendomania took hold, makers of competing home video game systems withdrew from the market.

Licensing

With demand for games for the Famicom outstripping supply, Nintendo decided to license other companies to develop games for its system. The initial licensees were Namco, Hudson (a computer-software maker), Taito, Konami (another maker of computer and coin-op games), Capcom (developer of a variety of games with Disney characters), and Bandai (Japan's largest toy maker). These first six licensees paid royalties to Nintendo set at 20% of the ¥6,000 ($30) price at which cartridges wholesaled.

By 1988, there were 50 licensees. All except the original 6 were required to place manufacturing orders with Nintendo itself. (In accordance with its outsourcing policy, Nintendo in turn subcontracted licensees' orders to outside manufacturers.) Licensees were charged the 20% royalty, and also had to absorb Nintendo's manufacturing cost. They were further required to place minimum orders of 10,000 units—payable in advance. Later, licensee contracts were modified to limit the number of game titles that any one company could release in a year.

One small software house, Hacker International, found a way around the Nintendo security chip and started selling unauthorized games for the Famicom by mail order.[4] To generate interest in its games, Hacker placed ads in *Family Computer*, one of many magazines that had sprung up to give tips on Nintendo games. A day after the first in a projected series of ads appeared, Hacker learned that the remaining ads had been canceled. *Family Computer* followed up with a public apology to Nintendo.

In 1989, Namco's original license came up for renewal. Yamauchi made it clear that the terms of the new contract would be the same as those extended to the later licensees. Masaya Nakamura, head of Namco, responded angrily: "The game industry is still new. I want it to grow soundly. Nintendo is monopolizing the market, which is not good for the future of the industry. . . . Nintendo should consider itself the leader of the video-game industry and accept the responsibility that goes along with it."[5] Still, Nakamura accepted the new contractual arrangements.

Position in the Late 1980s

With cumulative sales of Famicoms from 1983 to 1990 reaching 17 million units, or more than one system for every three Japanese households, Nintendo was estimated to have a 95% share of the Japanese 8-bit home video game market. On average, Japanese consumers bought 12 cartridges for every Famicom system purchased. (Refer to **Table B**.)

[4]Sheff, *Game Over*, pp. 71-72.
[5]*Ibid*., p. 74.

Table B Japanese Unit Sales of Nintendo 8-bit Systems (millions)

1983	1984	1985	1986	1987	1988	1989	1990
1.4	2.1	3.2	3.9	1.8	1.7	1.4	1.3

Sources: Nintendo Co., Ltd. Annual Reports; *Tokyo Business Today*, May 1993; casewriter estimates

Nintendo continued with its outsourcing policy, working now with some 30 subcontractors, including many of the leading chip makers. It had become Ricoh's largest customer, accounting for 60%-70% of the company's semiconductor sales. Nintendo employed 200 people in R&D, 350 in administration, and 310 in manufacturing.

In 1988, Nintendo launched the Family Computer Communications Network System. A $100 modem and a special cartridge transformed the Famicom into a terminal that could interact with other terminals or with a central computer. Nintendo struck an agreement with Nomura Securities, the largest Japanese brokerage house, that enabled Famicom owners to monitor and trade stocks by computer. By 1991, a total of 130,000 households had joined the network, which offered, in addition to stock-brokerage services, home shopping, on-line banking, rail and airline reservation services, electronic mail, and access to information about new video games. Nintendo charged users for on-line time, and information and service suppliers for access to its user base.

Nintendo in the U.S.

In 1980, Nintendo established a U.S. subsidiary, Nintendo of America ("NOA"), subsequently headquartered in Redmond, Washington. The operation was led by Yamauchi's son-in-law Minoru Arakawa, who came from a leading Kyoto family and had previously studied and worked in the U.S. and Canada. NOA had a shaky start importing Nintendo coin-op games in an attempt to gain a foothold in the U.S. arcade game business. But then Miyamoto's *Donkey Kong* arrived from Japan, propelling NOA to 1981 sales of $100 million. Further revenue came from licensing of the game (to Coleco) and of the characters (for use on T-shirts, cereal packets, etc.). Nevertheless, it was estimated that as many as half the *Donkey Kong* games on the market were counterfeits, leading NOA to file numerous copyright infringement suits.

In 1983, NOA entered the U.S. consumer market with Game & Watch, brought over from Japan. The product, aimed at the toy market, was a failure.

The Nintendo Entertainment System

In 1985, Arakawa decided to try to launch the Famicom in America. However, initial approaches to toy retailers met with an unenthusiastic response. The decision was made to re-position the video game system as a consumer electronics product rather than a toy. It was redesigned to look more like a computer and given a hi-tech package. New patented and copyrighted encryption technology was also included. Retailers remained gun-shy.

Arakawa mounted a direct effort to sell the $100 Nintendo Entertainment System (NES), as the re-designed video game system was called, in New York City. NOA targeted electronics retailers and offered to stock stores for free, with retailers having to pay for only what they had managed to sell after 90 days. To the surprise of the trade, consumer reaction was favorable. A national roll-out followed in 1986.

Licensing

NOA initiated an outside game development program similar to the one Nintendo ran in Japan. It limited each licensee to five NES titles a year. All games for the NES were vetted against a set of standards that included a ban on any excessively violent or sexually suggestive material. Licensees had to place orders for manufacture of approved games with NOA at a cost of about $14 per cartridge. (Cartridges wholesaled for around $30 apiece, and were marked up another $15 or so at retail.) It took a licensee around nine months to develop a new game, one month to test it, and one month to gain approval from Nintendo. Licensees then had to place minimum orders of 30,000 units (payable in advance) with NOA and wait 3 months to receive their orders at the shipping dock in Kobe, Japan. Distribution of cartridges was the licensees' responsibility. A new contractual feature was an exclusivity clause, which prohibited licensees from releasing NES titles for other video game systems, or outside North America, for two years.

Early licensees were, for the most part, U.S. subsidiaries of Japanese companies that imported arcade games or worked with Nintendo in Japan. Konami scored a notable success with the NES games based on the *Teenage Mutant Ninja Turtle* characters, which had been developed by a pair of freelance artists. The first American licensee was Acclaim Entertainment, founded in 1987 for the specific purpose of developing games for the NES. Well-known Acclaim games included *Total Recall* (based on the Arnold Schwarzenegger movie), *Roger Rabbit*, several *Spider Man* games (based on the Marvel Entertainment Group comic book character), *NFL Football*, and *The Simpsons*.

A late signee was Electronic Arts, which had been founded in 1982 by Trip Hawkins, then 28 and a veteran of Apple Computer. (Before that, Hawkins had designed his own major at Harvard in strategy and game theory and also started his own business with $5,000, making table-top football games.) Hawkins had envisioned that personal computers would come to play a multipurpose role in homes—everything from household finances to game playing. He had therefore concentrated his efforts on designing floppy-disk-based games for personal computer platforms such as the Apple and IBM. But while Electronic Arts had found success with celebrity-endorsed sports games (such as *John Madden Football*), computer games had proved to be a limited business, bringing in a total of only $250 million in 1989. While he had licensed some Electronic Arts games to video game developers, Hawkins decided it was time to get directly involved and signed up with Nintendo in 1990. In an interview, Hawkins talked about the delay in getting into video games:

> It was my biggest mistake since starting the company. . . . Most of the people in the industry thought Nintendo couldn't succeed. Everyone figured it would be a Cabbage Patch doll kind of thing—that it would hold up for another year and then go the way of Atari and Coleco and the other video game systems that had disappeared. . . . There was another factor that kept us on the sidelines. . . . If you made software for Nintendo, you were restricted from moving to other video game machines for two years. . . . We didn't want to put all our eggs in one basket. But after a while there were so many Nintendos out that it was a moot point.[6]

Hawkins stepped aside from day-to-day management of Electronic Arts in 1991. The rumor was that he was working on a secret new video game system.

---

[6]"Trip Hawkins Interview," *Upside*, August/September 1990, p. 48.

By 1991, there were 100 licensees for the NES; only around 10% of software development remained in-house at Nintendo. Over 450 titles were available for the NES.

In addition to licensing the rights to develop games for the NES platform, NOA licensed its game characters to a wide variety of other businesses. Mario and the other Nintendo creations turned up on TV shows, cereal packets, T-shirts, records and tapes, in books and board games, as toys, and elsewhere.

Marketing and Distribution

NOA employed highly targeted advertising tied to new game releases. The advertising budget ran to about 2% of sales. NOA also sought out promotion partners, such as Pepsi, Procter & Gamble, and McDonald's.

In 1988, Arakawa started a magazine, called *Nintendo Power*, for NES users. The magazine gave tips on existing games, announced new releases, and rated games. It carried no advertising and was priced to break even. By 1990, readership was estimated at 6 million each month, making *Nintendo Power* the highest-circulation magazine targeted to children in the United States. NOA also set up a consumer hot-line, with game counselors available to give hints—but not complete answers—on how to play the games. "We don't just give away secrets," one counselor said. "We are trained in the Socratic method of game counseling."[7] Callers' names and addresses were added to NOA's mailing list. Software licensees got the benefit of write-ups in *Nintendo Power* and consumer service through the game counselors.

In the winter of 1989, Universal Studios put out the movie *The Wizard*, showcasing the soon-to-be-released Nintendo game, *Super Mario Brothers 3*.

Nintendo products were now distributed through toy stores (30% of total volume), mass merchandisers (40%), and department stores (10%), as well as electronics retailers and other outlets. In 1989, the U.S. toy industry had retail sales of $13 billion. Spending on Nintendo products accounted for over 20% of the total. Leading toy retailer Toys "R" Us earned in excess of 20% of its profits from Nintendo merchandise. It was traditional in the toy business for retailers to place orders in January or February for product to be shipped in the summer, and then to pay all bills on December 10th. Nintendo, however, required that retailers place orders, take delivery, and pay in quick succession. Leading mass merchandisers Wal*Mart and Kmart both carried Nintendo products; Wal*Mart did not stock competing video game systems.

NOA set up interactive displays in stores nationwide, allowing anyone to stop and try the NES. Eventually, 10,000 outlets had "World of Nintendo" displays—stores-within-a-store showcasing Nintendo products, all of which carried the Nintendo Seal of Quality. In 1991, NOA opened a 360,000-square-foot, robot-controlled distribution center capable of shipping up to 600,000 systems and games directly to stores every day.

NOA practiced careful inventory management in releasing its new games. It maintained strict control of the number of copies put out and withdrew games quickly as soon as interest waned. It did not fill all of the retailers' demands, and kept more than half of its game library inactive. For example, in 1988, retailers requested 110 million cartridges from Nintendo; market surveys

[7]Sheff, *Game Over*, p. 183.

indicated that perhaps 45 million could have been sold, but Nintendo released only 33 million units to the marketplace.[8]

The scarcity of games became especially pronounced from mid-1988 to mid-1989. A temporary worldwide chip shortage was, at least in part, to blame. But allegations of abuse of power by Nintendo also began to surface from game developers, retailers, and even members of Congress. A profile of Peter Main, vice-president of marketing at NOA, ran: "To his admirers . . . [he] is a master seller of children's entertainment. . . . To his critics, however, he is an aspiring monopolist, squeezing supply and jacking up profits."[9] Complaints also were voiced that Nintendo threatened to cut off retailers if they carried competitors' products or discounted Nintendo machines and games.

Position in the Late 1980s

By 1990, Nintendo had a greater-than-90% share of the U.S. home video game market. Around 30 million NES units had been sold, or one system for every three U.S. households (refer to **Table C**). Of U.S. households with boys between the ages of 8 and 15, some 70% to 75% now had video game systems. American consumers bought around 8 or 9 game cartridges for every NES purchased.

Table C U.S. Unit Sales of Nintendo 8-bit Systems and Cartridges (millions)

	1986	1987	1988	1989	1990
Systems	1.1	4.2	7.0	9.1	6.7
Cartridges	3	10	33	53	50

Sources: Nintendo Co., Ltd. Annual Reports; *Toy Industry Review 1992*, Gerald Klauer Mattison & Co., October 1992; casewriter estimates

Note: Cartridge figures include licensees' sales

The Nintendo phenomenon became a "cultural" issue. While some people claimed that a generation of so-called vidiots was being raised, others countered that the games aided development of problem-solving, memory, and other skills. Video game terminology entered the language. Referring to the 1991 Gulf conflict, U.S. General Norman Schwarzkopf dubbed it "the first Nintendo war."[10]

In 1989, NOA announced its intention to set up a network linking American households that had the NES. The long-distance phone company AT&T was slated to be the carrier. Initial plans for the network focused on providing on-line stock-brokerage and banking services, but were soon abandoned in favor of an entertainment focus. Work began on the programming required to support video-game chat lines, downloading of games, and real-time game playing between users at different locations. But progress was slow and the joint venture with AT&T was subsequently dissolved.

---

[8]"Nintendo Paces Videogames: Attention Turns to Adults and New Product Tie-ins," *Advertising Age*, January 30, 1989, p. 24; "Marketer of the Year," *Adweek*, November 27, 1989, p. 15.
[9]The Games Played for Nintendo's Sales," *New York Times*, December 21, 1989, p. D1.
[10]Sheff, *Game Over*, p. 285.

Game Boy

In April 1989, Nintendo launched Game Boy in Japan. A handheld, monochrome video game system, Game Boy was a cross between the NES and the earlier Game & Watch. It was designed to broaden the appeal of video games beyond pre-teenagers to older children and adults. The U.S. release of Game Boy followed that July. Game Boy was priced at $100, with special compact game cartridges costing from $20 to $25.

Bundled with the game *Tetris*, which Nintendo had acquired from the Russians, Game Boy was an immediate hit. NOA planned to ship a total of 1 million Game Boys by the end of 1989, although Peter Main admitted: "Based on what our retailers are telling us, real demand in the U.S. this year could be between 2 to 3 million units."[11] Toys "R" Us tried—unsuccessfully—to secure the entire first shipment of Game Boys.

Through 1992, a total of 32 million Game Boys were sold worldwide, with consumers buying, on average, three games a year to play on the system.

Legal Maneuvers

In 1987, Atari Games was bought out by its managers and employees, with Warner coming back in for a majority stake. Tengen, an Atari Games subsidiary, signed up as a Nintendo licensee in January 1988. In December, Atari Games filed suit, charging that the purpose of the NES security chip was literally to lock out competition in the market for Nintendo-compatible game cartridges. Atari Games also announced that it had found a way around the encryption technology and would begin selling unlicensed Nintendo games. Atari Games indicated to NOA that it would drop the legal action and accept the terms of licensee status if it were allowed to do its own manufacturing. NOA rejected the offer, and Atari Games went into the marketplace with its Tengen games. Unauthorized by Nintendo and lacking the Nintendo Seal of Quality, the games met resistance from both consumers and retailers.

In a March 1991 ruling, Atari Games was found to have obtained the Nintendo security code illegally, and was ordered to stop selling NES-compatible cartridges.

Atari Corporation had tried, unsuccessfully, to launch a successor to the Atari Super VCS. In 1989, it, too, filed suit against NOA, charging that NOA's exclusivity clause amounted to unfair restraint of trade. The suit was decided in NOA's favor in May 1992.

Against a climate of strained American-Japanese relations, Nintendo's successes in the U.S. began to attract attention in Washington. On December 7, 1989 (Pearl Harbor Day), Rep. Dennis E. Eckart (D-Ohio), chairman of the House Subcommittee on Antitrust, Deregulation and Privatization, held a press conference at which he requested that the Justice Department investigate allegations that Nintendo unfairly reduced competition. Eckart said that the Subcommittee had begun investigating Nintendo in early 1989 in response to consumer complaints. NOA officials charged that the investigation was instigated by Atari Games, and complained that the Subcommittee had not even asked to hear their side of the story.

---

[11] "Top Video Game Companies Expect Solid Fourth Quarter," *Home Furnishings Daily*, October 23, 1989, p. 145.

Eckart's letter to the Justice Department outlined five specific areas of concern to the Subcommittee. The first was the alleged anti-competitive purpose of the NES security chip. The second turned on the licensing agreements with software developers who, the letter alleged, "became almost entirely dependent on Nintendo's acceptance of their games and production allocations." The letter further alleged that Nintendo had artificially created shortages of its equipment and games during the Christmas 1988 season. The letter said that some evidence existed that the shortages were "contrived to increase consumers' price and demand and to enhance Nintendo's market leverage." The fourth area of concern was Nintendo's practice of bundling software with hardware. Finally, the Subcommittee charged that Nintendo had "aggressively exercised its market power" by threatening retailers with limits on their supply, or with cutting them off, if competitors were given shelf space. This coercion by Nintendo would seriously impede any potential competitors and decrease consumer choice, the letter said. Eckart asserted that, as a result of these various practices, "The net result is that there is only one game in town."

At the same time, the Attorneys General of two states, New York and Maryland, began investigating allegations that NOA had been coercing retailers into keeping the price of the game console at $99.95 or more.

In April 1991, NOA signed a consent decree with the Federal Trade Commission (FTC), along with the Attorneys General of New York and Maryland, and 39 other states, agreeing to stop actions which could be construed as resale price maintenance. The agreement did not affect the other aspects of the FTC's investigation of Nintendo. Under the terms of the settlement, NOA agreed to mail previous purchasers a $5-off coupon toward future purchases of Nintendo game cartridges—to the tune of at least $5 million and up to $25 million if sufficiently many qualified consumers applied. With respect to its treatment of retailers, NOA agreed to

> Cease and desist from
>
> 1. Fixing, controlling, or maintaining, directly or indirectly, the resale price at which any dealer may advertise, promote, offer for sale or sell any product.
>
> 2. Requiring, coercing, or otherwise pressuring any dealer, directly or indirectly, to maintain, adopt or adhere to any resale price.
>
> 3. Securing or attempting to secure, directly or indirectly, any commitment or assurance from any dealer concerning the resale price at which the dealer may advertise, promote, offer for sale or sell any product.
>
> 4. Reducing the supply of products to any dealer or imposing different credit terms in whole or in part due to the dealer's resale price of any product.
>
> 5. Requesting dealers, directly or indirectly, to report the identity of other dealers who advertise, promote, or offer for sale or sell any product below any resale price.
>
> 6. For a period of five (5) years from the date on which this order becomes final, terminating any dealer due in whole or in part to the dealer's resale price of any product. Provided, however, that the respondent retains the right to terminate unilaterally any dealer for lawful business reason,

> unrelated to resale prices, that are not inconsistent with this paragraph or another paragraph of this order.[12]

While the New York State Attorney General proclaimed the settlement a major victory against vertical price-fixing, the business weekly *Barron's* took a different view:

> The legion of trustbusting lawyers would be far more productively occupied playing Super Mario Brothers 3 than bringing cases of this kind. . . . In their pursuit of . . . crooks, we wish the trustbusters well. But other authorities are in equally hot pursuit of Nintendo and other real business success stories, real achievements, real technological progress and real rewards.[13]

The FTC dropped its investigation of Nintendo in December 1992.

Nintendo, meanwhile, continued its fight against rentals of video games. It refused to supply rental stores direct, thus forcing them to buy games at retail. It also tried to get legislation passed in Congress banning rentals of video games outright or, failing that, prohibiting rentals for a year following the release of a title. It also continued the war against counterfeiting of games. In addition to taking legal action, Nintendo made numerous changes to the circuitry in the NES with a view to foiling technology developed by counterfeiters to disable the security chip.

A New Game

In late 1991, Seattle's major league baseball team, the Mariners, was put up for sale. A prospective buyer planned to move the team to Florida. In an effort to keep the Mariners in Seattle, a group of local investors that included top executives from Microsoft, McCaw Cellular Communications, Boeing, and Nintendo put together a bid. Yamauchi at Nintendo chipped in $75 million of the $125 million total, giving his voting interest to Arakawa. Uproar ensued when the baseball commissioner announced that he was opposed to transferring the Mariners to non-North American ownership. The deal finally went through in summer 1992.

---

[12]*Federal Register* 56, no. 75 (April 18, 1991): 15883-15885.
[13]Editorial Commentary, *Barron's*, December 23, 1991, p. 90.

Exhibit 1 Technical Specifications of Home Video Game Systems and Personal Computers

System	Introduction Date	Data Width (# of bits)	Microprocessor	Clock Speed (MHz)	RAM (bytes)
Home Video Game Systems					
Atari 5200 Super VCS	1982	8	6502 (Standard)[a]	1.8	16K
Nintendo Famicom/NES	1983	8	6502	4	8K
Nintendo Game Boy	1989	8	6502	4	8K

System	Introduction Date	Data Width (# of bits)	Microprocessor	Clock Speed (MHz)	RAM (bytes)	Retail Price ($)
Personal Computers						
IBM PC	1981	8	Intel 8088	4.77	256K	3,800 1983: 2,100
IBM PC XT	1983	8	Intel 8088	4.77	512K	4,275 1985: 2,700
Apple IIe	1983	8	Motorola 6502A	1.4	64-128K	1,995 1986: 800
IBM PC AT	1984	16	Intel 80286	6	256-52K	3,995 1988: 2,300
Apple Macintosh	1984	16	Motorola 68000	8	128K	2,495 1987: 1,699
IBM PS/2 80	1987	32	Intel 80386	25-33	1M	6,995 1991: 2,250
Apple Macintosh II	1987	32	Motorola 68020	16	1-8M	6,000 1990: 3,300

[a]Available from MOS Technology, Rockwell, Synertek, and others.
Sources: Atari Corporation; Boston Computer Exchange; Datasources; *Dealerscope Merchandising*, Oct. 1991

Exhibit 2 Nintendo Co., Ltd.: Financial Summary (¥ millions)

	1984	1985	1986	1987	1988	1989	1990	1991	1992
Net sales	68,141	81,429	123,037	144,575	203,301	291,201	240,234	471,417	561,843
Cost of sales	NA	NA	NA	77,665	127,525	191,345	145,673	270,633	339,519
SG&A	NA	NA	NA	15,096	21,160	27,404	21,465	42,871	56,041
Other expenses	NA	NA	NA	2,211	569	3,403	4,206	13,193	9,442
Operating income	NA	NA	NA	49,603	54,047	69,049	68,890	144,720	156,841
Interest income (expense)	NA	NA	NA	5,688	8,273	8,809	6,275	16,857	23,992
Provision for income taxes	NA	NA	NA	30,422	32,707	43,067	39,984	94,345	93,688
Other income (expense)	NA	NA	NA	323	496	(520)	(2,251)	1,654	(41)
Net income	9,433	9,823	16,743	25,192	30,109	34,271	32,930	68,886	87,104
Total assets	69,398	80,755	129,600	149,357	213,209	279,073	342,619	425,372	517,205
Long-term obligations	NA	NA	NA	2,572	2,362	3,520	2,650	2,946	4,453
Shareholders' equity	39,878	48,227	76,931	99,540	126,476	157,249	189,811	250,623	328,548
Current assets	NA	NA	NA	129,560	182,447	242,288	303,646	361,226	460,384
Current liabilities	NA	NA	NA	47,455	84,161	118,304	150,158	171,803	184,204
Exchange rate (¥ per US$)	238	239	169	145	128	138	145	135	127

Source: Nintendo Co., Ltd. Annual Reports.

Note: For year ending August 31 (1984 through 1989).
For 7-month period ending March 31 (1990).
For year ending March 31 (1991 through 1992).