Life in the age of the Atari 8-bit computers

Vol. A "Video Games & Consoles"

* 4 *
Atari
Video Game Consoles

Wikipedia articles curated by Laurent Delsarte
Downloaded from https://www.atari800xl.eu

Foreword

Talking with some very young colleagues at the office made me fully realise just how difficult it is to describe what the world of video games and personal computers was like in the early 1980s.

Their impression of it is distorted by series such as "Stranger Things" and other recent films set in the 80s. It simply doesn't match what I experienced as a child born in 1971, a teenager in France during the 80s.

How can I explain to them that, at the time, all of this was so new, so exciting? Of course, everyone – parents included – quickly understood what video game consoles were for. But trying to explain that you wanted a computer – that we called a "microcomputer" – which was far more expensive than a video game console, was quite another matter. Why? What for?

First of all, to play video games – that was the obvious honest answer, and there was no point denying it, even for those who swore otherwise. But you could do so much more with it, especially learning to program the machine, which seemed incredibly promising for the future. The name "Atari" was practically synonymous with "video game" back then. So, if you wanted to ask for an Atari computer, you needed solid arguments to justify it. And why an Atari rather than something else? There were so many options!

We didn't have access to many sources of information back then. Apart from a few magazines, there wasn't much at all. Spending time in a computer or video game shop was genuinely entertaining, even if you didn't buy anything. And an hour or so in an arcade was like stepping into a whole new world – with no direct view of the outside, constantly stimulated by those flashy colours and sounds coming from all around. The games were absolutely stunning – especially visually. They were far superior to their microcomputer versions, which were released only months, or even years, later.

Today's generation can feel anxious when they're disconnected, without a network, cut off from their tribe. But that was completely normal in the 80s. The Internet did exist, but it wasn't available to the general public – only to the military and universities. In fact, ordinary people had never even heard of the Internet, and websites hadn't been invented yet. We were only just beginning to imagine connecting via a modem – painfully slow – to a local BBS (Bulletin Board System). In the US, other services like CompuServe, PLATO, The Source and so on were available, but not in France. That said, at the same time, we did have the Minitel.

To try to begin sketching out as accurately as possible the contours of these technological revolutions of the 1970s and 1980s, I've selected a collection of Wikipedia articles, grouped by theme. Of course, this isn't exhaustive. Of course, this selection reflects a certain perspective on certain topics, and some choices had to be made. But the approach is entirely honest. You won't be fascinated by every single article, but I'm certain that, like me, you'll make some wonderful discoveries. I plan to compile these articles into about twenty themed books. Happy reading, happy exploring.

Pong

Pong is a 1972 sports video game developed and published by Atari, Inc. for arcades. It was created by Allan Alcorn as a training exercise assigned to him by Atari co-founder Nolan Bushnell. Bushnell and Atari co-founder Ted Dabney were so surprised by the quality of Alcorn's work that they decided to manufacture the game. Bushnell based the game's concept on an electronic ping-pong game included on the Magnavox Odyssey, the first home video game console; in response, Magnavox later sued Atari for patent infringement.

Pong was the first commercially successful video game,[4] helping to establish the video game industry along with the Magnavox Odyssey. Soon after its release, several companies began producing games that closely mimicked its gameplay. Eventually, Atari's competitors released new types of video games that deviated from *Pong*'s original format to varying degrees; this, in turn, led Atari to encourage its staff to move beyond *Pong* and produce more innovative games themselves.

Atari released several sequels to *Pong* that built upon the original's gameplay by introducing new features. During the 1975 Christmas season, Atari released a home version of *Pong* exclusively through Sears retail stores. The home version was also a commercial success and led to numerous clones. The game was later remade on numerous home and portable platforms. *Pong* is regarded as one of the most influential and greatest video games of all time, and is considered one of the most culturally significant video games, being part of the permanent collection of the Smithsonian Institution in Washington, D.C..

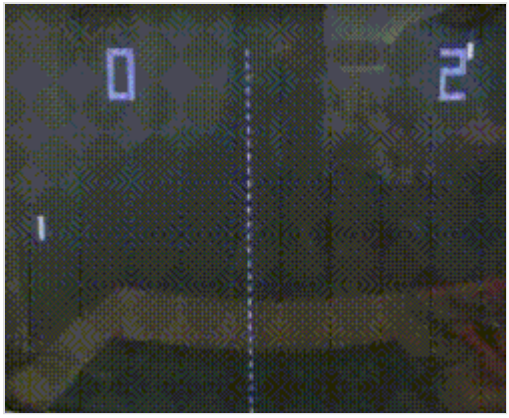
Pong

An upright cabinet of *Pong* on display at the Neville Public Museum of Brown County

Developer	Atari, Inc.
Publishers	Atari, Inc.
Designer	Allan Alcorn
Platforms	Arcade, dedicated console
Release	**Arcade** NA: November 29, 1972 JP: November 1973[1] EU: 1973[2] **Home version** October 1975[3]
Genre	Sports
Modes	Single-player, multiplayer

Gameplay

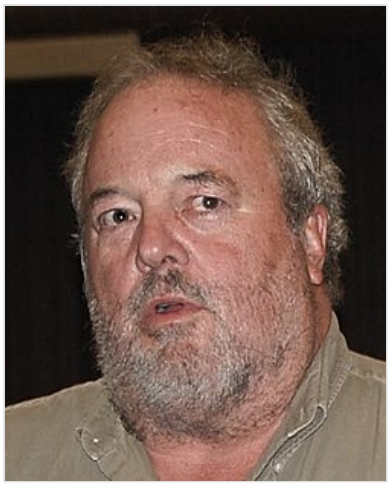
Pong is a two-dimensional sports game that simulates table tennis. The player controls an in-game paddle by moving it vertically across the left or right side of the screen. They can compete against another player controlling a second paddle on the opposing side. Players use the paddles to hit a



The two paddles return the ball back and forth. The score is displayed at the top of the screen.

ball back and forth. The goal is for each player to reach eleven points before the opponent; points are earned when one fails to return the ball to the other.[5][6][7]

Development and history

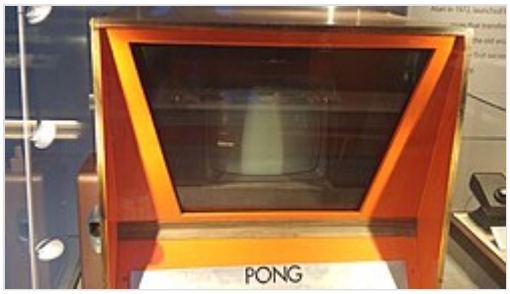

Atari engineer Allan Alcorn designed and built *Pong* as a training exercise.

Pong was the first game developed by Atari.[8][9] In 1971, Bushnell and Dabney founded Syzygy Engineering to develop the concept of a standalone computer system with a monitor and attaching a coin slot to it to play games on. Drawing inspiration from *Spacewar!*, the duo created *Computer Space*.[10] As the game did not fare well commercially, Bushnell decided to form a company to produce more games by licensing ideas to other companies. The first contract was with Bally Manufacturing Corporation for a pinball game and a video game that Bushnell told Bally would have a hockey theme.[11] Soon after the founding, Bushnell hired Allan Alcorn because of his experience with electrical engineering and computer science; Bushnell and Dabney also had previously worked with him at Ampex. Prior to working at Atari, Alcorn had no experience with video games.[12]

To acclimate Alcorn to creating games, Bushnell gave him a project secretly meant to be a warm-up exercise.[12][13] Bushnell told Alcorn that he had a contract with General Electric for a product, and asked Alcorn to create a simple game with one moving spot, two paddles, and digits for score keeping.[12] In 2011, Bushnell stated that the game was inspired by previous versions of electronic tennis he had played before; Bushnell played a version on a PDP-1 computer in 1964 while attending college.[14] However, Alcorn has claimed it was in direct response to Bushnell's viewing of the Magnavox Odyssey's Tennis game.[12] In May 1972, Bushnell had visited the Magnavox Profit Caravan in Burlingame, California where he played the Magnavox Odyssey demonstration, specifically the table tennis game.[15][16] Though he thought the game lacked quality, seeing it prompted Bushnell to assign the project to Alcorn.[14]

Alcorn first examined Bushnell's schematics for *Computer Space*, but found them to be illegible. He went on to create his own designs based on his knowledge of transistor–transistor logic (TTL) and Bushnell's game. Feeling the basic game was too boring, Alcorn added features to give the game more appeal. He divided the paddle into eight segments to change the ball's angle of return. For example, the center segments return the ball at a 90° angle in relation to the paddle, while the outer segments return the ball at smaller angles. He also made the ball accelerate the longer it remained in play; missing the ball reset the speed.[7] Another feature was that the in-game paddles were unable to reach the top of the screen. This was caused by a simple circuit that had an inherent defect. Instead of dedicating time to fixing the defect, Alcorn decided it gave the game more difficulty and helped limit the time the game could be played; he imagined two skilled players being able to play forever otherwise.[12]

Three months into development, Bushnell told Alcorn he wanted the game to feature realistic sound effects and a roaring crowd.[12][17] Dabney wanted the game to "boo" and "hiss" when a player lost a round. Alcorn had limited space available for the necessary electronics and was unaware of how to create such sounds with digital circuits. After inspecting the sync generator, he discovered that it could generate different tones and used those for the game's sound effects.[7][12] To construct the prototype, Alcorn purchased a $75 Hitachi black-and-white television set from a local store, placed it into a 4-foot (1.2 m) wooden cabinet, and soldered the wires into boards to create the necessary circuitry. The prototype impressed Bushnell and Dabney so much that they felt it could be a profitable product and decided to test its marketability.[7]



The *Pong* prototype that was used in the tavern

In August 1972, Bushnell and Alcorn installed the *Pong* prototype at a local bar, Andy Capp's Tavern.[18][19][20][21] They selected the bar because of their good working relationship with the bar's owner and manager, Bill Gaddis;[22] Atari supplied pinball machines to Gaddis.[9] Bushnell and Alcorn placed the prototype on one of the tables near the other entertainment machines: a jukebox, pinball machines, and *Computer Space*. The game was well received the first night and its popularity continued to grow over the next one and a half weeks. Bushnell then went on a business trip to Chicago to demonstrate *Pong* to executives at Bally and Midway Manufacturing;[22] he intended to use *Pong* to fulfill his contract with Bally.[7][8] A few days later, the prototype began exhibiting technical issues and Gaddis contacted Alcorn to fix it. Upon inspecting the machine, Alcorn discovered that the problem was due to the coin mechanism overflowing with quarters.[22]


The former site of Andy Capp's Tavern in 2023, which was replaced by the Rooster T. Feathers comedy club in 1984[23]

After hearing about the game's success, Bushnell decided there would be more profit for Atari to manufacture the game rather than license it. Bushnell had difficulty finding financial backing for *Pong*; banks viewed it as a variant of pinball, which at the time the general public associated with the Mafia. Atari eventually obtained a line of credit from Wells Fargo that it used to expand its facilities to house an assembly line.[24] The company announced *Pong* on 29 November 1972.[25][26] Management sought assembly workers at the local unemployment office, but was unable to keep up with demand. The first arcade cabinets produced were assembled very slowly, about ten machines a day, many of which failed quality testing. Atari eventually streamlined the process and began producing the game in greater quantities.[24] By 1973, they began shipping *Pong* to other countries with the aid of foreign partners.[27]

In Japan, *Pong* was officially released in November 1973 by Atari Japan, which would later be sold to Namco.[1] However, *Pong* had been beaten to the market by two Japanese *Pong* clones released in July 1973: Sega's *Pong Tron* and Taito's *Elepong*.[28]

Home version

Atari's *Home Pong* console, released through Sears in 1975

After the success of *Pong*, Bushnell asked his employees to create new products.[8][29] A new electronic technology, the large-scale integration (LSI) chip, had recently become available, which Bushnell believed would "allow pioneering in new" game concepts. Atari began working on the reduction of *Pong* from a large arcade printed circuit board (PCB) down to a small LSI chip for use in a home system. The initial development cost for a game on a single LSI chip was expensive, costing around $50,000 (equivalent to $397,000 in 2025), but once the chip was developed, it became significantly cheaper to mass-produce the game as well as more difficult to reverse-engineer.[30]

In 1974, Atari engineer Harold Lee proposed a home version of *Pong* that would connect to a television: *Home Pong*. The system began development under the codename *Darlene*, named after an employee at Atari. Alcorn worked with Lee to develop the designs and prototype and based them on the same digital technology used in their arcade games. The two worked in shifts to save time and money; Lee worked on the design's logic during the day, while Alcorn debugged the designs in the evenings. After the designs were approved, fellow Atari engineer Bob Brown assisted Alcorn and Lee in building a prototype. The prototype consisted of a device attached to a wooden pedestal containing over a hundred wires, which would eventually be replaced with a single chip designed by Alcorn and Lee; the chip had yet to be tested and built before the prototype was constructed. The chip was finished in the latter half of 1974, and was, at the time, the highest-performing chip used in a consumer product.[29]

Bushnell and Gene Lipkin, Atari's vice-president of sales, approached toy and electronic retailers to sell *Home Pong*, but were rejected. Retailers felt the product was too expensive and would not interest consumers.[31] Bushnell contacted Sears after coming across a Magnavox Odyssey advertisement in the sporting goods section of its catalog. Atari staff (including Bushnell and Lipkin) discussed the game with a representative, Tom Quinn, who expressed enthusiasm and offered the company an exclusive deal. Believing they could find more favorable terms elsewhere, Atari's executives declined and continued to pursue toy retailers. In January 1975, Atari staff set up a *Home Pong* booth at the American Toy Fair (a trade fair) in New York City, but was unsuccessful in soliciting orders due to high price of the unit.[32]

While at the show, they met Quinn again, and, a few days later, set up a meeting with him to obtain a sales order. In order to gain approval from the Sporting Goods department, Quinn suggested Atari demonstrate the game to executives in Chicago. Alcorn and Lipkin traveled to the Sears Tower and, despite a technical complication in connection with an antenna on top of the building which broadcast on the same channel as the game, obtained approval. Bushnell told Quinn he could produce 75,000 units in time for the Christmas season; however, Quinn requested double the amount. Though Bushnell knew Atari lacked the capacity to manufacture 150,000 units, he agreed.[29] Atari acquired a new factory through funding obtained by venture capitalist Don Valentine. Supervised by Jimm Tubb, the factory fulfilled the Sears order.[33] The first units manufactured, branded with Sears' "Tele-Games" name, started to sell around the end of October[3] to mid-November 1975[34] with a 1-year warranty for $98.95 and an additional $7.95 for the optional AC adapter.[35] Atari later released a version under its own brand in 1976.[36]

Lawsuit from Magnavox

The Magnavox Odyssey, invented by Ralph H. Baer, inspired *Pong*'s development.

In April 1974, Magnavox filed suit against Atari, Allied Leisure, Bally Midway and Chicago Dynamics.[37] Magnavox argued that Atari had infringed on Sanders Associates' patents relating both to the concept of TV games generally and to the interaction of player and machine-controlled objects rendered on a screen and presented detailed records Ralph Baer kept of the Odyssey's design process dating back to 1966. Other documents included depositions from witnesses and a signed guest book that demonstrated Bushnell had played the Odyssey's table tennis game prior to releasing *Pong*.[38][39] In response to claims that he saw the Odyssey, Bushnell later stated that, "The fact is that I absolutely did see the Odyssey game and I didn't think it was very clever."[40]

After considering his options, Bushnell decided to settle with Magnavox out of court in June 1976. Bushnell's lawyer felt they could win; however, he estimated legal costs of US$1.5 million, which would have exceeded Atari's funds. Magnavox offered Atari an agreement to become a licensee for US$1.5 million payable in eight installments. In addition, Magnavox obtained the right to full information on Atari products publicly announced or released over the next year.[38][39] Magnavox continued to pursue legal action against the other companies, and proceedings began shortly after Atari's settlement. The first case took place at the district court in Chicago, with Judge John Grady presiding. Magnavox won the suit against the remaining defendants.[38][39][41] Atari may have delayed the announcement of the Atari 2600 by a few months to avoid disclosing information about the system under the settlement agreement.[39][42]

Impact and legacy

Dedicated *Pong* consoles made their way to various countries, like the Soviet Turnir.

The *Pong* arcade games manufactured by Atari were a great success. The prototype was well received by Andy Capp's Tavern patrons; people came to the bar solely to play the game.[8][22] Following its release, *Pong* consistently earned four times more revenue than other coin-operated machines.[43] Bushnell estimated that the game earned US$35–40 per day (i.e. 140–160 plays daily per console at $0.25 per play), which he described as nothing he'd ever seen before in the coin-operated entertainment industry at the time.[14] The game's earning power resulted in an increase in the number of orders Atari received. This provided Atari with a steady source of income; the company sold the machines at three times the cost of production. By 1973, the company had filled 2,500 orders, and at the end of 1974, sold more than 8,000 units.[43] The arcade cabinets have since become collector's items, with cocktail cabinets being the rarest.[44] Soon after the game's successful testing at Andy Capp's Tavern, other companies began visiting the bar to inspect it. Similar games appeared on the market three months later, produced by companies like Ramtek and Nutting Associates.[45] Atari could do little against the competitors as they had not initially filed for patents on the solid state technology used in the game. When the company did file for patents, complications delayed the process. As a

result, the market consisted primarily of "*Pong* clones"; author Steven Kent estimated that Atari had produced less than a third of the machines.[46] Bushnell referred to the competitors as "Jackals" because he felt they had an unfair advantage. His solution to competing against them was to produce more innovative games and concepts.[45][46]

Home Pong was an instant success following its limited 1975 release through Sears; around 150,000 units were sold that holiday season.[47][48] The game became Sears' most successful product at the time, which earned Atari a Sears Quality Excellence Award.[48] Atari's own version sold an additional 50,000 units.[49] Similar to the arcade version, several companies released clones to capitalize on the home console's success, many of which continued to produce new consoles and video games. Magnavox re-released their Odyssey system with simplified hardware and new features and, later, released updated versions. Coleco entered the video game market with their Telstar console; it features three *Pong* variants and was also succeeded by newer models.[47] The dedicated *Pong* consoles and the numerous clones have since become varying levels of rare; Atari's *Pong* consoles are common, while APF Electronics' TV Fun consoles are moderately rare.[50] Prices among collectors, however, vary with rarity; the Sears Tele-Games versions are often cheaper than those with the Atari brand.[47]

Several publications consider *Pong* the game that launched the video game industry as a lucrative enterprise.[13][36][51] Video game author David Ellis sees the game as the cornerstone of the video game industry's success, and called the arcade game "one of the most historically significant" titles.[8][44] Kent attributes the "arcade phenomenon" to *Pong* and Atari's games that followed it, and considers the release of the home version the successful beginning of home video game consoles.[45][48] Bill Loguidice and Matt Barton of Gamasutra referred to the game's release as the start of a new entertainment medium, and commented that its simple, intuitive gameplay made it a success.[36] In 1995, Flux magazine ranked the game 56th on their "Top 100 Video Games."[52] In 1996 *Next Generation* named it one of the "Top 100 Games of All Time", recounting that "*Next Generation* staff ignor[ed] hundreds of thousands of dollars of 32-bit software to play *Pong* for hours when the Genesis version was released."[53] In 1999, *Next Generation* listed *Pong* as number 34 on their "Top 50 Games of All Time", commenting that, "Despite, or perhaps because of, its simplicity, *Pong* is the ultimate two-player challenge – a test of reaction times and very simple strategy stripped down to its barest essentials."[54] *Entertainment Weekly* named *Pong* one of the top ten games for the Atari 2600 in 2013.[55] Many of the companies that produced their own versions of *Pong* eventually became well known within the industry. Nintendo entered the video game market with clones of *Home Pong*. The revenue generated from them—two systems sold over a million units combined—helped the company survive a difficult financial time, and spurred them to pursue video games further.[56] In 2015, The Strong National Museum of Play inducted *Pong* to its World Video Game Hall of Fame.[57]

Bushnell felt that *Pong* was especially significant in its role as a social lubricant, since it was multiplayer-only and did not require each player to use more than one hand: "It was very common to have a girl with a quarter in hand pull a guy off a bar stool and say, 'I'd like to play *Pong* and there's nobody to play.' It was a way you could play games, you were sitting shoulder to shoulder, you could talk, you could laugh, you could challenge each other ... As you became better friends, you could put down your beer and hug. You could put your arm around the person. You could play left-handed if you so desired. In fact, there are a lot of people who have come up to me over the years and said, 'I met my wife playing *Pong*,' and that's kind of a nice thing to have achieved."[58]

Ports

Atari remade the game on numerous platforms. In 1977, *Pong* and several variants of the game were featured in *Video Olympics*, one of the original release titles for the Atari 2600.

Pong has also been included in several Atari compilations on many different platforms, such as *Arcade Classics* on the Sega Genesis, Paired with *Asteroids* and *Yars' Revenge* on the Game Boy Advance. *Atari Classics Evolved* on the PlayStation Portable, *Retro Atari Classics* on the Nintendo DS, and *Atari: 80 Classic Games in One!* for personal computer, and the *Atari 50: The Anniversary Celebration* (2022) compilation for Nintendo Switch, PlayStation 4, Steam, and Xbox One.[59][60][61][62][63][64]

Through an agreement with Atari, Bally Gaming and Systems developed a slot machine version of the game.[65]

The game was also included as a loading screen minigame on the PlayStation 2 and Xbox versions of *TD Overdrive: The Brotherhood of Speed*; however, the Windows version does not include it.[66][67]

Sequels and remakes

Tele-Games *Pong IV*, Sears' version of *Pong* sequel (*Pong Doubles*), was one of the many consoles that flooded the market by 1977.

Bushnell felt the best way to compete against imitators was to create better products, leading Atari to produce sequels in the years following the original's release: *Pong Doubles*, *Super Pong*, *Quadrapong* and *Pinpong*.[6] The sequels feature similar graphics, but include new gameplay elements; for example, *Pong Doubles* allows four players to compete in pairs, while *Quadrapong*—also released by Kee Games as *Elimination*—has them compete against each other in a four-way field.[68][69] Bushnell also conceptualized a free-to-play version of *Pong* to entertain children in a doctor's office. He initially titled it *Snoopy Pong* and fashioned the cabinet after Snoopy's doghouse with the character on top, but retitled it to *Puppy Pong* and altered Snoopy to a generic dog to avoid legal action. Bushnell later used the game in his chain of Chuck E. Cheese's restaurants.[6][70][71][72][73] In 1976, Atari released *Breakout*, a single-player variation of *Pong* where the object of the game is to remove bricks from a wall by hitting them with a ball.[74] Like *Pong*, *Breakout* was followed by numerous clones that copied the basic gameplay, such as *Arkanoid*, *Alleyway*, and *Break 'Em All*.[75]

A 3D platform game with puzzle and shooter elements was reportedly in development by Atari Corporation for the Atari Jaguar in September 1995 under the title *Pong 2000*, as part of their series of arcade game updates for the system and was set to have an original storyline for it,[76][77][78] but it was never released.

In 1999, Hasbro Interactive released a new title known as *Pong: The Next Level* for home computers and the PlayStation. This game was released as part of a trend within the time period of popular arcade games being remade with 3D graphics and art styles. The game also featured many power-ups.[79][80]

In 2012, Atari celebrated the 40th anniversary of *Pong* by releasing *Pong World* for iOS, which was developed by zGames.[81] In 2020, a new game titled *Pong Quest* was developed by Chequered Ink and released by Atari on Windows, PlayStation 4, Xbox One, and Nintendo Switch.[82] A remake of *Pong* has been announced for release exclusively for the Intellivision Amico.[83]

In popular culture

The game is featured in episodes of television series including *That '70s Show*,[84] *King of the Hill*[85] and *Saturday Night Live*.[86] In 2006, an American Express commercial featured Andy Roddick in a tennis match against the white, in-game paddle.[87] Other video games have also referenced and parodied *Pong*; for example *Neuromancer* for the Commodore 64 and *Banjo-Kazooie: Nuts & Bolts* for the Xbox 360.[88][89] The concert event Video Games Live has performed audio from *Pong* as part of a special retro "Classic Arcade Medley".[90] Frank Black's song "Whatever Happened to Pong?" on the album *Teenager of the Year* references the game's elements.[91]

First-generation *Pong* console in a retro 1970s installation at the Computerspielemuseum Berlin, pictured in 2017

Dutch design studio Buro Vormkrijgers created a *Pong*-themed clock as a fun project within their offices. After the studio decided to manufacture it for retail, Atari took legal action in February 2006. The two companies eventually reached an agreement in which Buro Vormkrijgers could produce a limited number under license.[92] In 1999, French artist Pierre Huyghe created an installation titled "Atari Light", in which two people use handheld gaming devices to play *Pong* on an illuminated ceiling. The work was shown at the Venice Biennale in 2001, and the Museo de Arte Contemporáneo de Castilla y León in 2007.[93] The game was included in the London Barbican Art Gallery's 2002 Game On exhibition meant to showcase the various aspects of video game history, development, and culture.[94]

Starting in 2012, Chuck E. Cheese's began referencing Pong as a part of the rebranding of its eponymous mascot. According to a backstory of the character published in 2014, Chuck E. won $50 in a Pong tournament and moved to New York City, where he eventually met the rest of the band members.[95]

References

1. Akagi, Masumi (October 13, 2006). *アーケードTVゲームリスト国内•海外編(1971-2005)* (https://archive.org/details/ArcadeGameList1971-2005/page/n52) [*Arcade TV Game List: Domestic • Overseas Edition (1971-2005)*] (in Japanese). Japan: Amusement News Agency. p. 51. ISBN 978-4990251215.
2. "After *Pong*" (https://archive.org/details/ACE_Issue_06_1988-03_Future_Publishing_GB/page/n30/mode/1up). *ACE*. No. 6 (March 1988). February 4, 1988. pp. 29–32 (31).
3. "Atari Markets 'Pong' TV Home Unit; Consumer Distribution Thru Sears" (https://archive.org/details/cashbox37unse_19/page/48/mode/2up?q=pong). *Cash Box*. October 11, 1975. Retrieved August 19, 2023.

4. "Atari PONG" (https://www.computinghistory.org.uk/det/4007/Atari-PONG). *The Centre for Computing History*. Retrieved February 17, 2024.
5. "Pong" (http://www.arcade-museum.com/game_detail.php?game_id=9074). Killer List of Videogames. Retrieved October 22, 2008.
6. Sellers, John (August 2001). "Pong". *Arcade Fever: The Fan's Guide to The Golden Age of Video Games*. Running Press. pp. 16–17. ISBN 0-7624-0937-1.
7. Kent, Steven (2001). "And Then There Was Pong". *Ultimate History of Video Games*. Three Rivers Press. pp. 40–43. ISBN 0-7615-3643-4.
8. Ellis, David (2004). "A Brief History of Video Games" (https://archive.org/details/officialpricegui00davi/page/3). *Official Price Guide to Classic Video Games*. Random House. pp. 3–4 (https://archive.org/details/officialpricegui00davi/page/3). ISBN 0-375-72038-3.
9. Kent, Steven (2001). "And Then There Was Pong". *Ultimate History of Video Games*. Three Rivers Press. pp. 38–39. ISBN 0-7615-3643-4.
10. The Sydney Morning Herald and The Age (November 24, 2022). *The Evolution of Video Games: Pong's 50-Year Legacy* (https://www.youtube.com/watch?v=763CFRuxovo). *YouTube*. Retrieved November 5, 2024.
11. Smith, Alexander (November 19, 2019). *They Create Worlds: The Story of the People and Companies That Shaped the Video Game Industry, Vol. I: 1971-1982*. CRC Press. pp. 159–160. ISBN 978-0-429-75261-2.
12. Shea, Cam (10 March 2008). "Al Alcorn Interview" (http://www.ign.com/articles/2008/03/11/al-alcorn-interview). *IGN*. Archived (https://web.archive.org/web/20170727190507/http://www.ign.com/articles/2008/03/11/al-alcorn-interview) from the original on 27 July 2017. Retrieved 13 October 2008.
13. Rapp, David (November 29, 2006). "The Mother of All Video Games" (https://web.archive.org/web/20080517011435/http://www.americanheritage.com/people/articles/web/20061129-pong-video-games-nolan-bushnell-atari-al-alcorn-nintendo.shtml). *American Heritage*. Archived from the original (http://www.americanheritage.com/people/articles/web/20061129-pong-video-games-nolan-bushnell-atari-al-alcorn-nintendo.shtml) on May 17, 2008. Retrieved October 25, 2008.
14. Helgeson, Matt (March 2011). "The Father of the Game Industry Returns to Atari". *Game Informer*. No. 215. p. 39.
15. "Video game history" (https://www.ralphbaer.com/video_game_history.htm). R. H. Baer Consultants. 1998. Archived (https://web.archive.org/web/20111223011401/https://www.ralphbaer.com/video_game_history.htm) from the original on 23 December 2011. Retrieved 22 October 2008.
16. Baer, Ralph (April 2005). *Video Games: In The Beginning*. New Jersey, USA: Rolenta Press. p. 81. ISBN 0-9643848-1-7.
17. Morris, Dave (2004). "Funky Town". *The Art of Game Worlds*. HarperCollins. p. 166. ISBN 0-06-072430-7.
18. "Pong 40th anniversary – Rooster T. Feathers – Features & Columns" (https://www.metroactive.com/features/columns/pong-40th-anniversary-rooster-t-feathers.html). *www.metroactive.com*. Archived (https://web.archive.org/web/20170709091930/http://www.metroactive.com/features/columns/pong-40th-anniversary-rooster-t-feathers.html) from the original on 9 July 2017. Retrieved 9 May 2017.
19. Long, Tony. "Nov. 29, 1972: Pong, a Game Any Drunk Can Play" (https://www.wired.com/2010/11/1129pong/). *WIRED*. Archived (https://web.archive.org/web/20170901154356/https://www.wired.com/2010/11/1129pong) from the original on 1 September 2017. Retrieved 9 May 2017.
20. "Pong – CHM Revolution" (http://www.computerhistory.org/revolution/story/183). *www.computerhistory.org*. Archived (https://web.archive.org/web/20170709182848/http://www.computerhistory.org/revolution/story/183) from the original on 9 July 2017. Retrieved 9 May 2017.

21. Goldberg, Harold (28 March 2011). "The Origins of the First Arcade Video Game: Atari's Pong" (http://www.vanityfair.com/culture/features/2011/03/pong-excerpt-201103). *Vanity Fair*. No. March. Archived (https://web.archive.org/web/20150111232305/http://www.vanityfair.com/culture/features/2011/03/pong-excerpt-201103) from the original on 11 January 2015. Retrieved 9 May 2017.
22. Kent, Steven (2001). "And Then There Was Pong". *Ultimate History of Video Games*. Three Rivers Press. pp. 43–45. ISBN 0-7615-3643-4.
23. G, Nina; Patterson, OJ (2022). *Bay Area Stand-Up Comedy: A Humorous History* (https://books.google.com/books?id=sShaEAAAQBAJ&pg=PA87). Charleston, South Carolina: The History Press. p. 87. ISBN 9781467149884. Retrieved June 24, 2023.
24. Kent, Steven (2001). "The King and Court". *Ultimate History of Video Games*. Three Rivers Press. pp. 50–53. ISBN 0-7615-3643-4.
25. "Production Numbers" (https://www.atarigames.com/atarinumbers90s.pdf) (PDF). Atari. 1999. Archived (https://web.archive.org/web/20130120084729/https://www.atarigames.com/atarinumbers90s.pdf) (PDF) from the original on 20 January 2013. Retrieved 19 March 2012.
26. "This Day in History: November 29" (http://www.computerhistory.org/tdih/November/29/). Computer History Museum. Archived (https://web.archive.org/web/20180103230403/http://www.computerhistory.org/tdih/november/29/) from the original on 3 January 2018. Retrieved 28 November 2011.
27. Kent, Steven (2001). "The Jackals". *Ultimate History of Video Games*. Three Rivers Press. p. 74. ISBN 0-7615-3643-4.
28. Smith, Alexander (November 19, 2019). *They Create Worlds: The Story of the People and Companies That Shaped the Video Game Industry, Vol. I: 1971-1982* (https://books.google.com/books?id=Cxy_DwAAQBAJ&pg=PT191). CRC Press. pp. 191–95. ISBN 978-0-429-75261-2.
29. Kent, Steven (2001). "Could You Repeat That Two More Times?". *Ultimate History of Video Games*. Three Rivers Press. pp. 80–83. ISBN 0-7615-3643-4.
30. Albarardo, Sonny (October 1975). "Silicon Gulch cowboys aim to be top guns of games" (https://archive.org/details/play-meter-volume-1-number-10-october-1975-600dpi/Play%20Meter%20-%20Volume%201%2C%20Number%2010%20-%20October%201975/page/31). *Play Meter*. Vol. 1, no. 10. pp. 31–7.
31. Kent, Steven L/ (2001). *the Ultimate History of Video Games*. Three Rivers Press. ISBN 0-7615-3643-4.
32. Smith, Alexander (2019). *They Create Worlds: The Story of the People and Companies That Shaped the Video Game Industry, Vol. I: 1971–1982* (https://books.google.com/books?id=Cxy_DwAAQBAJ&q=Atari+home+pong+toy+trade+fair+1975&pg=PT207). CRC Press. ISBN 9780429752612. Retrieved February 16, 2020.
33. Kent, Steven (2001). "Could You Repeat That Two More Times?". *Ultimate History of Video Games*. Three Rivers Press. pp. 84–87. ISBN 0-7615-3643-4.
34. "Atari Brings 'Pong' Into The Livingroom" (https://archive.org/details/cashbox37unse_24/page/44/mode/2up?q=pong). *Cash Box*. November 15, 1975. p. 45. Retrieved August 19, 2023.
35. *Wish Book for the 1975 Christmas Season* (https://archive.org/details/1975-sears-christmas-wish-book/page/410/mode/2up?q=pong). Sears. 1975. p. 410. Retrieved August 19, 2023.
36. Loguidice, Bill; Matt Barton (9 January 2009). "The History Of Pong: Avoid Missing Game to Start Industry" (https://www.gamedeveloper.com/business/the-history-of-i-pong-i-avoid-missing-game-to-start-industry). *Gamasutra*. Archived (https://web.archive.org/web/20090112004852/http://www.gamasutra.com/view/feature/3900/the_history_of_pong_avoid_missing_.php) from the original on 12 January 2009. Retrieved 10 January 2009.
37. "Magnavox Sues Firms Making Video Games, Charges Infringement". *The Wall Street Journal*. April 17, 1974.
38. Baer, Ralph (1998). "Genesis: How the Home Video Games Industry Began" (https://www.ralphbaer.com/how_video_games.htm). R. H. Baer Consultants. Archived (https://web.archive.org/web/20160424064425/https://www.ralphbaer.com/how_video_games.htm) from the original on 24 April 2016. Retrieved 22 October 2008.

39. Kent, Steven (2001). "And Then There Was Pong". *Ultimate History of Video Games*. Three Rivers Press. pp. 45–48. ISBN 0-7615-3643-4.
40. Nolan Bushnell (2003). *The Story of Computer Games* (video). Discovery Channel.
41. Kent, Steven (2001). "A Case of Two Gorillas". *Ultimate History of Video Games*. Three Rivers Press. p. 201. ISBN 0-7615-3643-4.
42. Goldberg, Marty; Vendel, Curt (2012). "Chapter 5". *Atari Inc: Business is Fun*. Sygyzy Press. ISBN 978-0985597405.
43. Kent, Steven (2001). "The King and Court". *Ultimate History of Video Games*. Three Rivers Press. pp. 53–54. ISBN 0-7615-3643-4.
44. Ellis, David (2004). "Arcade Classics" (https://archive.org/details/officialpricegui00davi/page/400). *Official Price Guide to Classic Video Games*. Random House. p. 400 (https://archive.org/details/officialpricegui00davi/page/400). ISBN 0-375-72038-3.
45. Kent, Steven (2001). "The Jackals". *Ultimate History of Video Games*. Three Rivers Press. pp. 60–61. ISBN 0-7615-3643-4.
46. Kent, Steven (2001). "The King and Court". *Ultimate History of Video Games*. Three Rivers Press. p. 58. ISBN 0-7615-3643-4.
47. Ellis, David (2004). "Dedicated Consoles" (https://archive.org/details/officialpricegui00davi/page/33). *Official Price Guide to Classic Video Games*. Random House. pp. 33–36 (https://archive.org/details/officialpricegui00davi/page/33). ISBN 0-375-72038-3.
48. Kent, Steven (2001). "Strange Bedfellows". *Ultimate History of Video Games*. Three Rivers Press. pp. 94–95. ISBN 0-7615-3643-4.
49. Booth, John (June 27, 2012). "Timeline: A Look Back at 40 Years of Atari" (https://www.wired.com/2012/06/atari-40th-anniversary/). *Wired*. Retrieved August 14, 2020.
50. Ellis, David (2004). "Dedicated Consoles" (https://archive.org/details/officialpricegui00davi/page/37). *Official Price Guide to Classic Video Games*. Random House. pp. 37–41 (https://archive.org/details/officialpricegui00davi/page/37). ISBN 0-375-72038-3.
51. "Pong" (http://www.ign.com/games/pong/arcade-9096). *IGN*. Archived (https://web.archive.org/web/20120702082633/http://www.ign.com/games/pong/arcade-9096) from the original on 2 July 2012. Retrieved 25 December 2008.
52. "Top 100 Video Games" (https://archive.org/details/flux-issue-4/page/n29/mode/2up). *Flux*. No. 4. April 1995. p. 31.
53. "Top 100 Games of All Time". *Next Generation*. No. 21. September 1996. p. 47.
54. "Top 50 Games of All Time". *Next Generation*. No. 50. February 1999. p. 76.
55. Morales, Aaron (25 January 2013). "The 10 best Atari games" (http://www.ew.com/article/2013/01/25/the-10-best-atari-games). *Entertainment Weekly*. Archived (https://web.archive.org/web/20180115174334/http://ew.com/article/2013/01/25/the-10-best-atari-games/) from the original on 15 January 2018. Retrieved 17 April 2016.
56. Sheff, David (1993). "In Heaven's Hands". *Game Over: How Nintendo Zapped an American Industry, Captured Your Dollars, and Enslaved Your Children* (1st ed.). Random House. pp. 26–28 (https://archive.org/details/gameoverhowninte00shef/page/26). ISBN 0-679-40469-4.
57. "Pong" (https://www.museumofplay.org/games/pong/). *The Strong National Museum of Play*. The Strong. Retrieved May 6, 2022.
58. "What the Hell has Nolan Bushnell Started?". *Next Generation*. No. 4. April 1995. p. 11.
59. "Arcade Classics" (http://www.ign.com/games/arcade-classics/gen-591). *IGN*. Archived (https://web.archive.org/web/20150713094513/http://www.ign.com/games/arcade-classics/gen-591) from the original on 13 July 2015. Retrieved 25 December 2008.
60. Atari (December 20, 2007). "Retro Arcade Masterpieces Hit Store Shelves in Atari Classics Evolved" (http://www.gamespot.com/psp/action/ataricclassicsevolved/news.html?sid=6184181). *GameSpot*. Retrieved December 25, 2008.

61. Gerstmann, Jeff (23 March 2005). "Retro Atari Classics Review" (http://www.gamespot.com/reviews/retro-atari-classics-review/1900-6120954/). *GameSpot*. Archived (https://web.archive.org/web/20180316024040/https://www.gamespot.com/reviews/retro-atari-classics-review/1900-6120954/) from the original on 16 March 2018. Retrieved 25 December 2008.
62. "Atari: 80 Classic Games in One Company Line" (http://www.gamespot.com/pc/action/atari80games/news.html?sid=6094407). *GameSpot*. April 23, 2004. Retrieved December 25, 2008.
63. Kohler, Chris (7 September 2004). "Atari opens up massive classic-game library" (http://www.gamespot.com/articles/atari-opens-up-massive-classic-game-library/1100-6106808/). *GameSpot*. Archived (https://web.archive.org/web/20180125120143/https://www.gamespot.com/articles/atari-opens-up-massive-classic-game-library/1100-6106808/) from the original on 25 January 2018. Retrieved 25 December 2008.
64. Machkovech, Sam (September 12, 2022). "The 103 Classic Games That Did, and Didn't, Make the Atari 50 Anniversary Cut — Retailer Leak Suggests Games from Arcade to Jaguar; Surprises Apparently Still Await" (https://arstechnica.com/gaming/2022/09/the-103-classic-games-that-did-and-didnt-make-the-atari-50-anniversary-cut/). *Ars Technica*. Condé Nast. Archived (https://web.archive.org/web/20220914101824/https://arstechnica.com/gaming/2022/09/the-103-classic-games-that-did-and-didnt-make-the-atari-50-anniversary-cut/) from the original on September 14, 2022. Retrieved May 23, 2023.
65. "Atari, Alliance Gaming to Develop Slots Based on Atari Video Games" (http://www.gamespot.com/arcade/action/pong/news.html?sid=6107053). *GameSpot*. September 9, 2004. Retrieved December 25, 2008.
66. Munk, Simon (May 4, 2002). "PS2 Review: TD Overdrive" (http://www.computerandvideogames.com/article.php?id=28451). *Computer and Video Games*. Retrieved December 25, 2008.
67. Gestalt (18 August 2002). "TD Overdrive Xbox Review" (http://www.eurogamer.net/articles/qt_tdoverdrive). *Eurogamer*. Archived (https://web.archive.org/web/20111113131227/http://www.eurogamer.net/articles/qt_tdoverdrive) from the original on 13 November 2011. Retrieved 25 December 2008.
68. "Pong Doubles" (http://www.arcade-museum.com/game_detail.php?game_id=9075). Killer List of Videogames. Retrieved December 31, 2008.
69. "Quadrapong" (http://www.arcade-museum.com/game_detail.php?game_id=9187). Killer List of Videogames. Retrieved December 31, 2008.
70. "Doctor Pong" (http://www.arcade-museum.com/game_detail.php?game_id=7597). Killer List of Videogames. Retrieved December 31, 2008.
71. "Puppy Pong" (http://www.arcade-museum.com/game_detail.php?game_id=9159). Killer List of Videogames. Retrieved December 31, 2008.
72. "Snoopy Pong" (http://www.arcade-museum.com/game_detail.php?game_id=9598). Killer List of Videogames. Retrieved December 31, 2008.
73. Ellis, David (2004). "Dedicated Consoles" (https://archive.org/details/officialpricegui00davi/page/402). *Official Price Guide to Classic Video Games*. Random House. pp. 402 (https://archive.org/details/officialpricegui00davi/page/402). ISBN 0-375-72038-3.
74. Kent, Steven (2001). "The Jackals". *Ultimate History of Video Games*. Three Rivers Press. p. 71. ISBN 0-7615-3643-4.
75. Nelson, Mark (21 August 2007). "Breaking Down Breakout: System And Level Design For Breakout-style Games" (https://web.archive.org/web/20110228031838/http://www.gamasutra.com/view/feature/1630/breaking_down_breakout_system_and_.php). *Gamasutra*. Archived from the original (http://www.gamasutra.com/view/feature/1630/breaking_down_breakout_system_and_.php) on 28 February 2011. Retrieved 23 February 2011.
76. Quartermann (May 1995). "Gaming Gossip" (https://retrocdn.net/index.php?title=File:EGM_US_070.pdf&page=54). *Electronic Gaming Monthly*. No. 70. p. 54.
77. Gore, Chris (September 1995). "The Gorescore – Industry News You Can – The Return of Pong" (https://archive.org/stream/Video_Games_The_Ultimate_Gaming_Magazine_Issue_80_September_1995#page/n21/mode/1up). *VideoGames – The Ultimate Gaming Magazine*. No. 80. p. 20.

78. Schmudde (November 5, 2014). "Lost interview with Francois Yves Bertrand" (https://atariage.com/forums/topic/231545-lost-interview-with-francois-yves-bertrand/). *AtariAge*. Retrieved April 12, 2019.
79. "Pong: The Next Level (PC)" (http://www.ign.com/games/pong-the-next-level/pc-13321). *IGN*. Archived (https://web.archive.org/web/20121031105332/http://www.ign.com/games/pong-the-next-level/pc-13321) from the original on 31 October 2012. Retrieved 11 January 2009.
80. "Pong: The Next Level (PlayStation)" (http://www.ign.com/games/pong-the-next-level/ps-11431). *IGN*. Archived (https://web.archive.org/web/20121026071945/http://www.ign.com/games/pong-the-next-level/ps-11431) from the original on 26 October 2012. Retrieved 9 January 2009.
81. "Atari celebrates 40 years of Pong with new, free iOS Pong game, custom portable Xbox 360" (https://www.engadget.com/2012/11/29/atari-40th-anniversary-pong-world/). Engadget. 29 November 2012. Archived (https://web.archive.org/web/20170906091244/https://www.engadget.com/2012/11/29/atari-40th-anniversary-pong-world/) from the original on 6 September 2017. Retrieved 12 July 2015.
82. "Pong Quest" (https://web.archive.org/web/20220211130715/https://www.atari.com/games/pong-quest/). *Atari*. Archived from the original (https://www.atari.com/games/pong-quest/) on February 11, 2022.
83. Intellivision Entertainment (October 22, 2018). "Intellivision Reveals Initial Details For The Upcoming Amico Home Video Game Console!" (https://www.prnewswire.com/news-releases/intellivision-reveals-initial-details-for-the-upcoming-amico-home-video-game-console-300734998.html). *PR Newswire*. Retrieved February 12, 2021.
84. "Punk Chick". *That '70s Show*. Season 1. Episode 22. June 21, 1999. Fox Broadcasting Company.
85. "It Ain't Over 'Til the Fat Neighbor Sings". *King of the Hill*. Season 9. Episode 15. May 15, 2005. Fox Broadcasting Company.
86. "Episode 5". *Saturday Night Live*. Season 1. Episode 5. New York City. November 15, 1975. NBC.
87. Ashcraft, Brian (August 22, 2006). "Roddick vs. Pong" (https://kotaku.com/gaming/television/roddick-vs-pong-195709.php). Kotaku. Retrieved December 26, 2008.
88. Parker, Sam (February 13, 2004). "The Greatest Games of All Time: Neuromancer" (http://www.gamespot.com/gamespot/features/all/greatestgames/p-37.html). *GameSpot*. Retrieved January 14, 2009.
89. Anderson, Luke (11 September 2008). "Banjo-Kazooie: Nuts & Bolts Updated Hands-On" (http://www.gamespot.com/articles/banjo-kazooie-nuts-and-bolts-updated-hands-on/1100-6197547/). *GameSpot*. Archived (https://web.archive.org/web/20171223220152/https://www.gamespot.com/articles/banjo-kazooie-nuts-and-bolts-updated-hands-on/1100-6197547/) from the original on 23 December 2017. Retrieved 14 January 2009.
90. Microsoft (August 28, 2007). "Microsoft Brings Video Games Live To London" (http://games.ign.com/articles/816/816582p1.html). *GameSpot*. Retrieved September 7, 2008.
91. Frank Black (Singer) (May 23, 1994). *Album: Teenager of the Year Song: Whatever Happened to Pong?*. Elektra Records.
92. Crecente, Brian (February 28, 2006). "Atari Threatens Pong Clock Makers" (https://kotaku.com/gaming/pong-clock/atari-threatens-pong-clock-makers-157394.php). Kotaku. Retrieved October 22, 2008.
93. "Tech rewind: Interesting facts about the hit arcade video game Pong" (http://www.mid-day.com/articles/tech-rewind-interesting-facts-about-the-hit-arcade-video-game-pong/15795171). *Mid-Day*. 29 November 2015. Archived (https://web.archive.org/web/20170306133228/http://www.mid-day.com/articles/tech-rewind-interesting-facts-about-the-hit-arcade-video-game-pong/15795171) from the original on 6 March 2017. Retrieved 5 March 2017.
94. Boyes, Emma (9 October 2006). "London museum showcases games" (http://www.gamespot.com/articles/london-museum-showcases-games/1100-6159465/). *GameSpot*. Archived (https://web.archive.org/web/20140323001946/http://www.gamespot.com/articles/london-museum-showcases-games/1100-6159465/) from the original on 23 March 2014. Retrieved 9 May 2008.

95. "The story of Chuck E. Cheese by Chuck E. Cheese" (https://issuu.com/chuckecheeses/docs/the_story_of_chuck_e?e=11869875/7768485). *issuu.com*. May 7, 2014. Retrieved March 12, 2025.

Further reading

- Cohen, Scott (1984). *Zap! The Rise and Fall of Atari* (https://archive.org/details/zaprisefall00cohe). McGraw-Hill. ISBN 978-0-07-011543-9.
- Herman, Leonard (1997). *Phoenix: The Fall & Rise of Videogames*. Rolenta Press. ISBN 978-0-9643848-2-8.
- Kline, Stephen; Dyer-Witheford, Nick; De Peuter, Greig (2003). *Digital Play: The interaction of Technology, Culture and Marketing*. McGill-Queen's Press. ISBN 978-0-7735-2591-7.
- Lowood, H. (2009). "Videogames in Computer Space: The Complex History of Pong". *IEEE Annals of the History of Computing*. **31** (3): 5–19. Bibcode:2009IAHC...31c...5L (https://ui.adsabs.harvard.edu/abs/2009IAHC...31c...5L). doi:10.1109/MAHC.2009.53 (https://doi.org/10.1109%2FMAHC.2009.53). S2CID 7653073 (https://api.semanticscholar.org/CorpusID:7653073).

External links

- Pong-story.com (http://www.pong-story.com), comprehensive site about *Pong* and its origins
- The Atari Museum (http://www.atarimuseum.com/), an in-depth look at Atari and its history
- *Pong* Flyer (http://flyers.arcade-museum.com/flyers_video/atari/11013001.jpg)
- Pong variants (https://www.mobygames.com/game-group/pong-variants) at MobyGames
- Pong can be played for free in the browser on the Internet Archive.

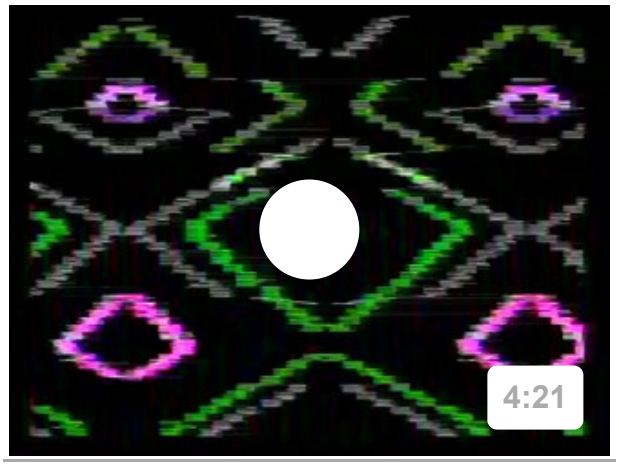
Atari Video Music

The **Atari Video Music** (Model C240) is the earliest commercial electronic music visualizer released. It was manufactured by Atari, Inc., and released in 1977[1][2] for $169.95.[3] The system creates an animated visual display that responds to musical input from a Hi-Fi stereo system for the visual entertainment of consumers.[4]

Atari Video Music

The Atari Video Music

Developer	Robert J. Brown
Manufacturer	Atari, Inc.
Type	music visualizer
Released	1977
Introductory price	$169.95; equivalent to $903 in 2025



Video output of Atari Video Music, recorded in 2021

Overview

By interpreting an input musical waveform, the Video Music translates the levels of musical intensity and mellowness into colors and shapes that are output to a graphical display. The console is attached to an audio source and then operated by an adhesive-backed switch box that is glued to the back of a television display. Audio signal visualizations take the basic form of a two-part diamond. The outer part represents the left audio channel while the right channel is represented by the inner part. Varying colors and shapes provide a wide variety of patterns, designs, and images depending on the audio sample played.

After the unit is powered on, a toggle switch may be used to select between "TV" (music visualization inactive), and "Game" (music visualization active). When in the "Game" position, visual data is broadcast on VHF channel 3 by default, but may be set to channel 4.[5]:76 Unlike Atari's previous video game systems, the Video Music system's switch box featured a 75 Ohm pass-through F connector allowing the television antenna or cable to remain attached and thereby eliminating the tiresome process of detaching and reattaching the cable every time the user switched from watching normal television broadcasts to using the visualizer.[6]:64–66 Any audio source may be used for visualization including Atari's video game system audio,[5]:76 and visualizations can either be watched "live" on a television screen or recorded on a VCR by using a balun converter.[6]:66

Technical details

A sample of output (without sound input)

The Video Music hooks up to a TV through an RF switchbox. The other hook ups are left and right RCA jack inputs that hook up to an audio amplifier's RCA outputs. The face is a brushed metal plate and the sides are particle board with walnut veneer. The unit is turned on by pushing a power button, and visualization is controlled by five potentiometer knobs and 12 additional push-buttons.[5]:76

The knob controls are as follows:[6]:66–67

- `Gain`: Two knobs controlling the left and right audio input signals strength. These increase the size of the visual pattern.
- `Color`: One knob controlling color. This increases the number of available colors from a solid color to a rainbow of colors.
- `Contour`: Two knobs controlling the left and right audio input signals visual representations shapes from soft to geometric. These act to soften shapes or increase geometric complexity of the design.

The push button controls are as follows:[6]:67

- `Power`: Turns unit on and off.
- `Shape (solid)`: Any Shape or Image that is displayed will be solid
- `Shape (hole)`: One stereo channel controls the outside with a hole in the center controlled by the other stereo channel.
- `Shape (ring)`: Both stereo channels will represent two outline shapes that retain their thickness with the pulse of the music
- `Shape (auto)`: The system automatically cycles at random between the different Shape settings as well as the next eight buttons:
- `Horizontal 1`: Displays one generated image.
- `Horizontal 2`: Displays two horizontal generated images
- `Horizontal 3`: Displays three horizontal generated images
- `Horizontal 5`: Displays five horizontal generated images
- `Vertical 1`: Displays one generated image
- `Vertical 2`: Displays two vertical generated images
- `Vertical 4`: Displays four vertical generated images
- `Vertical 8`: Displays eight vertical generated images

The last four buttons have an auxiliary function when the "Auto" button is pushed. In this mode, three of these buttons represent Solid, Hole and Ring. When the unit is in auto, it will retain the shape of one of those three shapes. The fourth button is "Auto All". This sends the unit into semi-automatic mode, cycling through shape, horizontal and vertical options but not affecting the user-set gain, color or contour settings.[6]:67

Development history

Developed under the codename *Project Mood*, the Video Music unit was designed by Robert Brown,[7] a developer of the home version of *Pong*. According to Atari design engineer, Al Alcorn, when Atari was on tour promoting the device, a Sears representative asked what the developers were smoking when they invented it. With that, a technician stepped forward holding up a lit joint.[8]

In March 1978, the unit was described in a patent under the name "Audio activated video display".[7] It is considered to have been commercially unsuccessful and production was discontinued after only one year on the market.

Reception

The Video Music system was reviewed in *Video* magazine as part of a special "VideoTest Report" in 1978. The reviewers gave it mild but positive coverage, describing it as "a well-constructed machine and an interesting component to be used as an adjunct to stereo sound," but warning that "once the novelty wears off the display can become somewhat monotonous." The same report recommended it for "those who find it relaxing, stimulating, or therapeutic to watch psychedelic displays."[6]:67

Appearance in popular culture

- Devo used a Video Music screen as a background in the video for "The Day My Baby Gave Me a Surprise". It appears again, connected to a vocoder, in the music video for "Beautiful World".
- Daft Punk used a screen in their video "Robot Rock".
- The diamond pattern visuals from Video Music can be seen in several scenes from the 1979 movie *Over the Edge* where the mute character Johnny watches the visuals in his bedroom.
- The diamond pattern visuals from Video Music appeared in an episode of *The X-Files* (Season 1 Episode 7, "Ghost in the Machine") as part of a video surveillance system.

See also

- Music visualization

References

1. Tape/Audio/Video:High Technology Hits CES Audio Scene (https://books.google.com/books?id=7kQEAAAAMBAJ&dq=%22Atari+Video+Music%22&pg=PT60), Page 52, 29 Jan 1977, Billboard, *Atari, ... premiered Video Music,....Expected to retail for under $200...*
2. Techmoan (2017-04-26), *RetroTech: Atari Video Music - The Migraine Machine* (https://www.youtube.com/watch?v=wle0eqBwtL8), archived (https://ghostarchive.org/varchive/youtube/20211215/wle0eqBwtL8) from the original on 2021-12-15, retrieved 2017-04-26
3. "ATARI Inc.; Business Is Fun (the complete history of Atari)" Volume 1, by Marty Goldberg and Curt Vendel

4. The Atari Video Music is a trippy, psychedelic rarity from the 1970s (http://www.pcworld.com/article/3026252/consumer-electronics/this-old-tech-atari-video-music-is-a-trippy-psychedelic-rarity-from-the-mid-1970s.html), By Benj Edwards, 2016-01-28, PCWorld
5. Kaplan, Deeny, ed. (Winter 1978). "Video Music". *Video* (Buyer's Guide). Vol. 1, no. 1. Reese Communications. pp. 74–77. ISSN 0147-8907 (https://search.worldcat.org/issn/0147-8907).
6. Kaplan, Deeny, ed. (Summer 1978). "VideoTest Report Number 7: Atari's Video Music". *Video*. Vol. 1, no. 2. Reese Communications. pp. 64–67. ISSN 0147-8907 (https://search.worldcat.org/issn/0147-8907).
7. US 4081829 (https://worldwide.espacenet.com/textdoc?DB=EPODOC&IDX=US4081829), Brown, Robert J., "Audio activated video display", published 1978-03-28, assigned to Atari Inc., Abstract:An interface unit for providing visual color display of objects on an unaltered TV receiver which are directly associated with the music on an audio source. Audio energy is derived from separate channels of a stereo system. This audio information is presented on the screen in the form of objects in various arrangements. Color is derived based on the zero crossing rate of each channel. Each channel has its own color associated with it. Objects may be solid, or rings, or one may be "subtracted" one from the other. If desired, the different arrays may be selected automatically in a random manner. A spectral color modulator using phase shifted techniques is incorporated.
8. Bloom, Steve. "The incredible, incredible story of Atari — from a $500 lark to a $2 billion business in 10 short years (http://www.landley.net/history/mirror/atari/museum/cut2pin.html)". Landley.net reprint accessed 28 April 2015.

External links

- The Atari Video Music (C-240), Atari Museum (https://web.archive.org/web/20210626063609/http://www.atarimuseum.com/videogames/dedicated/videomusic/videomusic.html) at the Wayback Machine (archived 2021-06-26)
- Video of the Atari Video Music screen (https://www.youtube.com/watch?v=-NWwtZCpC2M) on YouTube

Atari Game Brain

The **Atari Game Brain** (model number: C-700) is an unreleased home video game console that was developed and planned for release by Atari, Inc.[2] in June 1978. It plays 10 particular games, converted from all of Atari's previously released dedicated consoles, such as *Pong*, *Stunt Cycle*, and *Video Pinball*. Its controllers are on the console face, with 4 directional buttons, a paddle, and a fire button.[2] Games are inserted in the top of the system by opening a door that also bears a small instruction booklet.

The system was not intended as a big seller for Atari but rather as a clearance of CPUs from unsold dedicated consoles.[2] By the time the Game Brain was finished, dedicated consoles were becoming obsolete against consoles with removable ROM cartridges, such as the already released Fairchild Channel F, the RCA Studio 2, and Atari's own Video Computer System (later renamed to the Atari 2600). Atari canceled the Game Brain around 1978. Three Atari Game Brain consoles and five prototype cartridges are known to exist.

Atari Game Brain

Also known as	C-700
Developer	Atari, Inc.
Type	home video game console
Generation	First generation
Released	Unreleased (1978)[1][2][3][4]
Storage	ROM cartridge
Controller input	Built in

Games

- *Pong*
- *Stunt Cycle*
- *Super Pong*
- *Super Pong ProAm*
- *Super Pong ProAm 10*
- *Super Pong 10*
- *Ultra Pong*
- *Ultra Pong Doubles*
- *Video Music*
- *Video Pinball*

References

1. Music Backdrop For Vegas CES (https://books.google.com/books?id=piQEAAAAMBAJ&dq=%22Game+Brain%22+1977+ces&pg=PT78), By Stephen Traiman, Page 81, 14 Jan 1978, *Billboard*, "Listings from $19.95 to $59.95, additional carts were shown by...Atari(Warner Communications) for its new Game Brain,.."

2. Intermission: Innovative Oddities (https://books.google.com/books?id=3FwGMtRafrAC&dq=%22Game+Brain%22++ces&pg=PA497), Page 497, By Marty Goldberg, Curt Vendel, Atari Inc: Business is Fun, "Another interesting console blip that appears on the radar briefly appeared at the 1978 Summer CES. Called the 'Game Brain' Model C-700, it's a cartridge based console system, but it's not microprocessor based like the VCS."
3. Page xiii (https://books.google.com/books?id=ZSIqAQAAIAAJ&q=%22Game+Brain%22++ces), Weekly Television Digest with Consumer Electronics, Volume 18, Part 1, Editorial & Business Headquarters, 1978, "NEW ATARI MPU GAME:Atari is moving into lower end of programmable market with new "moderately prices" Game Brain scheduled for introduction at CES this week. At same time Atari ...will be..., delivered in June along with Game Brain."
4. A History of WCI Games / Atari / Atari Games / Atari Holdings (http://mcurrent.name/atarihistory/wci_games.html), "1978 June 11-14: At the Summer CES in Chicago Atari introduced the Game Brain (C-700; $115; never shipped), along with four new VCS titles: Basketball (previously announced in April), Capture the Flag (would ship as Flag Capture), The Maze (would eventually ship as Maze Craze), Wizard (never shipped)"

External links

- The Atari Museum's page about the Game Brain (http://www.atarimuseum.com/videogames/dedicated/gamebrain/)

Atari 2600

The **Atari 2600** is a home video game console developed and produced by Atari, Inc. Released c. September 1977[b] as the **Atari Video Computer System** (**Atari VCS**), it popularized microprocessor-based hardware and games stored on swappable ROM cartridges, a format first used with the Fairchild Channel F in 1976. The VCS was bundled with two joystick controllers, a conjoined pair of paddle controllers, and a game cartridge—initially *Combat*[5] and later *Pac-Man*.[6] Sears sold the system as the **Tele-Games Video Arcade**. Atari rebranded the VCS as the Atari 2600 in November 1982, alongside the release of the Atari 5200.

During the mid-1970s, Atari had been successful at creating arcade video games, but their development cost and limited lifespan drove CEO Nolan Bushnell to seek a programmable home system. The first inexpensive microprocessors from MOS Technology in late 1975 made this feasible. The console was prototyped under the codename Stella by Atari subsidiary Cyan Engineering. Lacking funding to complete the project, Bushnell sold Atari to Warner Communications in 1976.

The Atari VCS was launched in 1977 with nine games on 2 KB cartridges. Atari ported many of their arcade games to the system, and the VCS versions of *Breakout* and *Night Driver* are in color while the arcade originals have monochrome graphics. The system's first killer application was the home conversion of Taito's *Space Invaders* in 1980. *Adventure*, also released in 1980, was one of the first action-adventure video games and contains the first widely recognized Easter egg. Beginning with the VCS version of *Asteroids* in 1980, many games used bank switching to allow 8 KB or larger cartridges. By the time of the system's peak in 1982–83, games were released with significantly more advanced visuals and gameplay than the system was designed for, such as Activision's *Pitfall!*. The popularity of the

Atari 2600

Four-switch VCS model (1980–1982)

Also known as	Atari Video Computer System (1977–1982)
Manufacturer	Atari, Inc.
Type	Home video game console
Generation	Second
Released	NA: Late 1977 EU: 1978 FRA: 1982 BR: September 1983 JP: October 1983 (Atari 2800)
Lifespan	1977–1992
Introductory price	US$189.95 (equivalent to $1,010 in 2025)
Discontinued	1992[1]
Units sold	30 million (as of 2004)[2]
Media	ROM cartridge
CPU	8-bit MOS Technology 6507 @ 1.19 MHz
Memory	128 bytes RAM
Graphics	Television Interface Adaptor
Controller input	Joystick, paddles, driving, keypad, Trak-Ball

VCS led to the founding of Activision and other third-party game developers, as well as competition from the Intellivision and ColecoVision consoles.

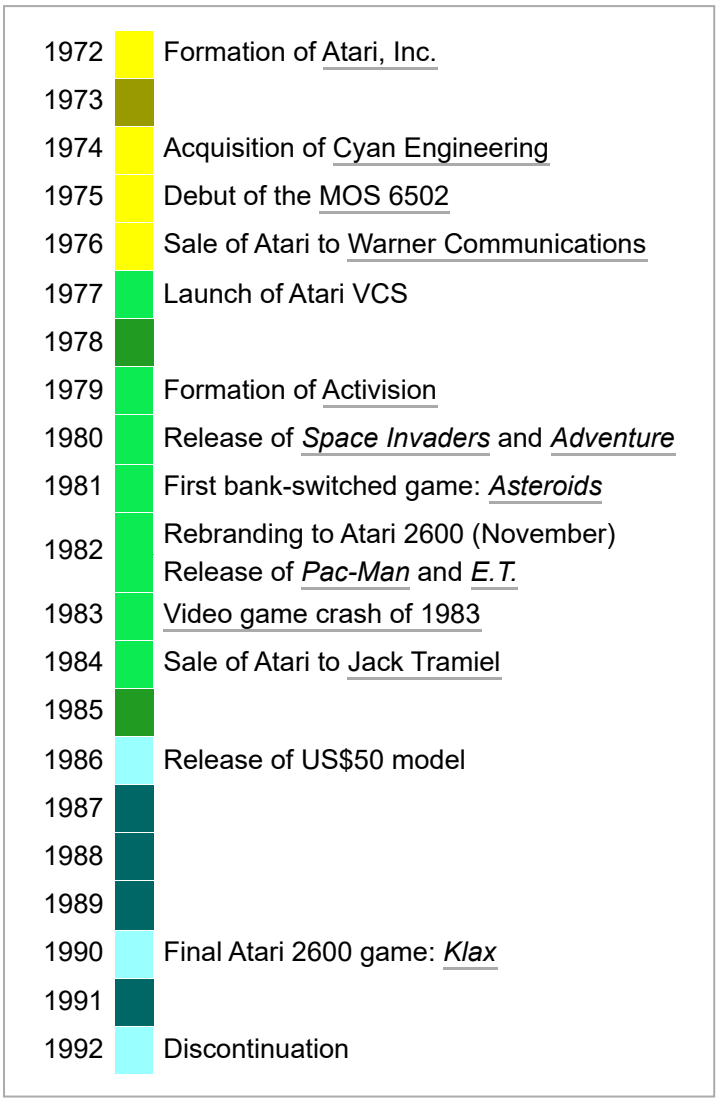
Best-selling game	*Pac-Man*, 8 million (as of 1990)[a]
Predecessor	Atari Home Pong Atari Video Pinball
Successor	Atari 5200

By 1982, the 2600 was the dominant game system in North America, and "Atari" had entered the vernacular as a synonym for the console and video games in general. However, poor decisions by Atari management damaged both the system's and the company's reputation, most notably the release of two highly anticipated games for the 2600: a port of the arcade game *Pac-Man* and *E.T. the Extra-Terrestrial*. *Pac-Man* became the 2600's best-selling game, but was panned for not resembling the original; *E.T.* was rushed to market for the holiday shopping season and was similarly disparaged. Both games, coupled with a glut of third-party shovelware, were factors in ending Atari's dominance of the console market, contributing to the North American video game crash of 1983.

Warner sold the assets of Atari's consumer electronics division to former Commodore CEO Jack Tramiel in 1984. In 1986, the new Atari Corporation under Tramiel released a revised, low-cost 2600 model, and the backward-compatible Atari 7800, but it was Nintendo that led the recovery of the industry with the 1985 North American launch of the Nintendo Entertainment System. Production of the Atari 2600 ended in 1992, with an estimated 30 million units sold across its lifetime.

History

Atari VCS/2600 timeline



Atari, Inc. was founded by Nolan Bushnell and Ted Dabney in 1972. Its first major product was *Pong*, released in 1972, the first successful coin-operated video game.[7] While Atari continued to develop new arcade games in following years, *Pong* gave rise to a number of competitors to the growing arcade game market. The competition along with other missteps by Atari led to financial problems in 1974 before the company recovered by the end of the year.[8] By 1975, Atari had released a *Pong* home console that competed against Magnavox, the only other major producer of home consoles at the time. However, Atari engineers recognized the limitation of custom logic integrated onto the circuit board, permanently confining the whole console to only one game.[9] The increasing competition increased the risk, as Atari had found with past arcade games and again with dedicated home consoles. Both platforms are built from integrating discrete electro-mechanical components into circuits instead of being programmed as on a mainframe computer. Thus, development of a console had cost at least $100,000 (equivalent to about $598,000 in 2025) plus time to complete, but the final product only had about a three-month shelf life before becoming outdated by competition.[8]

By 1974, Atari had acquired Cyan Engineering, a Grass Valley electronics company founded by Steve Mayer and Larry Emmons, both former colleagues of Bushnell and Dabney from Ampex, who helped to develop new ideas for Atari's arcade games. Even before the release of the home

version of *Pong*, Cyan's engineers, led by Mayer and Ron Milner, had envisioned a home console powered by new programmable microprocessors capable of playing Atari's arcade offerings of the time. The programmable microprocessors would make a console's design significantly simpler and more powerful than any dedicated single-game unit.[10] However, the cost $100–300 of such chips was far outside the range that their market would tolerate.[9] Atari had opened negotiations to use Motorola's new 6800 in future systems.[11]

MOS Technology 6502/6507

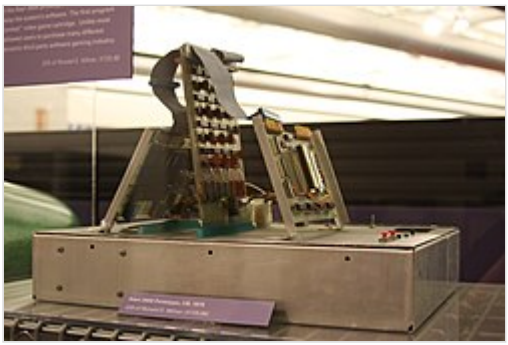
In September 1975, MOS Technology debuted the 6502 microprocessor for $25 at the Wescon trade show in San Francisco.[12][10] Mayer and Milner attended, and met with Chuck Peddle, the leader of the team that created the chip. They proposed using the 6502 in a game console, and offered to discuss it further at Cyan's facilities after the show.[11]

Over two days, MOS and Cyan engineers sketched out a 6502-based console design by Meyer and Milner's specifications.[13] Financial models showed that even at $25, the 6502 would be too expensive, and Peddle offered them a planned 6507 microprocessor, a cost-reduced version of the 6502, and MOS's RIOT chip for input/output. Cyan and MOS negotiated the 6507 and RIOT chips at $12 a pair.[11][14] MOS also introduced Cyan to Microcomputer Associates, who had separately developed debugging software and hardware for MOS, and had developed the JOLT Computer for testing the 6502, which Peddle suggested would be useful for Atari and Cyan to use while developing their system.[10] Milner was able to demonstrate a proof-of-concept for a programmable console by implementing *Tank*, an arcade game by Atari subsidiary Kee Games, on the JOLT.[10]

As part of the deal, Atari wanted a second source of the chipset. Peddle and Paivinen suggested Synertek, whose co-founder, Bob Schreiner, was a friend of Peddle.[9] In October 1975, Atari informed the market that it was moving forward with MOS. The Motorola sales team had already told its management that the Atari deal was finalized, and Motorola management was livid. They announced a lawsuit against MOS the next week.[11]

Building the system

By December 1975, Atari hired Joe Decuir, a recent graduate from University of California, Berkeley who had been doing his own testing on the 6502. Decuir began debugging the first prototype designed by Mayer and Milner, which gained the codename "Stella" after the brand of Decuir's bicycle. This prototype included a breadboard-level design of the graphics interface to build upon.[8][10] A second prototype was completed by March 1976 with the help of Jay Miner, who created a chip called the Television Interface Adaptor (TIA) to send graphics and audio to a television.[15] The second prototype included a TIA, a 6507, and a ROM cartridge slot and adapter.[8]



The first Stella prototype on display at the Computer History Museum

As the TIA's design was refined, Al Alcorn brought in Atari's game developers to provide input on features.[10] There were significant limitations in the 6507, the TIA, and other components, so the programmers creatively optimized their games to maximize the console.[13] The console lacks a

framebuffer and requires games to instruct the system to generate graphics in synchronization with the electron gun in the cathode ray tube (CRT) as it scans across rows on the screen. The programmers found ways to "race the beam" to perform other functions while the electron gun scans outside of the visible screen.[16]

Alongside the electronics development, Bushnell brought in Gene Landrum, a consultant who had already consulted for Fairchild Camera and Instrument for its upcoming Channel F, to determine the consumer requirements for the console. In his final report, Landrum suggested a living room aesthetic, with a wood grain finish, and for the cartridges to be "idiot proof, child proof and effective in resisting potential static [electricity] problems in a living room environment". Landrum recommended it include four to five dedicated games in addition to the cartridges, but this was dropped in the final designs.[10] The cartridge design was done by James Asher and Douglas Hardy. Hardy had been an engineer for Fairchild and helped in the initial design of the Channel F cartridges, but he quit to join Atari in 1976. The interior of the cartridge that Asher and Hardy designed was sufficiently different to avoid patent conflicts, but the exterior components were directly influenced by the Channel F to help work around the static electricity concerns.[10][17]

Atari was still recovering from its 1974 financial woes, and needed additional capital to fully enter the home console market; however, Bushnell was wary of being beholden to outside financial sources. Atari obtained smaller investments through 1975, but not at the scale it needed, and began considering a sale to a larger firm by early 1976. Atari was introduced to Warner Communications, which saw the potential for the growing video game industry to help offset declining profits from its film and music divisions. Negotiations took place during 1976, during which Atari cleared itself of liabilities, including settling a patent infringement lawsuit with Magnavox over Ralph H. Baer's patents that were the basis for the Magnavox Odyssey.[10] In mid-1976, Fairchild announced the Channel F, planned for release later that year, beating Atari to the market.[17]

By October 1976, Warner and Atari agreed to the purchase of Atari for $28 million.[10] Warner provided an estimated $120 million, which was enough to fast-track Stella.[8][18] By 1977, development had advanced enough to brand it the **Atari Video Computer System** (VCS) and start developing games.[8]

Launch and success

The unit was showcased on June 4, 1977, at the Summer Consumer Electronics Show, with plans for retail release in October. The announcement was purportedly delayed to wait out the terms of the Magnavox patent lawsuit settlement, which would have given Magnavox all technical information on any of Atari's products announced between June 1, 1976, and June 1, 1977.[10] However, Atari encountered production problems during its first batch, and its testing was complicated by the use of cartridges.

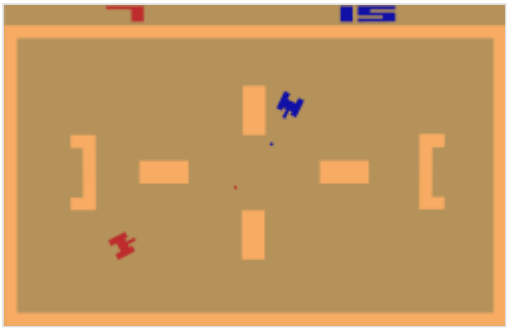
The second VCS model has lighter plastic molding and shielding, and a more angular shape, than the 1977 launch model.

Newspaper advertisments for the Atari VCS began appearing in August 1977, with the console arriving on store shelves within the following months.[19] The console launched at $199 (equivalent to about $1,060 in 2025), with two joysticks and a *Combat* cartridge; eight additional games were sold separately.[20] Most of the launch games were based on arcade games developed by Atari or its subsidiary Kee Games: for example, *Combat* was based on Kee's *Tank* (1974) and Atari's *Jet*

Fighter (1975).[8] Atari sold between 350,000 and 400,000 Atari VCS units during 1977, which was attributed to the delay in shipping the units and consumers' unfamiliarity with a swappable-cartridge console not dedicated to only one game.[21]

Starting in 1980, the VCS has only four front switches and a capital-letters logotype.

In 1978, Atari sold only 550,000 of the 800,000 systems that had been manufactured, requiring further financial support from Warner to cover losses.[21] Bushnell pushed the Warner Board of Directors to start working on "Stella 2", as he grew concerned that rising competition and aging tech specs of the VCS would render the console obsolete. However, the board stayed committed to the VCS and ignored Bushnell's advice, leading to his departure from Atari in 1979. Atari sold about 600,000 VCS systems in 1979, bringing the installed base to a little over 1.3 million.[22]



Combat, the pack-in game at launch

Atari obtained a license from Taito to develop a VCS conversion of its 1978 arcade hit *Space Invaders*, which made it the first officially licensed arcade conversion for a home console.[23] Atari sold 1.25 million *Space Invaders* cartridges and more than a million VCS systems in 1980, nearly doubling the install base to over 2 million, and then an estimated 3.1 million VCS systems in 1981.[22] By 1982, 10 million consoles had been sold in the United States, while its best-selling game was *Pac-Man*,[24] of which over 8 million copies had been sold by 1990.[a] *Pac-Man* propelled worldwide Atari VCS sales to 12 million units during 1982, according to a November 1983 article in *InfoWorld* magazine.[27] A subsequent *InfoWorld* article from August 1984 stated that more than 15 million Atari 2600 machines had been sold by 1982.[28] A March 1983 article in *IEEE Spectrum* magazine estimated about 3 million VCS sales in 1981, about 5.5 million in 1982, as well as a total of over 12 million VCS systems and an estimated 120 million cartridges sold.[29]

In Europe, the Atari VCS sold 125,000 units in the United Kingdom during 1980,[30] and 450,000 in West Germany by 1984.[31] In France, where the VCS released in 1982, the system sold 600,000 units by 1989.[32] The console was distributed by Epoch Co. in Japan in 1979 under the name "Cassette TV Game", but did not sell as well as Epoch's own Cassette Vision system in 1981.[33] In English-speaking countries, the console was distributed in the United Kingdom (first from 1979 by Ingersoll Electronics Ltd., later by Railway Terrace), Australia (by Futuretronics), Canada (first from 1977 by Paragon Entertainment and from 1980 by Irwin Toys), Ireland (from 1979 by Quintin Flynn and from 1982 by Omnitek), New Zealand (by Monaco), Singapore (by Hin Seng Ltd), South Africa (by Frank & Hirsch), Hong Kong (by Wong's Kong King Ltd) and Malaysia (by Perangsang International Sdn Bhd).[34][35][36]

In 1982, Atari launched its second programmable console, the Atari 5200. To standardize naming, the VCS was renamed the **Atari 2600 Video Computer System**, or **Atari 2600**, with the number derived from the manufacture part number CX2600.[37] By 1982, the 2600 cost Atari about $40 to manufacture, and was sold for an average of $125 (equivalent to $420 in 2025). The company spent $4.50 to $6 to manufacture each cartridge, plus $1 to $2 for advertising, wholesaling for $18.95 (equivalent to $60 in 2025).[27]

Third-party development

Activision, formed by Crane, Whitehead, and Miller in 1979, started developing third-party VCS games using their knowledge of VCS design and programming tricks, and began releasing games in 1980. *Kaboom!* (1981) and *Pitfall!* (1982) are among the most successful, with at least one and four million copies sold, respectively.[38] In 1980, Atari attempted to block the sale of the Activision cartridges, accusing the four of intellectual property infringement. The two companies settled out of court, with Activision agreeing to pay Atari a licensing fee for their games. This made Activision the first third-party video game developer, and established the licensing model that continues to be used by console manufacturers for game development.[39]

Activision's success led to the establishment of other third-party VCS game developers following its model in the early 1980s,[40][41][42] including U.S. Games, Telesys, Games by Apollo, Data Age, Zimag, Mystique, and CommaVid. The founding of Imagic included ex-Atari programmers. Mattel and Coleco, each already producing its own more advanced console, created simplified versions of their existing games for the 2600. Mattel used the M Network brand name for its cartridges. Third-party games accounted for half of VCS game sales by 1982.[43]

Decline and redesign

In addition to third-party game development, Atari also received the first major threat to its hardware dominance from the ColecoVision. Coleco had a license from Nintendo to develop a home version of Nintendo's 1981 arcade hit *Donkey Kong*, which was bundled with every ColecoVision console. Coleco gained about 17% of the hardware market in 1982 compared to Atari's 58%.[44] With third parties competing for market share, Atari worked to maintain dominance in the market by acquiring licenses for popular arcade games and other properties to make games from. The 2600 conversion of *Pac-Man* had numerous technical and aesthetic flaws, but still sold upwards of 7 million copies. Heading into the 1982 holiday shopping season, Atari had placed high sales expectations on *E.T. the Extra-Terrestrial*, a game based on the film of the same name that was programmed in about six weeks. Atari produced an estimated four million cartridges of *E.T.*,[45] but the game was poorly reviewed, and only about 1.5 million copies were sold.[46]

In December 1982, Warner Communications issued revised earnings guidance to its shareholders, having expected a 50% year-to-year growth but now only expecting 10–15% due to declining sales at Atari.[47][48] Coupled with the oversaturated home game market, Atari's weakened position led investors to start pulling funds out of video games, beginning a cascade of disastrous effects that would come to be known as the video game crash of 1983.[47] Many third-party developers formed prior to 1983 were closed, and Mattel and Coleco both left the video game market by 1985.[49]

In September 1983, Atari sent 14 truckloads of unsold Atari 2600 cartridges and other equipment to a landfill in the New Mexico desert.[50] The event was long considered an urban legend that claimed the burial contained millions of unsold cartridges. However, when the site was excavated in 2014, only 700,000 cartridges were revealed to have been buried, confirming reports from former Atari executives.[51] Atari reported a $536 million loss for 1983 as a whole,[52]:ch14 and continued to lose money into 1984, with a $425 million loss reported in the second quarter.[53] By mid-1984, software development for the 2600 had essentially stopped, except for that of Atari and Activision.[54]

Warner, wary of supporting its failing Atari division, started looking for buyers. In July 1984, it sold most of the assets of Atari's consumer electronics and home computer divisions to Jack Tramiel, the founder of Commodore International, in a deal valued at $240 million; Warner would retain Atari's arcade business, which would be rechristened as Atari Games. Tramiel, a proponent of personal computers, halted all game development for the 2600 soon after the sale.[53]

The North American video game market did not recover until about 1986, after Nintendo's 1985 launch of the Nintendo Entertainment System in North America. In 1986, Atari Corporation released a redesigned version of the 2600, supported by an ad campaign touting a price of "under 50 bucks".[55] With a large library of cartridges and a low price point, the 2600 continued to sell into the late 1980s. Atari released the last batch of games in 1989–90, including *Secret Quest*[56] and *Fatal Run*.[57] By 1986, over 20 million Atari VCS units had been sold worldwide.[58][59] The final Atari-licensed release was the PAL-only version of the arcade game *Klax* in 1990.

After more than 14 years on the market, production on the 2600, along with the Atari 7800 and Atari 8-bit computers, ended in 1992.[1] Despite this, sales of the 2600 continued in Europe for years to come. It cost less than £39.99 and was mainly distributed through mail order chains. In 1991, 200,000 units were sold on the continent, and it was a bestseller at Littlewoods stores in the UK.[60] After the fall of communism, Atari attempted to legally introduce the Atari 2600 and 7800 to former Eastern Bloc countries, with the small price being main advantage of the system. However, Atari was defeated by even cheaper and easily available clones called "Rambo TV Game 2600" (advertised with the 1982 movie character Rambo), which contained up to several hundred built-in games.[61][62][63] In Western Europe, the last stocks of the 2600 and 7800 were sold until the summer/fall of 1995.[64]

Hardware

The Atari 2600's CPU is the MOS Technology 6507, a version of the 6502,[65] running at 1.19 MHz in the 2600.[66] Though their internal silicon was identical, the 6507 was cheaper than the 6502 because its package included fewer memory-address pins—13 instead of 16.[67] The designers of the Atari 2600 selected an inexpensive cartridge interface[68] that has one fewer address pins than the 13 allowed by the 6507, further reducing the already limited addressable memory from 8 KB (2^{13} = 8,192) to 4 KB (2^{12} = 4,096). This was believed to be sufficient as *Combat* was only 2 KB.[69] Later games circumvented this limitation with bank switching.[70]

The console has 128 bytes of RAM for scratch space, the call stack, and the state of the game environment.

The top bezel of the console originally had six switches: power, TV type selection (color or black-and-white), game selection, left and right player difficulty, and game reset. The difficulty switches were moved to the back of the bezel in later versions of the console. The back bezel also included the controller ports, TV output, and power input.

Graphics

The Atari 2600 was designed to be compatible with the CRT television sets produced in the late 1970s and early 1980s, which commonly lack auxiliary video inputs to receive audio and video from another device. Therefore, to connect to a TV, the console generates a radio frequency signal

compatible with the regional television standards (NTSC, PAL, or SECAM), using a special switch box to act as the television's antenna.[72][13]

Pitfall! (1982) has more advanced graphics than the games the VCS launched with. The black bar on the left provides extra time for the program to prepare graphics between each scanline.[71]

Atari developed the Television Interface Adaptor (TIA) chip in the VCS to handle the graphics and conversion to a television signal. It provides a single-color, 20-bit background register that covers the left half of the screen (each bit represents 4 adjacent pixels) and is either repeated or reflected on the right side. There are 5 single-color sprites: two 8-pixel wide *players*; two 1 bit *missiles*, which share the same colors as the players; and a 1-pixel *ball*, which shares the background color. The 1-bit sprites all can be controlled to stretch to 1, 2, 4, or 8 pixels.[73]

The system was designed without a frame buffer to avoid the cost of the associated RAM. The background and sprites apply to a single scan line, and as the display is output to the television, the program can change colors, sprite positions, and background settings. The careful timing required to sync the code to the screen on the part of the programmer was labeled "racing the beam"; the actual game logic runs when the television beam is outside of the visible area of the screen.[74][16] Early games for the system use the same visuals for pairs of scan lines, giving a lower vertical resolution, to allow more time for the next row of graphics to be prepared. Later games, such as *Pitfall!*, change the visuals for each scan line or extend the black areas around the screen to extend the game code's processing time.[38][71]

Regional releases of the Atari 2600 use modified TIA chips for each region's television formats, which require games to be developed and published separately for each region. All modes are 160 pixels wide. NTSC mode provides 192 visible lines per screen, drawn at 60 Hz, with 16 colors, each at 8 levels of brightness. PAL mode provides more vertical scanlines, with 228 visible lines per screen, but drawn at 50 Hz and only 13 colors. SECAM mode, also a 50 Hz format, is limited to 8 colors, each with only a single brightness level.[73][75]

Controllers

The first VCS bundle has two types of controllers: a joystick (part number CX10) and pair of rotary paddle controllers (CX30). Driving controllers, which are similar to paddle controllers but can be continuously rotated, shipped with the *Indy 500* launch game. After less than a year, the CX10 joystick was replaced with the CX40 model[76] designed by James C. Asher.[77] Because the Atari joystick port and CX40 joystick became industry standards, 2600 joysticks and some other peripherals work with later systems, including the MSX, Commodore 64, Amiga, Atari 8-bit computers, and Atari ST. The CX40 joystick can be used with the Master System and Sega Genesis, but does not provide all the buttons of a native controller. Third-party controllers include Wico's

CX30 paddle CX40 joystick

Command Control joystick.[78] Later, the CX42 Remote Control Joysticks, similar in appearance but using wireless technology, were released, together with a receiver whose wires could be inserted in the controller jacks.[79]

Atari introduced the CX50 Keyboard Controller in June 1978 along with two games that require it: *Codebreaker* and *Hunt & Score*.[76] The similar, but simpler, CX23 Kid's Controller was released later for a series of games aimed at a younger audience.[80] The CX22 Trak-Ball controller was announced in January 1983 and is compatible with the Atari 8-bit computers.[81]

There were two attempts to turn the Atari 2600 into a keyboard-equipped home computer: Atari's never-released CX3000 "Graduate" keyboard,[82] and the CompuMate keyboard by Spectravideo which was released in 1983.[83]

Console models

Minor revisions

The initial production of the VCS was made in Sunnyvale during 1977, using thick polystyrene plastic for the casing as to give the impression of weight from what was mostly an empty shell inside.[10] The initial Sunnyvale batch had also included potential mounts for an internal speaker system on the casing, though the speakers were found to be too expensive to include; instead sound was routed through the TIA to the connected television.[10] All six console switches were mounted on the front panel. Production of the unit was moved to Taiwan in 1978, where a less thick internal metal shielding was used and thinner plastic was used for the casing, reducing the system's weight. These two versions are commonly referred to as "Heavy Sixers" and "Light Sixers" respectively, referencing the six front switches.[84][10]

In 1980, the difficulty switches were moved to the back of the console, leaving four switches on the front and replacing the previous all lowercase font for the switch labels to fully capitalized wording. Otherwise, these four-switch consoles look nearly identical to the earlier six-switch models. In 1982, to coincide with the release of the Atari 5200, Atari rebranded the console as the "Atari 2600", a name first used on a version of the four-switch model without woodgrain, giving it an all-black appearance. This all-black model is commonly referred to by fans as the "Vader" model, due to its resemblance to the *Star Wars* character of the same name.

Sears Video Arcade

Atari continued its OEM relationship with Sears under the latter's Tele-Games brand, which started in 1975 with the original *Pong*. This is unrelated to the company Telegames, which later produced 2600 cartridges.[85][86] Sears released several models of the VCS as the Sears Video Arcade series starting in 1977. The final Sears-specific model was the Video Arcade II, released during the fall of 1982.[87]

Sears released versions of Atari's games with Tele-Games branding, usually with different titles.[88] Three games were produced by Atari for Sears as exclusive releases: *Steeplechase*, *Stellar Track*, and *Submarine Commander*.[88]

Atari 2800

The Atari 2800 is the Japanese version of the 2600 released in October 1983. It is the first Japan-specific release of a 2600, though companies like Epoch had distributed the 2600 in Japan previously. The 2800 was released a short time after Nintendo's Family Computer (which became the dominant console in Japan), and it did not gain a significant share of the market. Sears previously released the 2800 in the US during late 1982 as the Sears Video Arcade II, which came packaged with two controllers and *Space Invaders*.[89][87] The system launched in May 1983 with 25 specifically branded games.[90] Around 35 games were released for the 2800.

Designed by engineer Joe Tilly, the 2800 has four controller ports instead of the two of the 2600. The controllers are an all-in one design using a combination of an 8-direction digital joystick and a 270-degree paddle, designed by John Amber.[89] The 2800's case design departed from the 2600, using a wedge shape with non-protruding switches. The case style is the basis for the Atari 7800, which was redesigned for the 7800 by Barney Huang.[89]

The all-black model that first used the Atari 2600 name (released in November 1982)

Sears rebranded the VCS as the "Video Arcade" for its Tele-Games line.

The design of the Japan-only Atari 2800 was previously used in the US for the Sears Video Arcade II.

The 1986 cost-reduced version, nicknamed "2600 Jr."

1986 model

The cost-reduced 1986 model, sometimes referred to as the "2600 Jr.", has a smaller form factor with an Atari 7800-like appearance. It was advertised as a budget gaming system (under $50) with the ability to run a large collection of games.[91] Released after the video game crash of 1983, and after the North American launch of the Nintendo Entertainment System, the 2600 was supported with new games and television commercials promoting "The fun is back!". Atari released several minor stylistic variations: the "large rainbow" (shown), "short rainbow", and an all-black version sold only in Ireland.[92] Later European versions include a joypad.[93]

Unreleased prototypes

The Atari 2700 was a version of the 2600 with wireless controllers.

The CX2000, with integrated joystick controllers, was a redesign based on human factor analysis by Henry Dreyfuss Associates.[94]

The circa-1982 Atari 3200 was a backwards compatible 2600 successor with "more memory, higher resolution graphics and improved sound".[95]

Related hardware and recreations

The Atari 7800, announced in 1984 and released in 1986, is the official successor to the Atari 2600 and is backward compatible with 2600 cartridges.

Multiple retro-style consoles and microconsoles have been released since the lifespan of the original Atari 2600:

- The TV Boy includes 127 games in an enlarged joypad.
- The Atari Classics 10-in-1 TV Game, manufactured by Jakks Pacific, emulates the 2600 with ten games inside an Atari-style joystick with composite-video output.
- The Atari Flashback 2 (2005) contains 40 games, with four additional programs unlocked by a cheat code. It uses a recreated chip based on original 2600 hardware, and is compatible with original 2600 controllers. It can be modified to play original 2600 cartridges.
- In 2017, Hyperkin announced the RetroN 77, a clone of the Atari 2600 that plays original cartridges instead of preinstalled games.[96]
- The Atari VCS (2021 console) can download and emulate 2600 games via an online store.[97]
- The Atari Flashback 12 Gold (2023) contains 130 games built-in.[98]
- The Atari 2600+ (2023) is a replica of the 2600 and is 20% smaller. The 2600+ includes support for original Atari 2600 and 7800 cartridges.[99]
- The Atari 7800+ (2024) is a smaller replica of the Atari 7800. It has similar features to the Atari 2600+, but its exterior encasing design pays homage to the Atari 7800.

Games

In 1977, nine games were released on cartridge to accompany the launch of the console: *Air-Sea Battle*, *Basic Math*, *Blackjack*, *Combat*, *Indy 500*, *Star Ship*, *Street Racer*, *Surround*, and *Video Olympics*.[100] *Indy 500* shipped with special "driving controllers", which are like paddles but rotate freely. *Street Racer* and *Video Olympics* use the standard paddle controllers. Atari, Inc. was the only developer for the first few years, releasing dozens of games.

Atari determined that box art featuring only descriptions of the game and screenshots would not be sufficient to sell games in retail stores, since most games were based on abstract principles and screenshots give little information. Atari outsourced box art to Cliff Spohn, who created visually interesting artwork with implications of dynamic movement intended to engage the player's imagination while staying true to the gameplay. Spohn's style became a standard for Atari when bringing in assistant artists, including Susan Jaekel, Rick Guidice, John Enright, and Steve Hendricks.[101] Spohn and Hendricks were the largest contributors to the covers in the Atari 2600 library. Ralph McQuarrie, a concept artist on the *Star Wars* series, was commissioned for one cover, the arcade conversion of *Vanguard*.[102] These artists generally conferred with the programmer to learn about the game before drawing the art.[101]

Cover art for Atari's games, such as this cover for *Combat* illustrated by Cliff Spohn, were aimed to capture the player's imagination and obviate the low fidelity of game graphics.

An Atari VCS port of the *Breakout* arcade game appeared in 1978. The original is in black and white with a colored overlay, and the home version is in color. In 1980, Atari released *Adventure*,[103] the first action-adventure game, and the first home game with a hidden Easter egg.

Rick Maurer's port of Taito's *Space Invaders*, released in 1980, was the first VCS game to sell a million copies—eventually doubling that[104] within a year[105] and totaling more than 6 million cartridges by 1983.[25] It became the killer app to drive console sales. Versions of Atari's own

Asteroids and *Missile Command* arcade games, released in 1981, were also major hits.

Launch games use 2K ROMs. 4K eventually became standard with games such as *Space Invaders*.[106] The VCS port of *Asteroids* (1981) was the first game for the system to use 8K via a bank switching technique between two 4K segments.[107] Some games, including Atari's ports of *Dig Dug* and *Crystal Castles*, are 16K cartridges.[106] One of the final games, *Fatal Run* (1990), doubled this to 32K.[108]

Many early VCS titles were able to display in both monochrome (black and white) and full color through the use of the "TV type" switch on the console. This allowed the VCS games to function on both monochrome and color televisions. However, beginning around the rebranding from "VCS" to "2600", support for black and white display modes diminished greatly, with most releases during this period only displaying in color and the TV type switch serving no function. Late releases such as *Secret Quest*, began using the TV type switch for gameplay functions, such as pausing.[109]

Two Atari-published games, both from the system's peak in 1982, *E.T. the Extra-Terrestrial*[110] and *Pac-Man*,[111] were rushed to market and are cited as factors in the video game crash of 1983.

A company named American Multiple Industries produced a number of pornographic games for the 2600 under the *Mystique Presents Swedish Erotica* label. The most notorious, *Custer's Revenge*, was protested by women's and Native American groups[112] because it depicted General George Armstrong Custer raping a bound Native American woman.[113] Atari sued American Multiple Industries in court over the release of the game.[114]

Legacy

The 2600 was so successful in the late 1970s and early 1980s that "Atari" was a synonym for the console in mainstream media and for video games in general.[115] Jay Miner directed the creation of the successors to the 2600's TIA chip—CTIA and ANTIC—which are central to the Atari 8-bit computers released in 1979 and later the Atari 5200 console.

"The Art of Video Games" (2012) at the Smithsonian American Art Museum, with *Pac-Man*, *Space Invaders*, *Pitfall!*, and *Combat*

The Atari 2600 was inducted into the National Toy Hall of Fame at The Strong in Rochester, New York, in 2007.[116] In 2009, the Atari 2600 was named the number two console of all time by IGN, which cited its remarkable role behind both the first video game boom and the video game crash of 1983, and called it "the console that our entire industry is built upon".[117]

In November 2021, the current incarnation of Atari announced three 2600 games to be published under "Atari XP" label: *Yars' Return*, *Aquaventure*, and *Saboteur*.[118] These were previously included in Atari Flashback consoles.[119]

A model of the Atari 2600 was released by Lego in 2022.[120] Included are the three games *Asteroid*, *Centipede*, and *Adventure*. Included is a minifigure with a bedroom designed from the 1980s.

Notes

a. 7,271,844 in 1982. 684,569 in 1983.[25] 37,063 in 1986. 61,685 in 1987. 3,885 in 1988. 34,374 in 1989. 2,166 in 1990.[26]
b. The exact date that the console hit store shelves is unknown and may have been as early as August 1977 or as late as October 1977.[3][4]

References

Citations

1. Montfort & Bogost 2009, p. 137.
2. "A Brief History of Game Console Warfare" (https://web.archive.org/web/20070509092239/http://images.businessweek.com/ss/06/10/game_consoles/source/3.htm). *BusinessWeek*. May 9, 2007. Archived from the original (http://images.businessweek.com/ss/06/10/game_consoles/source/3.htm) on May 9, 2007. Retrieved October 13, 2018.
3. "Games – Deja Vu Sets In" (https://www.atariarchive.org/wp-content/uploads/2021/05/Weekly-Television-Digest-1977-10-17.png). *Weekly Television Digest*. October 17, 1977. "...90,000 of its Video Computer System MPU Games have been shipped to all major market areas in past 2½ months"
4. Nick Montfort, Nick; Bogost, Ian (2009). *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 20. ISBN 978-0-262-01257-7. "...the Atari VCS was not sold until October 1977"
5. Weesner, Jason (January 11, 2007). "On Game Design: A History of Video Games" (https://web.archive.org/web/20071124040000/http://www.gamecareerguide.com/features/327/on_game_design_a_history_of_video_.php?page=3). Archived from the original (http://www.gamecareerguide.com/features/327/on_game_design_a_history_of_video_.php?page=3) on November 24, 2007. Retrieved November 13, 2007.
6. "Image of box with Pac-Man sticker" (http://www.mr-atari.com/afbeeldingen/systems/2600pacmanblue.jpg). Archived (https://web.archive.org/web/20080529194107/http://www.mr-atari.com/afbeeldingen/systems/2600pacmanblue.jpg) from the original on May 29, 2008. Retrieved September 4, 2008.
7. Chafkin, Max (April 1, 2009). "Nolan Busnell is Back in the Game" (https://www.inc.com/magazine/20090401/the-gamer.html). *Inc.* Archived (https://web.archive.org/web/20190114051424/https://www.inc.com/magazine/20090401/the-gamer.html) from the original on January 14, 2019. Retrieved September 11, 2018.
8. Fulton, Steve (November 6, 2007). "The History of Atari: 1971–1977" (https://www.gamasutra.com/view/feature/130414/the_history_of_atari_19711977.php?print=1). *Gamasutra*. Archived (https://web.archive.org/web/20180912021902/http://www.gamasutra.com/view/feature/130414/the_history_of_atari_19711977.php?print=1) from the original on September 12, 2018. Retrieved September 11, 2018.
9. Goldberg, Marty (January 4, 2008). "The 2600 Story – Part I" (https://web.archive.org/web/20131013220343/http://classicgaming.gamespy.com/View.php?view=Articles.Detail&id=401). *GameSpy*. Archived from the original (http://classicgaming.gamespy.com/View.php?view=Articles.Detail&id=401) on October 13, 2013. Retrieved September 11, 2018.
10. Goldberg, Marty; Vendel, Curt (2012). "Chapter 5" (https://archive.org/details/atariincbusiness0000gold/page/192/mode/2up). *Atari Inc: Business is Fun* (https://archive.org/details/atariincbusiness0000gold/). Sygyzy Press. ISBN 978-0985597405.
11. Bagnall, Brian (2011). *Commodore: A company on the edge*. Variant Press. ISBN 978-0973864960.

12. "MOS 6502 the second of a low cost high performance microprocessor family" (https://commons.wikimedia.org/wiki/File:MOS_6501_6502_Ad_Sept_1975.jpg). *Computer*. **8** (9). IEEE Computer Society: 38–39. September 1975. Bibcode:1975Compr...8i..38. (https://ui.adsabs.harvard.edu/abs/1975Compr...8i..38.). doi:10.1109/C-M.1975.219074 (https://doi.org/10.1109%2FC-M.1975.219074). Archived (https://web.archive.org/web/20210224154043/https://commons.wikimedia.org/wiki/File:MOS_6501_6502_Ad_Sept_1975.jpg) from the original on February 24, 2021. Retrieved September 28, 2020.
13. Decuir, Joe (July 2015). "Atari Video Computer System: Bring Entertainment Stories Home" (https://doi.org/10.1109%2FMCE.2015.2421572). *IEEE Consumer Electronics Magazine*: 59–66. doi:10.1109/MCE.2015.2421572 (https://doi.org/10.1109%2FMCE.2015.2421572).
14. Oral History of Chuck Peddle. Computer History Museum X7180.2014 https://www.computerhistory.org/collections/catalog/102739938 Archived (https://web.archive.org/web/20210611034012/https://www.computerhistory.org/collections/catalog/102739938) June 11, 2021, at the Wayback Machine https://www.youtube.com/watch?v=enHF9lMseP8 Archived (https://web.archive.org/web/20210611034818/https://www.youtube.com/watch?v=enHF9lMseP8) June 11, 2021, at the Wayback Machine time index: 0:59:10 and 1:19:24
15. Curt Vendel. "The Atari VCS Prototype" (http://www.atarimuseum.com/videogames/consoles/2600/proto2600.html). Atarimuseum.com. Retrieved March 30, 2014.
16. Kohler, Chris (March 19, 2009). "Racing the Beam: How Atari 2600's Crazy Hardware Changed Game Design" (https://www.wired.com/gamelife/2009/03/racing-the-beam/). *Wired*. Archived (https://web.archive.org/web/20100727184654/http://www.wired.com/gamelife/2009/03/racing-the-beam/) from the original on July 27, 2010. Retrieved August 9, 2010.
17. Edwards, Benj (January 22, 2015). "The Untold Story Of The Invention Of The Game Cartridge" (https://www.fastcompany.com/3040889/the-untold-story-of-the-invention-of-the-game-cartridge). *Fast Company*. Archived (https://web.archive.org/web/20190413014941/https://www.fastcompany.com/3040889/the-untold-story-of-the-invention-of-the-game-cartridge) from the original on April 13, 2019. Retrieved April 9, 2021.
18. Goll, Steve (October 1, 1984). "When The Magic Goes" (https://www.inc.com/magazine/19841001/136.html). *Inc*. Archived (https://web.archive.org/web/20210310075000/http://www.inc.com/magazine/19841001/136.html) from the original on March 10, 2021. Retrieved April 2, 2021.
19. Bunch, Kevin (2023). *Atari Archive Vol. I*. Limited Run Games. ISBN 978-1955183215.
20. Forster, Winnie (2005). *The encyclopedia of consoles, handhelds & home computers 1972–2005*. GAMEPLAN. p. 27. ISBN 3-00-015359-4.
21. Fulton, Steve (August 21, 2008). "Atari: The Golden Years – A History, 1978–1981" (https://web.archive.org/web/20181010011309/http://www.gamasutra.com/view/feature/3766/atari_the_golden_years__a_.php?print=1). *Gamasutra*. Archived from the original (http://www.gamasutra.com/view/feature/3766/atari_the_golden_years__a_.php?print=1) on October 10, 2018. Retrieved September 11, 2018.
22. Smith, Alexander (2019). *They Create Worlds: The Story of the People and Companies That Shaped the Video Game Industry, Vol I* (1 ed.). CRC Press. pp. 458, 466, 518. ISBN 9781138389908.
23. "The Definitive Space Invaders" (https://archive.org/stream/retro_gamer/RetroGamer_041#page/24/mode/2up). *Retro Gamer*. No. 41. Imagine Publishing. September 2007. pp. 24–33.
24. *Guinness World Records Gamer's Edition*. Guinness World Records. 2008. p. 24. ISBN 1-904994-21-0. "10 million – number of Atari 2600 consoles sold by 1982."
25. *Cartridge Sales Since 1980*. Atari Corp. Via "The Agony & The Ecstasy". *Once Upon Atari*. Episode 4. Scott West Productions. August 10, 2003. 23 minutes in.
26. Vendel, Curt (May 28, 2009). "Site News" (https://web.archive.org/web/20101206090952/http://www.atarimuseum.com/whatsnew/2009-MAY-28.html). *Atari Museum*. Archived from the original (http://www.atarimuseum.com/whatsnew/2009-MAY-28.html) on December 6, 2010. Retrieved November 27, 2021.

27. Hubner, John; Kistner, William F. (November 28, 1983). "The Industry: What went wrong at Atari?" (https://books.google.com/books?id=sy8EAAAAMBAJ&pg=PA151). *InfoWorld*. Vol. 5, no. 48. InfoWorld Media Group, Inc. pp. 151–158 (157). ISSN 0199-6649 (https://search.worldcat.org/issn/0199-6649). Archived (https://web.archive.org/web/20231020183655/https://books.google.com/books?id=sy8EAAAAMBAJ&pg=PA151#v=onepage&q&f=false) from the original on October 20, 2023. Retrieved December 1, 2021.
28. Bisson, Gisselle (August 6, 1984). "Atari: From Starting Black to Auction Block" (https://books.google.com/books?id=HC8EAAAAMBAJ&pg=PA52). *InfoWorld*. Vol. 6, no. 32. InfoWorld Media Group, Inc. p. 52. ISSN 0199-6649 (https://search.worldcat.org/issn/0199-6649).
29. Perry, Tekla; Wallich, Paul (March 1983). "Design case history: the Atari Video Computer System". *IEEE Spectrum*. **20** (3): 45, 50, 51. doi:10.1109/MSPEC.1983.6369841 (https://doi.org/10.1109%2FMSPEC.1983.6369841). S2CID 2840318 (https://api.semanticscholar.org/CorpusID:2840318).
30. "Technology: The games that aliens play" (https://books.google.com/books?id=ainC3-wuz_kC&pg=PA782). *New Scientist*. Vol. 88, no. 1232–1233. Reed Business Information. December 18, 1980. p. 782. ISSN 0262-4079 (https://search.worldcat.org/issn/0262-4079).
31. "EG Goes Continental: Europe Joins the Game World" (https://archive.org/details/ElectronicGames/Electronic%20Games%20Issue%2023%20%28January%201984%29/page/n46). *Electronic Games*. Vol. 2, no. 23. January 1984. pp. 46–7. Retrieved December 2, 2021.
32. "Guerre Dans Le Salon" (https://abandonware-magazines.org/affiche_mag.php?mag=48&num=2280&album=oui) [War in the Living Room]. *Science & Vie Micro* (in French). No. 67. December 1989. pp. 126–8. Archived (https://web.archive.org/web/20211208070551/https://abandonware-magazines.org/affiche_mag.php?mag=48&num=2280&album=oui) from the original on December 8, 2021. Retrieved December 8, 2021.
33. Packwood, Lewis (July 18, 2023). "40 years of the Nintendo Famicom – the console that changed the games industry | Games | The Guardian" (https://www.theguardian.com/games/2023/jul/18/40-years-of-the-nintendo-famicom-the-console-that-changed-the-games-industry). *amp.theguardian.com*. Archived (https://web.archive.org/web/20230718133759/https://amp.theguardian.com/games/2023/jul/18/40-years-of-the-nintendo-famicom-the-console-that-changed-the-games-industry) from the original on July 18, 2023. Retrieved July 18, 2023.
34. "Game Club Locations" (https://www.atarimania.com/catalogues/hi_res/cat113004.jpg).
35. "Atari New Zealand-Monaco 2600 Games" (https://www.atarimania.com/list_games_atari-2600-vcs-atari-new-zealand-monaco_publisher_2559_2_G.html).
36. "A History of WCI Games / Atari / Atari Games / Atari Holdings" (https://mcurrent.name/atarihistory/wci_games.html).
37. Barton, Matt; Loguidice, Bill (February 28, 2008). "A History of Gaming Platforms: Atari 2600 Video Computer System/VCS" (https://www.gamedeveloper.com/design/a-history-of-gaming-platforms-atari-2600-video-computer-system-vcs). *Gamasutra*. Archived (https://web.archive.org/web/20140513034048/http://www.gamasutra.com/view/feature/131956/a_history_of_gaming_platforms_.php?print=1) from the original on May 13, 2014. Retrieved September 11, 2018.
38. Reeves, Ben (February 26, 2013). "Activisionaries: How Four Programmers Changed The Game Industry" (https://www.gameinformer.com/b/features/archive/2013/02/26/activisionaries-how-four-programmers-changed-the-game-industry-forever.aspx). *Game Informer*. Archived (https://web.archive.org/web/20210127015005/https://www.gameinformer.com/b/features/archive/2013/02/26/activisionaries-how-four-programmers-changed-the-game-industry-forever.aspx) from the original on January 27, 2021. Retrieved April 2, 2021.
39. Flemming, Jeffrey. "The History Of Activision" (https://www.gamedeveloper.com/business/the-history-of-activision). *Gamasutra*. Archived (https://web.archive.org/web/20161220122651/http://www.gamasutra.com/view/feature/1537/the_history_of_activision.php?print=1) from the original on December 20, 2016. Retrieved December 30, 2016.
40. "Atari Sues to k.o. Competition" (https://books.google.com/books?id=ZD4EAAAAMBAJ&pg=PP1). *InfoWorld*. Vol. 2, no. 13. August 4, 1980. p. 1. Archived (https://web.archive.org/web/20231020183642/https://books.google.com/books?id=ZD4EAAAAMBAJ&pg=PP1#v=onepage&q&f=false) from the original on October 20, 2023. Retrieved March 30, 2014.

41. John Markoff (December 21, 1981). "Atari attempts to gobble software competition" (https://books.google.com/books?id=ej0EAAAAMBAJ&pg=PA1). *InfoWorld*. Vol. 3, no. 31. p. 1. Archived (https://web.archive.org/web/20231020183658/https://books.google.com/books?id=ej0EAAAAMBAJ&pg=PA1#v=onepage&q&f=false) from the original on October 20, 2023. Retrieved March 30, 2014.
42. Mark P. Wolf (2012). *Encyclopedia of Video Games: The Culture, Technology, and Art of Gaming* (https://books.google.com/books?id=deBFx7QAwsQC&q=atari+activision+1981&pg=PA6). Vol. 2. ABC-CLIO. p. 6. ISBN 9780313379369. Archived (https://web.archive.org/web/20231020183636/https://books.google.com/books?id=deBFx7QAwsQC&q=atari+activision+1981&pg=PA6) from the original on October 20, 2023. Retrieved March 30, 2014.
43. Rosenberg, Ron (December 11, 1982). "Competitors Claim Role in Warner Setback" (https://web.archive.org/web/20121107073803/http://pqasb.pqarchiver.com/boston/access/666912291.html?FMT=ABS&FMTS=ABS:FT&type=current&date=Dec+11%2C+1982&author=Ron+Rosenberg+Globe+Staff&pub=Boston+Globe+%28pre-1997+Fulltext%29&desc=COMPETITORS+CLAIM+ROLE+IN+WARNER+SETBACK&pqatl=google). *The Boston Globe*. p. 1. Archived from the original (https://pqasb.pqarchiver.com/boston/access/666912291.html?FMT=ABS&FMTS=ABS:FT&type=current&date=Dec+11%2C+1982&author=Ron+Rosenberg+Globe+Staff&pub=Boston+Globe+%28pre-1997+Fulltext%29&desc=COMPETITORS+CLAIM+ROLE+IN+WARNER+SETBACK&pqatl=google) on November 7, 2012. Retrieved March 6, 2012.
44. Gallager, Scott; Ho Park, Seung (February 2002). "Innovation and Competition in Standard-Based Industries: A Historical Analysis of the U.S. Home Video Game Market". *IEEE Transactions on Engineering Management*. **49** (1). IEEE Technology and Engineering Management Society: 67–82. Bibcode:2002ITEM...49...67G (https://ui.adsabs.harvard.edu/abs/2002ITEM...49...67G). doi:10.1109/17.985749 (https://doi.org/10.1109%2F17.985749).
45. Bruck, *Master of the Game: Steve Ross and the Creation of Time Warner*, pp. 179–180
46. Buchanan, Levi (August 26, 2008). "IGN: Top 10 Best-Selling Atari 2600 Games" (http://retro.ign.com/articles/903/903024p1.html). *IGN*. Archived (https://web.archive.org/web/20110726161836/http://retro.ign.com/articles/903/903024p1.html) from the original on July 26, 2011. Retrieved September 21, 2009.
47. Crawford, Chris (1991). "The Atari Years". *The Journal of Computer Game Design*. Vol. 5.
48. Mikkelson, Barbara; Mikkelson, David P (May 10, 2011). "Buried Atari Cartridges" (http://www.snopes.com/business/market/atari.asp). Snopes.com. Retrieved September 10, 2011.
49. Ernkvist, Mirko (2008). "Down many times, but still playing the game: Creative destruction and industry crashes in the early video game industry 1971–1986". In Gratzer, Karl; Stiefel, Dieter (eds.). *History of Insolvency and Bankruptcy*. Södertörns högskola. pp. 161–191. ISBN 978-91-89315-94-5.
50. "Atari Parts Are Dumped" (https://www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html). *The New York Times*. September 28, 1983. Archived (https://web.archive.org/web/20170209222223/http://www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html) from the original on February 9, 2017. Retrieved May 20, 2018.
51. Poeter, Damon (May 31, 2014). "Atari's Buried E.T. Games Up for Sale" (https://www.pcmag.com/news/ataris-buried-et-games-up-for-sale). *PC Magazine*. Archived (https://web.archive.org/web/20210118140812/https://www.pcmag.com/news/ataris-buried-et-games-up-for-sale) from the original on January 18, 2021. Retrieved September 29, 2020.
52. Kent, Steven (2001). *The Ultimate History of Video Games* (https://archive.org/details/ultimatehistoryofvideogamesrevisited/). Three Rivers Press. ISBN 0-7615-3643-4.
53. Sange, David E. (July 3, 1984). "Warner Sells Atari To Tramiel" (https://www.nytimes.com/1984/07/03/business/warner-sells-atari-to-tramiel.html). *The New York Times*. pp. Late City Final Edition, Section D, Page 1, Column 6, 1115 words. Archived (https://web.archive.org/web/20161118132248/http://www.nytimes.com/1984/07/03/business/warner-sells-atari-to-tramiel.html) from the original on November 18, 2016.
54. Holyoak, Craig (May 30, 1984). "Here are ColecoVision's jewels" (https://news.google.com/newspapers?id=PqZNAAAAIBAJ&pg=7081%2C6575510). *Deseret News*. pp. 4 WV. Archived (https://web.archive.org/web/20230510234406/https://news.google.com/newspapers?id=PqZNAAAAIBAJ&pg=7081,6575510) from the original on May 10, 2023. Retrieved January 10, 2015.

55. "Atari 2600 1986 Commercial 'The Fun is Back' " (https://www.youtube.com/watch?v=m752qiGqSm4). *YouTube*. December 21, 2011. Archived (https://web.archive.org/web/20190817092507/https://www.youtube.com/watch?v=m752qiGqSm4&gl=US&hl=en) from the original on August 17, 2019. Retrieved May 20, 2018.
56. "Secret Quest" (http://www.atarimania.com/game-atari-2600-vcs-secret-quest_7464.html). *Atari Mania*. Archived (https://web.archive.org/web/20180520124517/http://www.atarimania.com/game-atari-2600-vcs-secret-quest_7464.html) from the original on May 20, 2018. Retrieved May 20, 2018.
57. "Fatal Run" (http://www.atarimania.com/game-atari-2600-vcs-fatal-run_16746.html). *Atari Mania*. Archived (https://web.archive.org/web/20180520124402/http://www.atarimania.com/game-atari-2600-vcs-fatal-run_16746.html) from the original on May 20, 2018. Retrieved May 20, 2018.
58. "Where every home game turns out to be a winter" (https://www.newspapers.com/clip/18547690/the-guardian/). *The Guardian*. March 6, 1986. p. 15. Archived (https://web.archive.org/web/20211003220523/https://www.newspapers.com/clip/18547690/the-guardian/) from the original on October 3, 2021. Retrieved October 3, 2021.
59. Pollack, Andrew (September 27, 1986). "Video Games, Once Zapped, In Comeback" (https://www.nytimes.com/1986/09/27/business/video-games-once-zapped-in-comeback.html). *The New York Times*. A1. Archived (https://web.archive.org/web/20210606050154/https://www.nytimes.com/1986/09/27/business/video-games-once-zapped-in-comeback.html) from the original on June 6, 2021. Retrieved November 2, 2015.
60. "Atari triumphs in Index". *CTW* (362): 4.
61. *Бурный рост приводит к аномалиям* (https://www.kommersant.ru/doc/44974), April 14, 1993
62. "Atari 2600". *Bajtek* (4/1992): 14.
63. *Video Computer Game Console (Rambo hry)* (https://www.retrobajty.cz/video-computer-game-console-rambo-hry/), February 16, 2020
64. "Atari Benelux Timeline – Atarimuseum.nl" (https://atarimuseum.nl/history-of-atari-benelux/). Archived (https://web.archive.org/web/20230516214620/https://atarimuseum.nl/history-of-atari-benelux/) from the original on May 16, 2023. Retrieved May 16, 2023.
65. "When Pac Ruled the Earth" (https://archive.org/details/Electronic_Gaming_Monthly_62/page/n17/mode/2up). *Electronic Gaming Monthly*. No. 62. EGM Media, LLC. September 1994. p. 18.
66. Stewart, Keith (February 24, 2017). "10 most influential games consoles – in pictures" (https://www.theguardian.com/technology/gallery/2017/feb/24/10-most-influential-games-consoles-in-pictures). *The Guardian*. Archived (https://web.archive.org/web/20180917215537/https://www.theguardian.com/technology/gallery/2017/feb/24/10-most-influential-games-consoles-in-pictures) from the original on September 17, 2018. Retrieved September 17, 2018.
67. Montfort & Bogost 2009, p. 25.
68. Montfort & Bogost 2009, p. 26 The cartridge connector's 24 pins are allocated to one supply-voltage line, two ground lines, 8 data lines, and 13 address lines. The uppermost address line is used as a so-called chip select for the cartridge's ROM chip, however, leaving only 12 address lines for the chip's game program. Thus, without special "hardware tricks" built into the cartridge, an Atari 2600 game can occupy a maximum address space of 4 KB.
69. Montfort & Bogost 2009, pp. 25–26.
70. Montfort & Bogost 2009, p. 88.
71. Kohler, Chris (March 13, 2009). "Racing the Beam: How Atari 2600's Crazy Hardware Changed Game Design" (https://www.wired.com/2009/03/racing-the-beam/). *Wired*. Archived (https://web.archive.org/web/20140712094639/https://www.wired.com/2009/03/racing-the-beam/) from the original on July 12, 2014.
72. Arceneaux, Noah (February 19, 2010). "Review Article: Game theories, technologies and techniques of play". *New Media & Society*. **12** (1): 161–166. doi:10.1177/1461444809350996 (https://doi.org/10.1177%2F1461444809350996). S2CID 220595570 (https://api.semanticscholar.org/CorpusID:220595570).
73. Wright, Steve (December 3, 1979), *Stella Programmer's Guide*

74. Montfort & Bogost 2009.
75. Atari 2600 "TIA color chart" (http://www.biglist.com/lists/stella/archives/200109/msg00285.html) Archived (https://web.archive.org/web/20110707234118/http://www.biglist.com/lists/stella/archives/200109/msg00285.html) July 7, 2011, at the Wayback Machine
76. Current, Michael A. "A History of WCI Games / Atari / Atari Games / Atari Holdings" (http://mcurrent.name/atarihistory/wci_games.html). Archived (https://web.archive.org/web/20180525062845/http://mcurrent.name/atarihistory/wci_games.html) from the original on May 25, 2018. Retrieved May 24, 2018.
77. "United States Patent 4,349,708" (https://patentimages.storage.googleapis.com/pdfs/1ae0e2937613724a0e9f/US4349708.pdf) (PDF). September 14, 1982. Archived (https://ghostarchive.org/archive/20221009/https://patentimages.storage.googleapis.com/pdfs/1ae0e2937613724a0e9f/US4349708.pdf) (PDF) from the original on October 9, 2022.
78. Hruschak, PJ (April 1, 2008). "Gamertell Review: Wico's Command Control Joystick" (https://web.archive.org/web/20160403210511/http://www.technologytell.com/gaming/31885/gamertell-review-wicos-command-control-joystick/). *Technologytell.com*. Archived from the original (http://www.technologytell.com/gaming/31885/gamertell-review-wicos-command-control-joystick/) on April 3, 2016.
79. "AtariAge – Atari 2600 – Controllers – Remote Control Joysticks" (https://atariage.com/controller_page.php?SystemID=2600&ControllerID=27). *atariage.com*. Archived (https://web.archive.org/web/20171011122525/http://atariage.com/controller_page.php?SystemID=2600&ControllerID=27) from the original on October 11, 2017. Retrieved February 18, 2019.
80. "AtariAge – Atari 2600 – Controllers – Kid's Controller" (https://atariage.com/controller_page.php?SystemID=2600&ControllerID=6). *atariage.com*. Archived (https://web.archive.org/web/20190518115901/https://atariage.com/controller_page.php?SystemID=2600&ControllerID=6) from the original on May 18, 2019. Retrieved February 18, 2019.
81. Current, Michael D. "Atari 8-Bit Computers FAQ" (http://www.faqs.org/faqs/atari-8-bit/faq/section-102.html). Archived (https://web.archive.org/web/20180828161141/http://www.faqs.org/faqs/atari-8-bit/faq/section-102.html) from the original on August 28, 2018. Retrieved May 24, 2018.
82. "The Atari "Graduate" Computer CX-3000" (http://www.atarimuseum.com/videogames/consoles/2600/a3000.html). *Atari Museum*. Retrieved April 22, 2019.
83. "The Spectravideo "Compumate" Keyboard" (http://www.atarimuseum.com/videogames/consoles/2600/compumat.html). *Atari Museum*. Archived (https://web.archive.org/web/20191126222146/http://www.atarimuseum.com/videogames/consoles/2600/compumat.html) from the original on November 26, 2019. Retrieved June 23, 2019.
84. Beaudoin, Dave (May 31, 2016). "You Can Judge a 2600 By Its Cover" (https://www.digitalgamemuseum.org/you-can-judge-a-2600-by-its-cover/). *Digital Game Museum*. Archived (https://web.archive.org/web/20180911225626/https://www.digitalgamemuseum.org/you-can-judge-a-2600-by-its-cover/) from the original on September 11, 2018. Retrieved September 11, 2018.
85. Yarusso, Albert. "Atari 2600 Catalog: Telegames" (https://atariage.com/catalog_overview.php?SystemID=2600&CatalogID=21). *AtariAge*. Archived (https://web.archive.org/web/20200726103858/https://atariage.com/catalog_overview.php?SystemID=2600&CatalogID=21) from the original on July 26, 2020. Retrieved August 31, 2010.
86. Grasso, Michael (September 19, 2017). "The Sears Tele-Games Video Arcade (1977) and the Coleco Gemini (1982)" (https://wearethemutants.com/2017/09/19/the-sears-tele-games-video-arcade-1977-and-the-coleco-gemini-1982/). We Are the Mutants. Archived (https://web.archive.org/web/20200722033027/https://wearethemutants.com/2017/09/19/the-sears-tele-games-video-arcade-1977-and-the-coleco-gemini-1982/) from the original on July 22, 2020. Retrieved July 22, 2020.
87. "Sears Ad" (https://www.newspapers.com/article/daily-record/123038461/). *Daily Record*. Sears. December 8, 1982. p. 9. Archived (https://web.archive.org/web/20230417181106/https://www.newspapers.com/article/daily-record/123038461/) from the original on April 17, 2023. Retrieved April 17, 2023.

88. Yarusso, Albert. "Atari 2600 – Sears – Picture Label Variation" (https://atariage.com/label_page.php?LabelID=10). AtariAge. Archived (https://web.archive.org/web/20150929042236/http://atariage.com/label_page.php?LabelID=10) from the original on September 29, 2015. Retrieved October 7, 2007.
89. Vendel, Curt. "The Atari 2800 System" (http://arquivo.pt/wayback/20160523171925/http://www.atarimuseum.com/videogames/consoles/2800/A2800.html). *atarimuseum.com*. Archived from the original (http://www.atarimuseum.com/videogames/consoles/2800/A2800.html) on May 23, 2016.
90. "第2回：TVゲームグラフティー[～1984年日本編] テレビゲーム・ファーストジェネレーション - コミニー[Cominy] / ブログ" (https://web.archive.org/web/20130126142952/https://www.famitsu.com/guc/blog/tvgame/11475.html). *www.famitsu.com*. Archived from the original (https://www.famitsu.com/guc/blog/tvgame/11475.html) on January 26, 2013. Retrieved December 11, 2025.
91. "Atari 7800 and 2600" (https://atariage.com/forums/topic/233960-7800-2600-jr-ad-in-sears-1988-catalog/). *Sears Catalog*. 1988. Archived (https://web.archive.org/web/20200715174649/https://atariage.com/forums/topic/233960-7800-2600-jr-ad-in-sears-1988-catalog/) from the original on July 15, 2020. Retrieved May 20, 2018.
92. "2600 Consoles and Clones" (https://atariage.com/2600/archives/consoles.html). Archived (https://web.archive.org/web/20071006124404/http://www.atariage.com/2600/archives/consoles.html) from the original on October 6, 2007. Retrieved August 2, 2018.
93. retroplace (1983). "Atari 2600 Jr. | Atari 2600" (https://www.retroplace.com/en/games/180313--atari-2600-jr). *retroplace.com*. Archived (https://web.archive.org/web/20220827204231/https://www.retroplace.com/en/games/180313--atari-2600-jr) from the original on August 27, 2022. Retrieved August 27, 2022.
94. "The Atari CX-2000 Prototype" (http://www.atarimuseum.com/videogames/consoles/2000/a2000.html). www.atarimuseum.com. Retrieved February 18, 2019.
95. "The Atari 3200: Super-Stella/Sylvia" (http://www.atarimuseum.com/videogames/consoles/sylvia/sylvia.html). AtarL Museum. Retrieved July 6, 2009.
96. "Atari 2600 fans get the revival console they deserve" (https://www.engadget.com/2017/06/13/atari-2600-retron-77/). June 14, 2017. Archived (https://web.archive.org/web/20170805130403/https://www.engadget.com/2017/06/13/atari-2600-retron-77/) from the original on August 5, 2017. Retrieved August 20, 2018.
97. Bonifac, Igor (June 15, 2021). "Atari VCS is now available to buy" (https://www.engadget.com/atari-vcs-now-available-193329467.html). *Engadget*. Archived (https://web.archive.org/web/20210615194626/https://www.engadget.com/atari-vcs-now-available-193329467.html) from the original on June 15, 2021. Retrieved June 15, 2021.
98. "Atari Flashback 12 Gold Console" (https://www.atgames.us/products/atari-flashback-12-gold-console). *AtGames E-Store*. Archived (https://web.archive.org/web/20240916163912/https://www.atgames.us/products/atari-flashback-12-gold-console) from the original on September 16, 2024. Retrieved September 11, 2024.
99. Nam, Michael (September 30, 2023). "Atari 2600+ sees its future in retro gaming | CNN Business" (https://www.cnn.com/2023/09/30/tech/atari-2600-plus-wade-rosen-nintendo-playstation/index.html). *CNN*. Archived (https://web.archive.org/web/20231001011901/https://www.cnn.com/2023/09/30/tech/atari-2600-plus-wade-rosen-nintendo-playstation/index.html) from the original on October 1, 2023. Retrieved October 20, 2023.
100. "Video Games Console Library Atari VCS Launch Titles" (http://www.videogameconsolelibrary.com/pg70-2600.htm#page=games). Archived (https://web.archive.org/web/20170808211321/http://www.videogameconsolelibrary.com/pg70-2600.htm#page=games) from the original on August 8, 2017. Retrieved September 8, 2017.
101. Webster, Andrew (September 19, 2013). "How Atari Box Art Turned 8-bit Games Into Virtual Wonderlands" (https://www.theverge.com/2013/9/19/4716444/how-atari-box-art-turned-8-bit-games-into-virtual-wonderlands). *The Verge*. Archived (https://web.archive.org/web/20210419043337/https://www.theverge.com/2013/9/19/4716444/how-atari-box-art-turned-8-bit-games-into-virtual-wonderlands) from the original on April 19, 2021. Retrieved April 4, 2021.

102. Wanserski, Nick (February 22, 2017). "How fantastical Atari box art taught the world what makes video games special" (https://www.avclub.com/how-fantastical-atari-box-art-taught-the-world-what-mak-1798258156). *The A.V. Club*. Archived (https://web.archive.org/web/20201113142038/https://games.avclub.com/how-fantastical-atari-box-art-taught-the-world-what-mak-1798258156) from the original on November 13, 2020. Retrieved April 4, 2021.
103. Robinett, Warren. "Adventure for the Atari 2600 Video Game Console" (http://www.warrenrobinett.com/adventure/index.html). Archived (https://web.archive.org/web/20071025085250/http://www.warrenrobinett.com/adventure/index.html) from the original on October 25, 2007. Retrieved October 11, 2007.
104. Kevin Day, Patrick (January 22, 2013). "Atari bankruptcy: Remembering the 2600, 7 bestselling games" (http://herocomplex.latimes.com/games/atari-bankruptcy-remembering-the-2600-7-bestselling-games/#/0). *Hero Complex*. Archived (https://web.archive.org/web/20130616181055/http://herocomplex.latimes.com/games/atari-bankruptcy-remembering-the-2600-7-bestselling-games/#/0) from the original on June 16, 2013. Retrieved June 27, 2018.
105. Hutcheon, Stephen (June 7, 1983). "The video games boom has yet to come" (https://news.google.com/newspapers?id=fC5VAAAAIBAJ&pg=4131,3188851). *The Age*. Archived (https://web.archive.org/web/20210414070311/https://news.google.com/newspapers?id=fC5VAAAAIBAJ&pg=4131,3188851) from the original on April 14, 2021. Retrieved February 22, 2012.
106. Horton, Kevin (1996). "Info about cart sizes and bankswitching methods" (https://web.archive.org/web/20210223035123/http://www.classic-games.com/atari2600/bankswitch.html). Archived from the original (http://www.classic-games.com/atari2600/bankswitch.html) on February 23, 2021. Retrieved November 22, 2018.
107. Grand, Joe (2004). *Hardware Hacking* (https://archive.org/details/hardwarehackingh00gran). Syngress Publishing. ISBN 978-1932266832.
108. "Atari 2600 VCS Fatal Run : scans, dump, download, screenshots, ads, videos, catalog, instructions, roms" (http://www.atarimania.com/game-atari-2600-vcs-fatal-run_16746.html). *www.atarimania.com*. Archived (https://web.archive.org/web/20180520124402/http://www.atarimania.com/game-atari-2600-vcs-fatal-run_16746.html) from the original on May 20, 2018. Retrieved May 20, 2018.
109. "Nerdly Pleasures: The Forgotten Switch : The Atari 2600's B&W/Color Switch" (https://nerdlypleasures.blogspot.com/2015/03/the-forgotten-switch-atari-2600s-b.html). *Nerdly Pleasures*. March 22, 2015. Archived (https://web.archive.org/web/20240128053245/http://nerdlypleasures.blogspot.com/2015/03/the-forgotten-switch-atari-2600s-b.html) from the original on January 28, 2024. Retrieved January 27, 2024.
110. Parish, Jeremy. "Classic 1UP.Com's Essential 50" (https://web.archive.org/web/20120725011314/http://www.1up.com/features/the-essential-50). 1UP.Com. Archived from the original (http://www.1up.com/do/feature?cId=3116290) on July 25, 2012. Retrieved November 8, 2007.
111. Vendel, Curt. "The Atari 2600 Video Computer System" (http://www.atarimuseum.com/videogames/consoles/2600/atari2600.html). *The Atari Museum*. Retrieved November 13, 2007.
112. "AGH – Third Party Profile: Mystique" (http://www.atarihq.com/2678/3party/mystique.html). AtariHQ.com. Archived (https://web.archive.org/web/20081207035221/http://www.atarihq.com/2678/3party/mystique.html) from the original on December 7, 2008. Retrieved July 6, 2009.
113. Fragmaster. "Custer's Revenge" (https://web.archive.org/web/20090416185618/http://classicgaming.gamespy.com/View.php?view=GameMuseum.Detail&id=282). Classic Gaming. Archived from the original (http://classicgaming.gamespy.com/View.php?view=GameMuseum.Detail&id=282) on April 16, 2009. Retrieved July 6, 2009.
114. Gonzalez, Lauren. "When Two Tribes Go to War: A History of Video Game Controversy" (http://www.gamespot.com/features/6090892/p-3.html). *GameSpot*. p. 3. Archived (https://web.archive.org/web/20090709233617/http://www.gamespot.com/features/6090892/p-3.html) from the original on July 9, 2009. Retrieved July 6, 2009.
115. Edgers, Geoff (March 8, 2009). "Atari and the deep history of video games" (http://www.boston.com/bostonglobe/ideas/articles/2009/03/08/a_talk_with_nick_montfort/). *The Boston Globe*. Archived (https://web.archive.org/web/20090416221945/http://www.boston.com/bostonglobe/ideas/articles/2009/03/08/a_talk_with_nick_montfort/) from the original on April 16, 2009. Retrieved April 13, 2009.

116. Farhad Manjoo (November 10, 2007). "The Atari 2600 makes the Toy Hall of Fame" (http://www.salon.com/2007/11/09/toy_hall_of_fame/). Archived (https://web.archive.org/web/20151208145307/http://www.salon.com/2007/11/09/toy_hall_of_fame/) from the original on December 8, 2015. Retrieved November 29, 2015.
117. "Atari 2600 is number 2" (https://ign.com/top-25-consoles/2.html). *IGN*. Archived (https://web.archive.org/web/20110929175158/http://www.ign.com/top-25-consoles/2.html) from the original on September 29, 2011. Retrieved September 22, 2011.
118. Gardner, Matt (November 17, 2021). "Atari 2600 Gets Three New Releases, 28 Years After Discontinuation" (https://www.forbes.com/sites/mattgardner1/2021/11/17/atari-2600-gets-three-new-releases-28-years-after-discontinuation/?sh=520b5a1273ea). *Forbes*. Archived (https://web.archive.org/web/20211128122627/https://www.forbes.com/sites/mattgardner1/2021/11/17/atari-2600-gets-three-new-releases-28-years-after-discontinuation/?sh=520b5a1273ea) from the original on November 28, 2021. Retrieved November 28, 2021.
119. Fahey, Mike (November 17, 2021). "Atari's New Collectible Game Cartridges Off To A Rocky Start" (https://kotaku.com/atari-s-new-collectible-game-cartridges-off-to-a-rocky-1848075679). *Kotaku*. Archived (https://web.archive.org/web/20211128123156/https://kotaku.com/atari-s-new-collectible-game-cartridges-off-to-a-rocky-1848075679) from the original on November 28, 2021. Retrieved November 28, 2021.
120. Reed, Chris (August 1, 2022). "Atari 2600 LEGO Set Is Now Available" (https://www.ign.com/articles/atari-2600-lego-set-release-date-announcement). IGN. Retrieved November 13, 2024.

General bibliography

- Tim Lapetino (2016). "Industrial Design". *Art of Atari* (https://web.archive.org/web/20170912071135/http://artofatari.com/). Dynamite. ISBN 978-1-5241-0103-9. Archived from the original (http://www.artofatari.com/) on September 12, 2017. Retrieved September 11, 2017.
- Montfort, Nick & Bogost, Ian (2009). *Racing the Beam: The Atari Video Computer System* (https://archive.org/details/racingbeamatariv00mont_656). MIT Press. ISBN 978-0-262-01257-7.
- Perry, Tekla; Wallich, Paul (March 1983). "Design case history: The Atari Video Computer System". *IEEE Spectrum*.

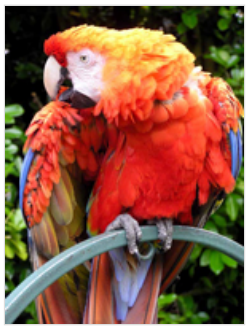
External links

- A history of the Atari VCS/2600 (https://thedoteaters.com/?bitstory=console/vcs2600)
- Inside the Atari 2600 (http://www.hardwaresecrets.com/article/Inside-the-Atari-2600/)
- Hardware and prototypes (http://www.atarimuseum.com/videogames/consoles/2600menu/2600menu.htm) at the Atari Museum

List of video game console palettes

This is a **full list of color palettes** for notable video game console hardware.

For each unique palette, an image color test chart and sample image (original True color version follows) rendered with that palette (without dithering unless otherwise noted) are given. The test chart shows the full 8 bit, 256 levels of the red, green and blue (RGB) primary colors and cyan, magenta and yellow complementary colors, along with a full 8 bit, 256 levels grayscale. Gradients of full saturation of intermediate colors (orange, yellow-green, green-cyan, blue-cyan, violet, and red-magenta), and a full hue spectrum are also present. Color charts are not gamma corrected.

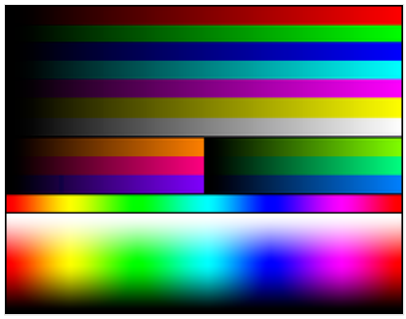


24-bit palette sample image

Atari

Atari 2600

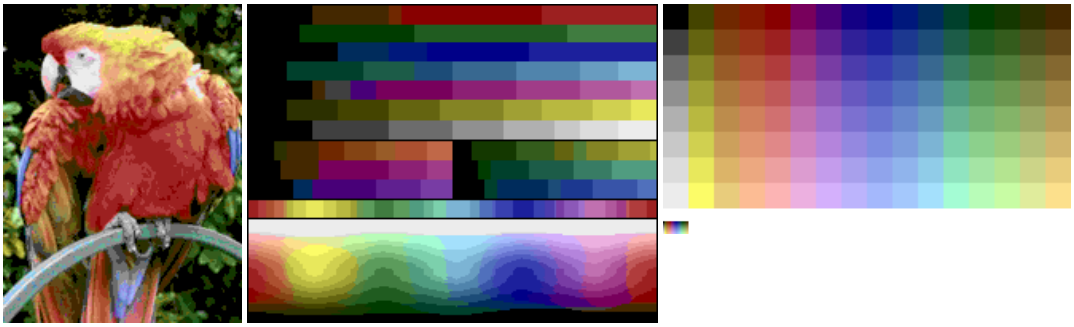
The **Television Interface Adaptor**[1] (**TIA**) is the custom computer chip that generated graphics for the Atari Video Computer System game console. It generated different YIQ color palettes dependent on the television signal format used.[2]



24 bit Palette Color Test Chart

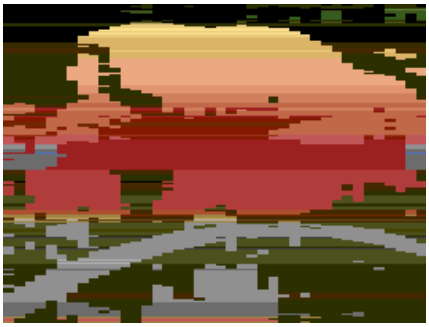
NTSC

With the NTSC format, a 128-color palette was available, built based on eight luma values and 15 combinations of I and Q chroma signals (plus I = Q = 0 for a pure grayscale):



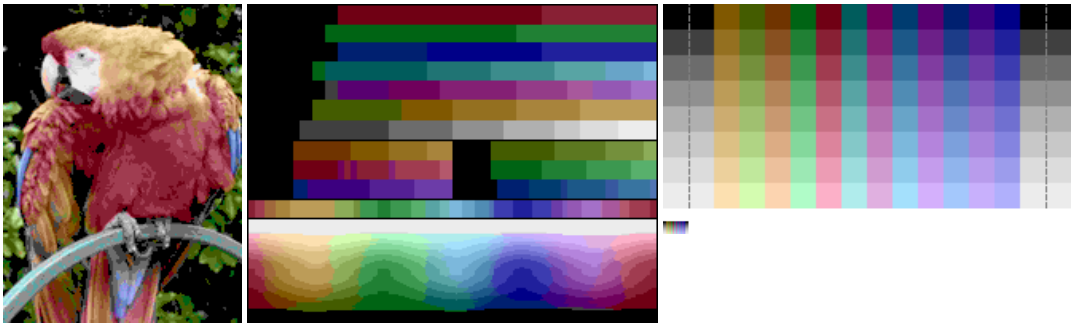
	Hue																	
Luma	Decimal	>	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	v	Hex	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0, 1	0, 1																
	2, 3	2, 3																
	4, 5	4, 5																
	6, 7	6, 7																
	8, 9	8, 9																
	10, 11	A, B																
	12, 13	C, D																
	14, 15	E, F																

The above image assumes there is no limit on the number of colors per scan line. With the system's actual color restrictions (and proper change in aspect ratio), the same image would look very different:



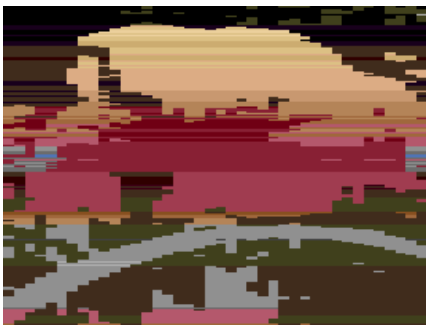
PAL

With the PAL format, a 104-color palette was available. 128-color entries could still be selected, but due to the different color encoding scheme, 32 color entries results in the same eight shades of gray:

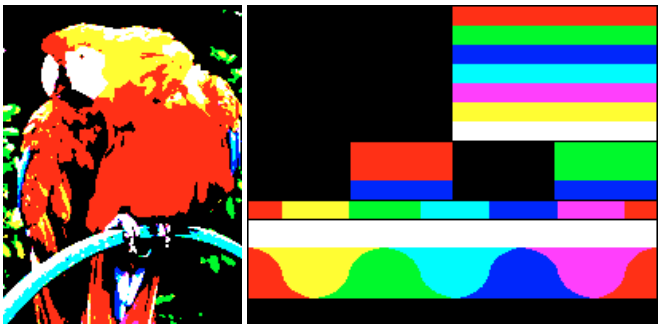


	Hue																
Luma	**Deci.**	**>**	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	v	**Hex.**	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
	0, 1	0, 1																
	2, 3	2, 3																
	4, 5	4, 5																
	6, 7	6, 7																
	8, 9	8, 9																
	10, 11	A, B																
	12, 13	C, D																
	14, 15	E, F																

The above image assumes there is no limit on the number of colors per scanline. With the system's actual color restrictions (and proper change in aspect ratio), the same image would look very different:



SECAM



The SECAM palette was reduced to a simple 3-bit RGB, containing only 8 colors (black, blue, red, magenta, green, cyan, yellow and white) by mapping the luma values:

Decimal	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hexadecimal											A	B	C	D	E	F
Color																

Modern Hardware-Assisted Implementation

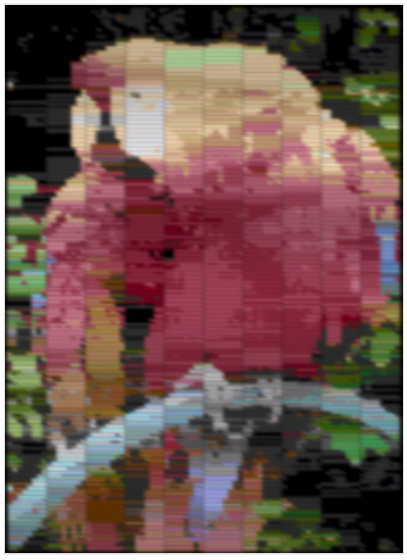
The MovieCart (by Rob Bairos) is a modern (2022) cartridge that implements sophisticated display techniques that allow more realistic images to be displayed on the Atari 2600. The MovieCart format offers 80 pixels horizontally, and 192 (NTSC) or 242 (PAL, SECAM) scanlines of resolution. Each line effectively has 10 multiplexed sprites displayed in groups of 5 on alternating frames. Each of the sprites can have its own colour. A sophisticated encoding algorithm allows arbitrary images to be displayed using all the colours available on the console, with some limitations related to colour changes. The encoder dithers and optimises colour usage to minimise errors in image reproduction.

Note that the original Atari 2600 hardware is still being used to display these images; the 6507 microprocessor is retrieving colours from memory, and the TIA chip is still producing the video data.

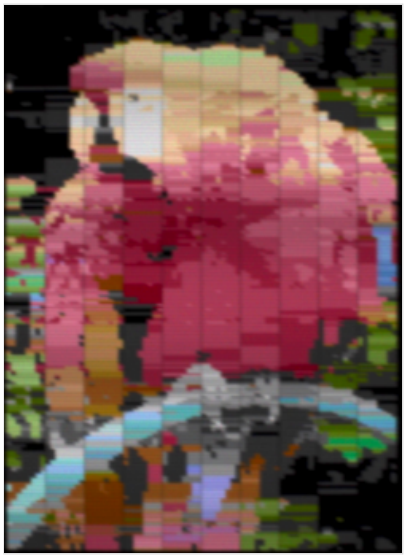
The following images are screen grabs using the Gopher2600 emulator, but increased in brightness to match what the human eye actually sees when viewing on hardware.

PAL

Resolution: 80 x 242 (128 colours)



PAL, dithered

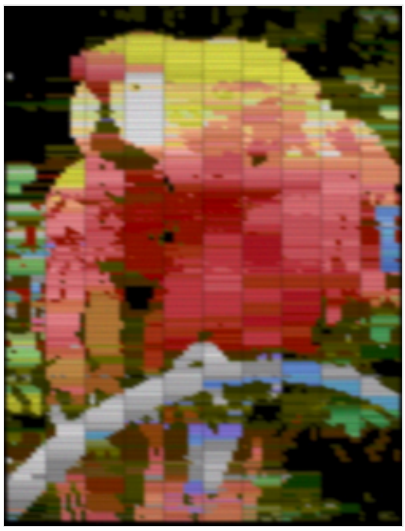


PAL, no dithering

NTSC

Resolution: 80 x 192 (128 colours)

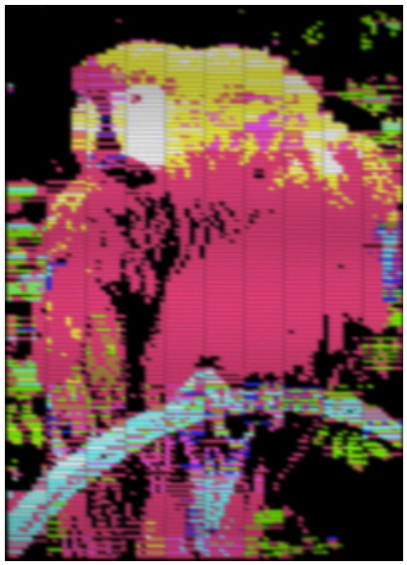
NTSC, dithered



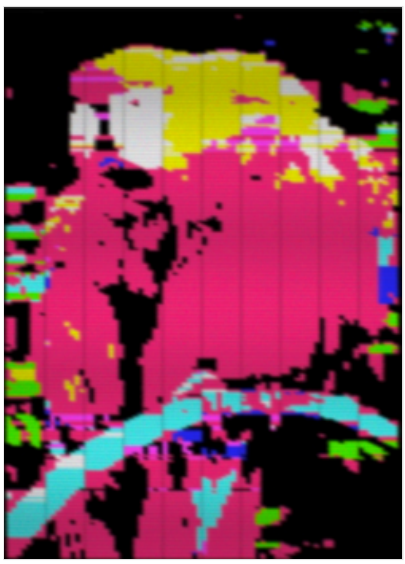
NTSC, no dithering

SECAM

Resolution: 80 x 242 (8 colours)



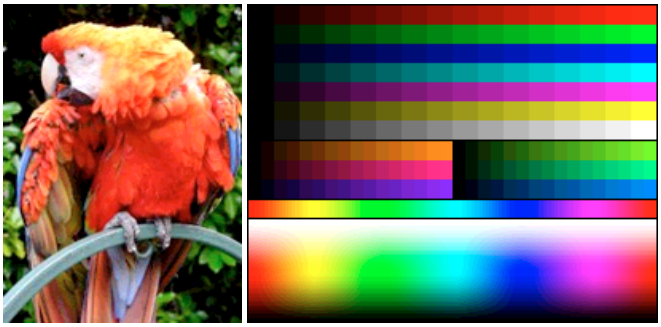
SECAM, dithered



SECAM, no dithering

Lynx

The Atari Lynx used a 4096-color palette. The video hardware was custom built and designed by Jay Miner and Dave Morse[3] It used two chips, named Mikey and Suzy.[4] Resolution was 160×102 pixels and it was possible to use 16 simultaneous colors per scanline.



Nintendo

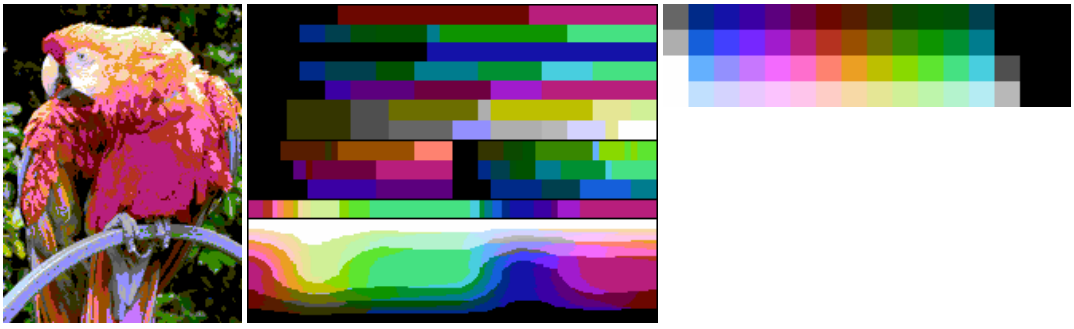
Nintendo Entertainment System

The Picture Processing Unit (PPU) used in the Nintendo Entertainment System generates color based on a composite video palette.

The 54-colors can be created based on four luma values, twelve combinations of I and Q chroma signals and two series of I = Q = 0 for several pure grays. Memory bits expressing colour are arranged like this: VVHHHH, where V corresponds to I values and H to Q.[5] There are two identical whites, one of the blacks has less-than-zero brightness, and one of the lighter grays is within 2% of another, so sometimes the palette has been reported to have 52 to 55 colors.[6][5]

In addition to this, it had 3 color emphasis bits which can be used to dim the entire palette by any combination of red, green and blue. This extends the total available colors to 448, but inconveniently divided into 8 variations of the base 56. Because it affects the whole palette at once it may be considered more of a filter effect applied to the image, rather than an increased palette range.

The PPU produces colors outside of the TV color gamut, resulting in some colors being presented differently on different TV systems.



Hex Value	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0x00																
0x10																
0x20																
0x30																

The NES PPU uses a background palette with up to 13 of these colors at a time, consisting of one common backdrop color and four subpalettes of three colors, chosen from the above set. The PPU's video memory layout allows choosing one subpalette for each 16×16 pixel area of the background. (A special video mode of the MMC5 mapper overrides this, assigning a subpalette to each 8×8-pixel tile.) Sprites have an additional set of four 3-color subpalettes (with color 0 being transparent in each) and every 8x8 or 8x16 pixels can have their own subpalette, allowing for a total of 12 different colors to use for sprites at any given time, or a total of 25 on-screen colors.

Because of the constraints mentioned above, converting a photograph often results in attribute clash at 16×16-pixel boundaries. Conversions with and without dithering follow, using the hex palette `0F160608 0F162720 0F090010 0F0A1910` (the repeated `0F` represents black as the common backdrop color).

Without dithering

With dithering

Game Boy

The original Game Boy uses a monochrome 4-shade palette. Because the non-backlit LCD display background is greenish, this results in a "greenscale" graphic display, as it is shown in the simulated image (at Game Boy display resolution), below. The Game Boy Pocket uses a monochrome 4-shade palette using actual gray, while the Game Boy Light gives the screen more of a bright blueish tint while its backlight is turned on. However, if its backlight were not on, it would look the same as the Game Boy Pocket.

Original Game Boy	Game Boy Pocket/Light	Game Boy Light (Backlit)
		

Original Game Boy Hex / Binary	0x0 00	0x1 01	0x2 10	0x3 11
Game Boy Pocket Hex / Binary	0x0 00	0x1 01	0x2 10	0x3 11
Game Boy Light Hex / Binary	0x0 00	0x1 01	0x2 10	0x3 11

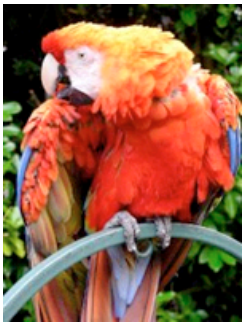
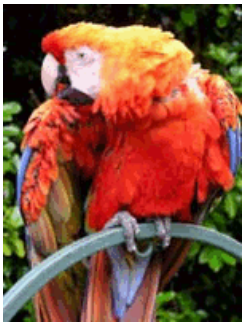
Super Nintendo Entertainment System

The Picture Processing Unit (PPU) used in the Super Nintendo Entertainment System has a 15-bit RGB (32,768 color) palette, with up to 256 simultaneous colors.

However, while the hardware palette can only contain 256 entries, in most display modes the graphics are arranged into between 2 and 4 layers, and these layers can be combined using additive or subtractive color blending. Because these blended colors are calculated by the hardware itself, and do not have to be represented by any of the existing palette entries, the actual number of visible colors onscreen at any one time can be much higher.

The exact number depends on the number of layers, and the combination of colors used by these layers, as well as what blending mode and graphical effects are in use. In theory it can show the entire 32,768 colors, but in practice this is rarely the case for reasons such as memory use. Most games use 256-color mode, with 15-color palettes assigned to 8x8 pixel areas of the background.

Theoretical 32768-color Practical 256-color

Game Boy Color

The Game Boy Color systems use a 15-bit RGB (32,768 colors) palette.

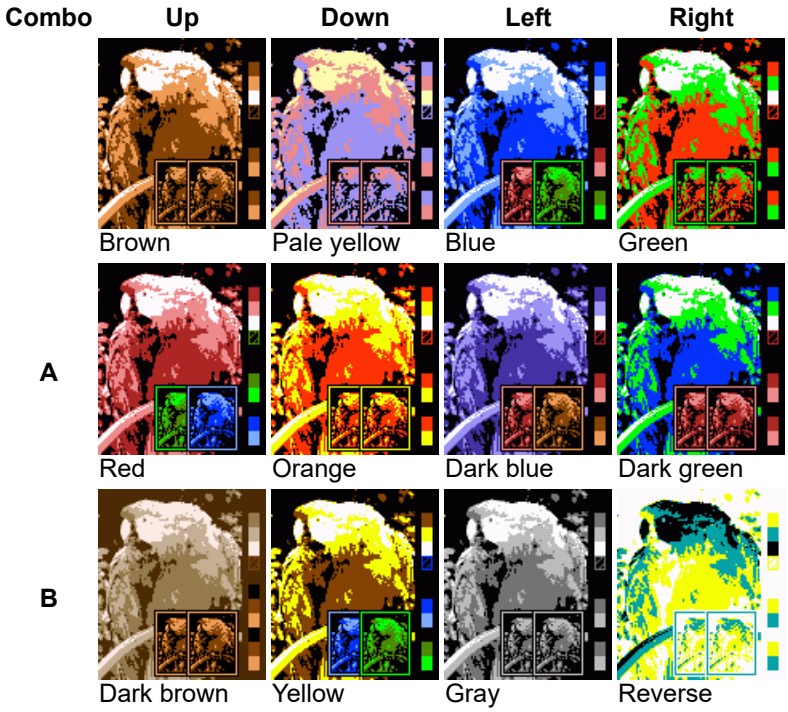
The specific Game Boy Color game cartridges have 8 background palettes (4 colors each) and 8 sprite palettes (3 colors plus transparent each) for a total of up to 56 colors without the use of special programming techniques. Backgrounds and objects (sprites) are both composed of 8x8-pixel tiles, with each pixel in these tiles being one of four color indizes (palette entries). However, tiles themselves do not reference a certain palette. Instead, the palette is assigned when the tile is used, so the same tile can be displayed with different palettes. Typically sprite palettes share some colors (black, white or others) or some palettes may be unused in a certain frame, so the total colors displayed will usually be less than 56.

As there are only 8 palettes for the 360 to 399 background tiles on screen, many tiles will have to share a palette. For a photographic image, finding tiles that can share a palette is tricky, so no simulated image is currently available.

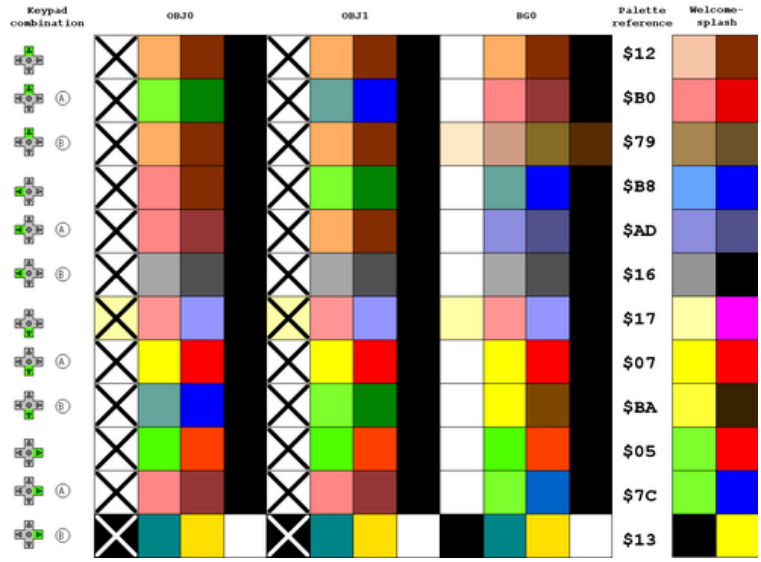
Though there is a 56 color limit, this in of itself is a palette storage limit and not an actual hardware limitation. As such, the programmer can swap out the palettes every two scanlines. Because of this ability to swap out the palettes, around 2,000 colors can actually appear on screen per frame when programmed like that (using only background palettes).[7]

When an older monochrome original Game Boy game cartridge (Type 1) is plugged-in, the Game Boy Color first tries to apply a palette from a hard-coded game list in the device's ROM. If the system does not have a palette stored for a game, it defaults to the "Dark green" palette (see below). The player can also choose one of 12 false color palettes. Type 1 games can have from 4 to 10 colors, four are for the background plane palette and there are two more hardware sprite plane palettes, with three colors plus transparent each. In the hard-coded game list, some games were given a unique palette that cannot be accessed manually. Only these unique palettes have the maximum of 10 different colors. Some homebrew Type 1 games use an adjusted game title to make a GBC think they were a certain commercial game that defaults to their desired palette (usually the "Gray" one used by *X*).[8]

The following shows the palettes (background plus both sprite planes) and the combination of controls used (the names are taken from the Game Boy Color user's manual; the colors are simulated):



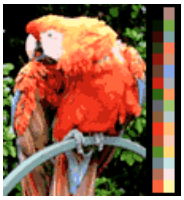
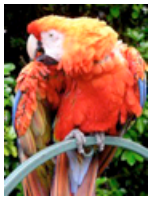
Game Boy color palette mapping



Game Boy Advance

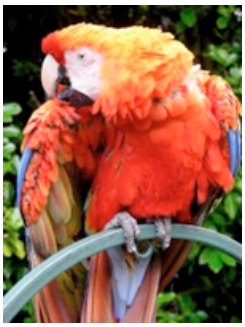
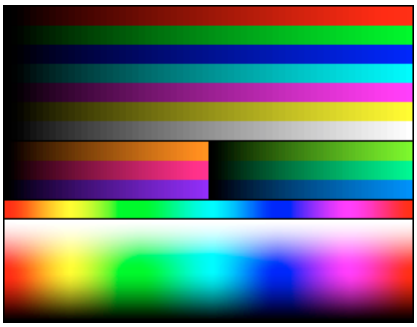
The Game Boy Advance/Advance SP/Micro systems also uses a 15-bit RGB palette, and along with the original and Color modes, they have also a specific Highcolor 32,768 colors mode. The LCDs of the Micro and some models of the SP are backlit, giving brighter images.

Compatible mode 32,768-color

Nintendo DS

The Nintendo DS has a display capable of using 18-bit RGB color palette, making a total of 262,144 possible colors; of these, 32,767 simultaneous colors can be displayed at once. The 18-bit color palette is only available in 3D video mode or in 2D modes when blending effects are used. The other video modes are similar to the GBA, but feature some enhancements. For example, the DS provides a number of 16 extended 256 color palettes for backgrounds as well as sprites on each of the two screens, allowing for a total of 8192 colors per frame (the practical number may be less due to some of the colors being considered transparent). The handheld's successor, Nintendo DS Lite, has brighter screens which makes some old GBA and NDS titles look different.[9]

Nintendo 3DS

The Nintendo 3DS has a 24-bit RGB palette.[10]

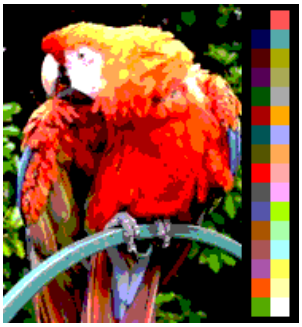
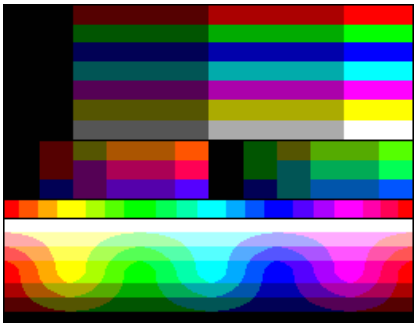
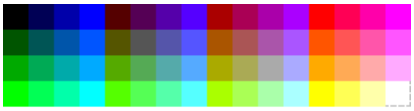
Sega

Master System

The Master System had a 6-bit RGB palette (64 colors), with 32 colors on-screen at once. It is possible to display all 64 colors at once using raster effects (line interrupts). The console used a proprietary chip called *Video Display Processor (VDP)* with the same internal design as the Texas Instruments TMS9918 (used in the SG-1000), although with enhanced features such as extra colors.[11]

There are only 512 different 8x8 tile patterns to cover the screen though, when 768 would be required for a complete 256x192 screen. This means that at least 1/3 of the tiles will have to be repeated. To help maximize tile reuse, they can be flipped either vertically or horizontally. The 64 sprites of 8x16 pixels can also be used to help to cover the screen (max 8 per scanline).

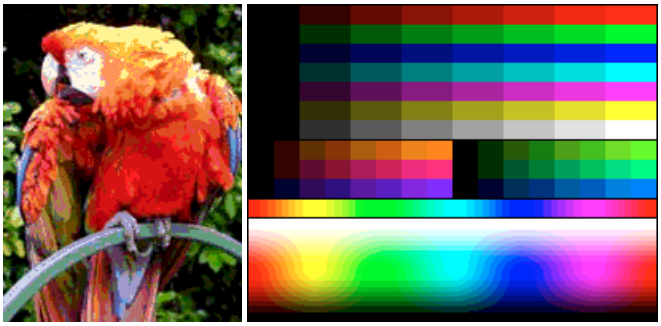
Because of the constraints mentioned above, there are no current accurate simulated screen images available for the Sega Master System.

0x00	0x01	0x02	0x03	0x04	0x05	0x06	0x07	0x08	0x09	0x0A	0x0B	0x0C	0x0D	0x0E	0x0F
0x10	0x11	0x12	0x13	0x14	0x15	0x16	0x17	0x18	0x19	0x1A	0x1B	0x1C	0x1D	0x1E	0x1F
0x20	0x21	0x22	0x23	0x24	0x25	0x26	0x27	0x28	0x29	0x2A	0x2B	0x2C	0x2D	0x2E	0x2F
0x30	0x31	0x32	0x33	0x34	0x35	0x36	0x37	0x38	0x39	0x3A	0x3B	0x3C	0x3D	0x3E	0x3F

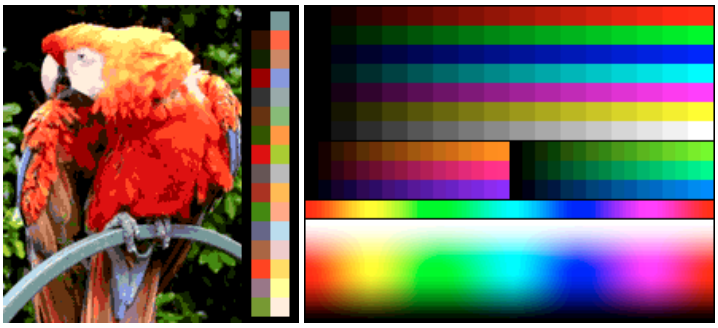
Mega Drive/Genesis and Pico

The Mega Drive/Genesis and Pico used the Sega 315-5313 (Yamaha YM7101) Video Display Processor, providing a 9-bit RGB palette (512 colors, up to approximately 1500 including shadow and highlight mode) with up to 61 colors on-screen at once without raster effects (4 palette lines of 16 colors each, palette indices $x0 are definable but considered as transparent, and can only be used as the background color).



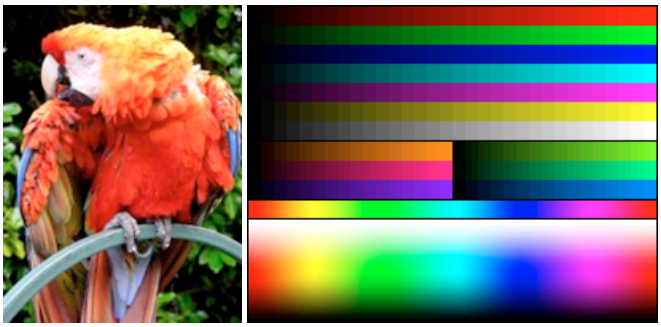
Game Gear

The Game Gear had a 12-bit RGB palette (4096 colors), with 32 colors on-screen at once.



32X

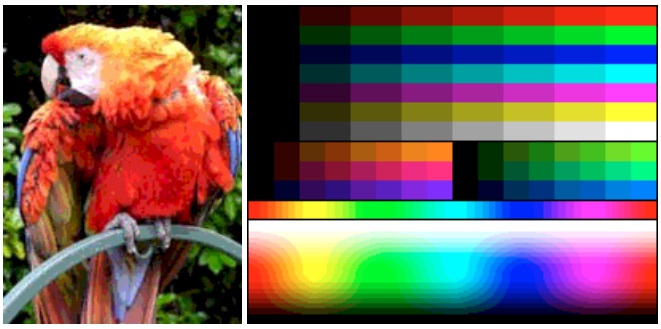
The Sega 32X had a 15-bit RGB palette (32768 colors). The 32X offered 3 display modes. Packed pixel and run length modes allowed for 256 colors at a given time, 317 including the Genesis' palette as the 32X video is overlaid on top of it. And direct color mode allowing for all 32768 colors to display at once with the caveat of reducing the console's vertical resolution to 204 pixels.



NEC

TurboGrafx-16

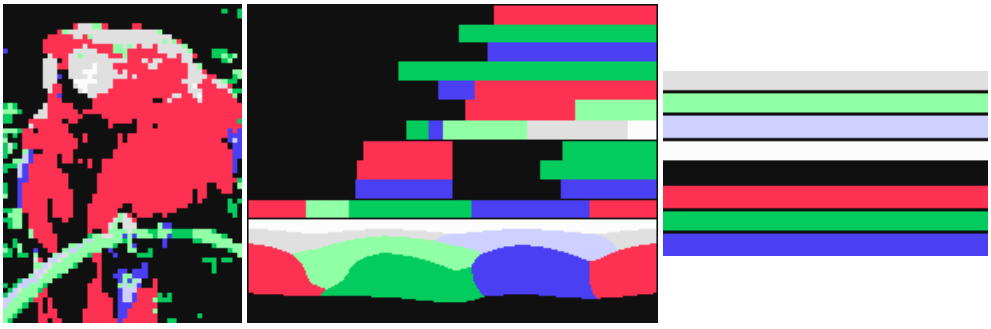
The TurboGrafx-16 used a 9-bit RGB palette consisting of 512 colors with 482 colors on-screen at once (16 background palettes of 16 colors each, with at least 1 common color among all background palettes, and 16 sprite palettes of 15 colors each, plus transparent which is visible as the overscan area).



Fairchild

Channel F

The Fairchild Channel F is able to use one plane of graphics and one of four background colors per line, with three plot colors to choose from (red, green, and blue) that turned into white if the background is set to black, at a resolution of 128 × 64, with approximately 102 × 58 pixels visible.[12] In total there are 8 possible colors.[13]



Mattel Electronics

Intellivision

The Intellivision graphics are powered by the Standard Television Interface Chip (STIC). The chip generates a sixteen color palette, based on four bit input and divided into two sets.[14][15][16]

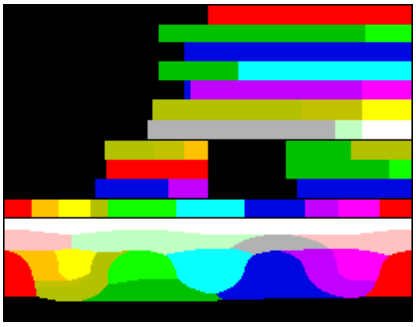
AY-3-8900 color palette[14][15][16]

Color Set	Color	Bits	Y	I	Q
Primary	Black	0000	0.000	0.000	0.000
	Blue	0001	0.330	-0.733	+0.660
	Red	0010	0.523	+0.666	+0.200
	Tan	0011	0.715	+0.266	-0.133
	Dark Green	0100	0.413	-0.133	-0.600
	Green	0101	0.577	-0.200	-0.533
	Yellow	0110	0.853	+0.533	-0.333
	White	0111	1.000	0.000	0.000
Pastel	Gray	1000	0.550	0.000	0.000
	Cyan	1001	0.660	-0.533	-0.266
	Orange	1010	0.687	+0.533	-0.066
	Brown	1011	0.330	+0.266	-0.266
	Magenta	1100	0.550	+0.400	+0.667
	Light Blue	1101	0.660	-0.400	+0.400
	Yellow-Green	1110	0.687	+0.066	-0.533
	Purple	1111	0.440	+0.133	+0.533

Epoch

Super Cassette Vision

The Super Cassette Vision, equipped with an EPOCH TV-1 video processor, uses a 16-color palette. Colors are generated based on 4-bits, controlling RGB outputs with three levels: 0, 75 and 100%[17]



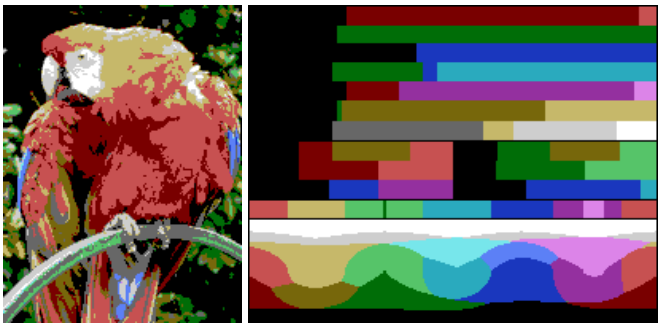
Super Cassette Vision color palette[17]

Number	Color	Levels (%)		
		R	G	B
1	Dark Blue	0	0	75
2	Black	0	0	0
3	Blue	0	0	100
4	Purple	75	0	100
5	Green	0	100	0
6	Light Green	75	100	75
7	Cyan	0	100	100
8	Dark Green	0	75	0
9	Red	100	0	0
10	Orange	100	75	0
11	Magenta	100	0	100
12	Light Red	100	75	75
13	Yellow	100	100	0
14	Dark Yellow	75	75	0
15	Gray	75	75	75
16	White	100	100	100

Magnavox / Philips

Odyssey 2 / Videopac G7000

The Magnavox Odyssey 2 is equipped with an Intel 8244 (NTSC) or 8245 (PAL) custom IC, and uses a 4-bit RGBI color palette.[18] This translates on screen into eight basic colors with a half-brightness variation.[18]



Internally, color register $A3 bits 0 to 2 define *Grid color*, bits 3 to 5 define *Background color*, bit 6 defines *Grid luminance* (0=dim/1=bright), withd bit 7 being unused.[18] The following table exemplifies this arrangement:

Color register $A3 organization[18]

	Grid Luminance	Background Color			Grid Color		
Bit	6	5	4	3	2	1	0

There are color usage limitations for sprites and backgrounds, shown in the following table.[18]

Magnavox Odyssey 2 color usage limitations [18]

	Character / Sprite Color	Grid Colors	
		Dark Back	Light Back
0	Dark Grey	Black	Black
1	Red	Dark Blue	Blue
2	Green	Dark Green	Green
3	Orange	Light Green	Light Green
4	Blue	Red	Red
5	Violet	Violet	Violet
6	Light Gray	Orange	Orange
7	White	Light Gray	Light Gray

See also

- Color depth
- Computer monitor
- Indexed color
- List of 8-bit computer hardware palettes
- List of 16-bit computer hardware palettes
- List of color palettes
- List of home computers by video hardware
- List of monochrome and RGB color formats
- List of software palettes
- Palette (computing)

References

1. "I. Theory of Operation". *Atari Video Computer System Field Service Manual - Model 2600/2600A Domestic* (https://web.archive.org/web/20170215054248/http://www.atariguide.com/pdfs/Atari_2600_VCS_Domestic_Field_Service_Manual.pdf) (PDF). Rev. 02. Atari, Inc. January 21, 1983. pp. 1–4. Archived from the original (http://www.atariguide.com/pdfs/Atari_2600_VCS_Domestic_Field_Service_Manual.pdf) (PDF) on February 15, 2017. Retrieved September 10, 2010.
2. Atari 2600 "TIA color chart" (http://www.biglist.com/lists/stella/archives/200109/msg00285.html). Archived (https://web.archive.org/web/20110707234118/http://www.biglist.com/lists/stella/archives/200109/msg00285.html) July 7, 2011, at the Wayback Machine
3. "Nintendo's island state of a stand at the Consumer Electronics Show in Chicago couldn't stop Atari stealing the limelight with their amazing hand-held video game machine" (https://archive.org/stream/ace-magazine-23/ACE_Issue_23_1989_Aug#page/n25). ACE Magazine. August 1989. p. 26. Retrieved 11 August 2018 – via archive.org.
4. "atarihistory.de" (http://kickass.ddnss.org/html/lynx/tech.htm).
5. "PPU palettes" (https://www.nesdev.org/wiki/PPU_palettes).
6. "The NES Composite Palette Project" (https://www.firebrandx.com/nespalette.html). *Firebrandx's Web Site*. Retrieved 2026-03-15.
7. "GBC Hicolour notes" (https://romhack.github.io/doc/gbcHiColour/#palettes). Retrieved 14 July 2024.
8. "Game Boy Color Modes" (https://gbstudiocentral.com/tips/game-boy-color-modes/). *GBStudio Central*. 29 June 2023. Retrieved 14 July 2024.
9. "GBATEK - GBA/NDS Technical Info" (https://problemkaputt.de/gbatek.htm#dsvideo).
10. "Nintendo 3DS Official Site - Features" (https://web.archive.org/web/20121007004512/http://www.nintendo.com/3ds/features#/two-screens). October 7, 2012. Archived from the original (http://www.nintendo.com/3ds/features#/two-screens) on October 7, 2012. Retrieved April 5, 2018.
11. "Sega Master System Architecture | A Practical Analysis" (https://www.copetti.org/writings/consoles/master-system/). 12 October 2020.
12. "FVE100_schematic_sheet_1of3.jpg" (https://web.archive.org/web/20110725180144/http://classicdev.org/images/thumb/3/31/FVE100_schematic_sheet_1of3.gif/1280px-FVE100_schematic_sheet_1of3.gif). *classicdev.org*. Archived from the original (http://classicdev.org/images/thumb/3/31/FVE100_schematic_sheet_1of3.gif/1280px-FVE100_schematic_sheet_1of3.gif) on 25 July 2011. Retrieved 12 January 2022.
13. "Home Page" (http://www.videogameconsolelibrary.com/pg70-fairchild.htm#page=specs).
14. Zbiciak, Joe. "STANDARD TELEVISION INTERFACE CIRCUIT (STIC)" (http://spatula-city.org/~im14u2c/intv/jzintv-1.0-beta3/doc/programming/stic.txt). *jzIntv!*. Retrieved 2019-07-23.
15. *Requirements of a PAL color circuit for the Mattel Electronics Intellivision Master Component* (https://papaintellivision.com/pdfs/CCF10242011_00001.pdf) (PDF). Mattel Toys. January 17, 1980.
16. Woods; Palazzolo (June 29, 2022). "General Instruments AY-3-8900-1 a.k.a. Standard Television Interface Chip (STIC) emulation for Mattel Intellivision" (https://github.com/mamedev/mame/blob/mame0283/src/mame/mattel/stic.cpp). *GitHub*.

17. "EPOCH TV-1" (https://github.com/MiSTer-devel/SuperCassetteVision_MiSTer/blob/main/doc/epochtv1.txt). *MiSTer-devel/SuperCassetteVision_MiSTer*. 2025.
18. Boris, Daniel (1998). *Odyssey 2 Technical Specs V1.1* (http://www.atarihq.com/danb/files/o2doc.pdf) (PDF). pp. 7, 12, 15.

Television Interface Adaptor

The **Television Interface Adaptor**[1] (**TIA**) is the custom computer chip which, along with a variant of the MOS Technology 6502, constitutes the heart of the 1977 Atari Video Computer System game console. The TIA generates the screen display, sound effects, and reads the controllers. At the time the Atari VCS was designed, even small amounts of RAM were expensive. The chip was designed without the extra circuitry of a framebuffer, instead requiring detailed programming to create even a simple display.[2]

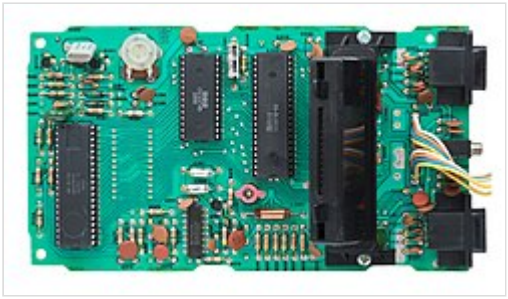
Atari 2600

Development of the CO10444/CO11903[3] TIA was led by Jay Miner, who continued at Atari expanding on the design of the TIA for the Atari 8-bit computers with the ANTIC,CTIA/GTIA and POKEY chips which allow for more graphical and sound capabilities. Miner later led the design of the custom chips for the Amiga computer.

Design

Background

Around 1975, Atari's engineers at Cyan Engineering led by Steve Mayer and Ron Milner had been considering alternatives to the development dedicated hardware such as application-specific integrated circuits (ASIC) for arcade video games and home video game consoles. Programmable microprocessors had reached the market, but Atari considered them too expensive for a home application.[4] They were limited by cost in options for displaying graphics. At this point in time, most computer graphics were generated by using sprites drawn atop a playfield, which then were translated into an analog signal for display on a CRT.[5] Sprites would be held as a bitmap in a framebuffer, requiring random-access memory (RAM). RAM was still expensive, costing tens of thousands of dollars per megabyte.,[6] and to display a two-color playfield on an 80×48 display would have cost thousands of dollars in memory.[4] On a conventional NTSC color television, maximum resolutions generally fell between 256 and 320 pixels per line, and 192 to 240 lines per screen.[7]



The motherboard of the original six-switch Atari VCS. The 40-pin TIA chip is on the left. The center 28-pin is the MOS Technology 6507, and to its right, the 40-pin MOS Technology 6352 Ram-I/O-Timer (RIOT) chip. The cartridge insertion slot is to the immediate right of the RIOT chip.

In September 1975, MOS Technology introduced the 6502 microprocessor, one of the first low-cost microprocessors on the market. Mayer and Milner arranged to speak to the chip's designer, Chuck Peddle, on using the 6502 as the basis for their programmable video game console. Over the course of a couple of days, the basic design of the Atari VCS was laid out, with Peddle offering Atari the

use of the lower-cost MOS Technology 6507 processor and the MOS Technology 6532 RAM-I/O-Timer (RIOT) as the core of the design.[8] Using a breadboard prototype for the display adapter atop a 6502 testbed system, Milner was able to demonstrate the ability to program a simple version of their *Tank* game. Joe Decuir was hired on to help convert Milner's proof-of-concept to a functional prototype, sufficient for Atari to give the go-ahead for the development to continue.[4]

While Decuir worked on the design of the rest of the system, Jay Miner focused on making an ASIC for the display adapter.[4] Early on, the ASIC display adapter was named the Television Interface Adaptor (TIA).[4] The cost of RAM remained high as the team began its design, and thus the option to use memory-based framebuffers was dropped from the TIA's design.[4]

RAM-less design

Due to the lack of RAM, the TIA differs from the conventional framebuffer in that using the TIA, the screen is composed by manipulating five movable graphic objects (2 players, 2 missiles and 1 ball) and a static playfield object. These are all generated on every scan line from their respective registers, unlike the technique used in a framebuffer-mapped model, requiring the program to update these on every scan line.[9] Horizontal resolution is not uniform, as its size depends on the particular graphics object. The smallest unit of pixel corresponds to 1 color clock cycle of the chip, of which there are 160 visible ones on a line.[9]

The Playfield object consists of a two-and-a-half byte register (20 bits wide), which can be reflected symmetrically or copied as-is to the right half of the screen for 40 bits in total (each bit being 4 color cycles wide). The color that was drawn if the bit was a 1 or a 0 was selected from a pre-defined palette of up to 128 colors (see below) and held in other registers.

The TIA also supported five separate graphics objects consisting of:

- Two 8-pixel horizontal lines which make up the 'sprites' Player 1 and Player 2. These are single color, can be stretched by a factor of 2 or 4, and can be duplicated or triplicated.
- A 'ball' - a horizontal line that is the same color as the playfield. It can be one, two, four, or eight pixels wide.
- Two 'missiles' - another horizontal line that is the same color as its respective player. It can be one, two, four, or eight pixels wide.

Without RAM-based framebuffers, collision detection is also complicated. The TIA has hardware collision detection for all of these objects through the use of 15 set/reset flip-flops and stores a bitmap of collisions, that are typically read during the VBLANK period.[4] Registers in the TIA allow the programmer to control the positioning of the graphical objects and their color.

The TIA also provides two channels of one-bit sound. Each channel provides for 32 pitch values and 16 possible bit sequences. There is a 4 bit volume control.[4]

Lastly, the TIA has inputs for reading up to four analog paddle controllers using potentiometers and for two joystick triggers.[4]

Drawing the display

As the registers hold data for only a single line of the display, creating a full screen requires the game program to update the registers on the fly, a process known as "racing the beam".[10]

To start the process, the game program running on the MOS Technology 6502-based CPU loads the TIA's registers with the data needed to draw the first line of the display. The TIA then waits until the television is ready to draw the line (under the command of the TIA's associated analog hardware) and read out the registers to produce a signal for that line. During the horizontal blanking period between lines, the 6502 quickly changes the TIA's registers as needed for the next line. This process continues down the screen.

This is made more difficult because the MOS Technology 6507 in the 2600 is a pin-reduced version of the 6502 with no support for hardware interrupts. Generally the analog side of the display system generates an interrupt when it finishes drawing a raster line and is getting ready for the next one. The interrupt triggers the code needed to update the screen, and then returns to the "main" program. The 6507 left these pins off of the CPU to save money, however it does have a "RDY" pin to insert wait states into CPU bus cycles. The TIA was specifically designed to use the RDY pin to synchronize the CPU with the raster line timing of the video generated by the TIA: when the CPU writes to a certain register address of the TIA, the TIA lowers its RDY output signal until the end of the current line, a "wait for sync" command.[4] This suspends the operation of the CPU until the start (color clock cycle 0) of the horizontal blanking period right ahead of the next line, providing a measure of automatic synchronization. The intended use of this mechanism is for the CPU to run code that sets up the TIA registers for the line about to be drawn, and which usually runs to completion some time before the TIA reaches the end of that line. To make video timing synchronization easier, the CPU then writes to the register that triggers the synchronization delay via RDY, throwing away a variable amount of CPU time.[4]

In addition, the TIA only semi-automatically generates vertical sync timing signals (to mark the end of each video frame and the start of the next). The TIA is capable of inserting a vertical sync signal into the analog output video signal, but it does not have a frame line-counter and so cannot tell when a frame should end. Instead, it is left to the CPU program to trigger vertical sync signals and to count the lines in each frame to determine when a vertical sync signal should be generated. Like for the RDY-wait hardware, the vertical sync signal is triggered by the CPU writing to a specific TIA register address. If no write to that address was ever done and the TIA was allowed to free-run, it would generate a single infinite frame of active raster lines, which would typically appear on the TV as a rolling picture. Most published games for the Atari 2600 generated vertical sync after either every 262 or every 263 lines (but nothing about the TIA prevents it from generating frames of any length, shorter or longer, though the resulting video displays would roll vertically on normal TVs).

These and other details of TIA programming mean that programmers need to time their programs carefully to run in the exact number of cycles needed for various screen-related events. Getting this wrong means the screen is not drawn properly. The part of a program that does this is known as the "kernel" of that program.[11]

Given this complexity, early games using the system tended to be simple in layout, using the TIA to create symmetric playfields with players on top. This was the original intention of the system: to run the handful of arcade games Atari had already produced like *Tank* and *Pong*. In these cases the playfield data was typically laid out in the 2 kB ROM memory in the game cartridge. As each line used 20 bits of data, and there were 192 lines on an NTSC display,[12] a display with a different layout on every line needed only 480 bytes (192 x 20 / 8) of the cartridge's 4 kB to hold a single hard-coded display. In this case the kernel simply advanced 20 bits through ROM for every line as the TIA advanced down the screen, a task that took only a few cycles of CPU time. This can be

further reduced by using the same data for multiple lines, either doubling them vertically, or reading one way through the list for the top and then back the other way for the bottom, producing a vertically mirrored display of only 240 bytes.

A key advance was the licensing of *Space Invaders* for the platform, which required many more player graphics to draw the enemy aliens. The solution was to change the player data for every line as the image was being drawn, creating an apparent large number of players. Another advance was made by (partially) coding the display as CPU instructions instead of storing it as fixed data in ROM. *Adventure* uses this concept to produce a wide variety of maps by combining different portions of the data in ROM, jumping back and forth through it during the screen drawing.[13] This allowed the game to have 30 rooms, which would have otherwise required 14 kB of ROM.

Rainbow effect visible in Barnstorming game

As programmers grew more accustomed to the odd timing needed to get things to work properly on-screen, they began to use the inherent flexibility in the TIA to greatly improve the displays. One common technique was to change the color registers that were used to draw the 1 and 0 states of the playfield, resulting in displays with rainbow-like effects. Later games could modify the playfield mid-line to generate asymmetric patterns, repositioning and changing player sprites mid-screen to generate additional sprites.

TIA Color Capabilities

The TIA uses different color palettes depending on the television signal format used. For NTSC format (part number CO10444),[3] a 128-color palette is provided, while only 104 colors are available for PAL (part number CO11903).[3] Finally, the SECAM palette consists of only 8 colors.

NTSC palette

luminance hue	0	2	4	6	8	10	12	14
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

PAL palette

luminance hue	0	2	4	6	8	10	12	14
0,1,14,15								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								

SECAM palette

0	2	4	6	8	10	12	14

Noise/Tone Generator (AUD0/1)

The TIA is capable of generating different types of pulse waves and white noise output to its two oscillators (or channels) AUD0 and AUD1. Each oscillator has a 5-bit frequency divider and a 4-bit audio control register which manipulates the waveform. There is also a 4-bit volume control register per channel.

Frequency Divider (AUDF0/1)

Frequencies are generated by taking 31399 Hz (31113 Hz for PAL) and dividing by the 5-bit value supplied.[14] The result is a cheap frequency divider capable of detuned notes and the odd tuned frequency. The TIA is not a musical chip unless the composer works within the frequency limits or modulates between two detuned frequencies to create a vibrato tuned note. The TIA is tuned to the inverted harmonic series due to each frequency being the base frequency divided by a whole number.

Audio Control (AUDC0/1)

The Audio Control register generates and manipulates a pulse wave to create complex pulses or noise. The following tables (with designed duplicates) explains how its tones are generated:

HEX	D7	D6	D5	D4	D3	D2	D1	D0	Type of noise or division
0					0	0	0	0	Set to 1 (volume only)
1					0	0	0	1	4 bit poly
2					0	0	1	0	÷ 15 → 4 bit poly
3					0	0	1	1	5 bit poly → 4 bit poly
4					0	1	0	0	÷ 2
5					0	1	0	1	÷ 2
6					0	1	1	0	÷ 31
7					0	1	1	1	5 bit poly → ÷ 2
8					1	0	0	0	9-bit poly (white noise)
9					1	0	0	1	5-bit poly
A					1	0	1	0	÷ 31
B					1	0	1	1	Set last 4 bits to 1
C					1	1	0	0	÷ 6
D					1	1	0	1	÷ 6
E					1	1	1	0	÷ 93
F					1	1	1	1	5-bit poly ÷ 6

References

1. "I. Theory of Operation". *Atari Video Computer System Field Service Manual - Model 2600/2600A Domestic* (https://web.archive.org/web/20170215054248/http://www.atariguide.com/pdfs/Atari_2600_VCS_Domestic_Field_Service_Manual.pdf) (PDF). Rev. 02. Atari, Inc. January 21, 1983. pp. 1–4. Archived from the original (http://www.atariguide.com/pdfs/Atari_2600_VCS_Domestic_Field_Service_Manual.pdf) (PDF) on February 15, 2017. Retrieved September 10, 2010.
2. Hague, James (September 10, 2013). "Why Do Dedicated Game Consoles Exist?" (https://prog21.dadgum.com/181.html). *Programming in the Twenty-First Century*.
3. Stilphen, Scott (February 5, 2020). "ATARI VCS/2600 TIA CHIPS" (http://www.ataricompendium.com/faq/vcs_tia/vcs_tia.html). Retrieved February 24, 2020.
4. Decuir, Joe (July 2015). "Atari Video Computer System: Bring Entertainment Stories Home" (https://doi.org/10.1109%2FMCE.2015.2421572). *IEEE Consumer Electronics Magazine*: 59–66. doi:10.1109/MCE.2015.2421572 (https://doi.org/10.1109%2FMCE.2015.2421572).
5. Chris Crawford, "ANTIC and the display list" (http://www.atariarchives.org/dere/chapt02.php), *De Re Atari*
6. McCallum, John C. (February 13, 2012). "Memory Prices (1957-2012)" (https://web.archive.org/web/20121026153229/http://www.jcmit.com/memoryprice.htm). *jcmit.net*. Archived from the original (http://www.jcmit.com/memoryprice.htm) on October 26, 2012. Retrieved October 27, 2012.
7. Montfort & Bogost, pg. 27
8. Goldberg, Marty; Vendel, Curt (2012). "Chapter 5". *Atari Inc: Business is Fun*. Sygyzy Press. ISBN 978-0985597405.
9. Wright, Steve. "Stella Programmer's Guide" (http://web.atari.org/stellaes.pdf), (in Spanish) December 3, 1979. Archived (https://web.archive.org/web/20160305014811/http://web.atari.org/stellaes.pdf) on March 5, 2016.
10. Kohler, Chris (March 13, 2009). "Racing the Beam: How Atari 2600's Crazy Hardware Changed Game Design" (https://www.wired.com/2009/03/racing-the-beam/). *Wired*. Archived (https://web.archive.org/web/20140712094639/https://www.wired.com/2009/03/racing-the-beam/) from the original on July 12, 2014.
11. Montfort & Bogost, pg. 34
12. More on PAL, see "Atari 2600 Specifications" (http://nocash.emubase.de/2k6specs.htm) Archived (https://web.archive.org/web/20110524014918/http://nocash.emubase.de/2k6specs.htm) May 24, 2011, at the Wayback Machine
13. Robinett, Warren, "Adventure" (http://www.warrenrobinett.com/adventure/adventure_lecture.ppt), University of North Carolina. Archived (https://web.archive.org/web/20180107145056/http://www.warrenrobinett.com/adventure/adventure_lecture.ppt) on January 27, 2018.
14. "Sound Chips in 8-bit Computers" (http://flop.atariportal.cz/content/62/en/ZVUKE1P1.html). *FLOP Atari portal*. Retrieved 14 December 2023.

Sources

- Montfort, Nick; Bogost, Ian (2009). *Racing the Beam: the Atari Video Computer System* (https://books.google.com/books?id=DqePfdz_x6gC). MIT Press. ISBN 978-0-262-01257-7.

External links

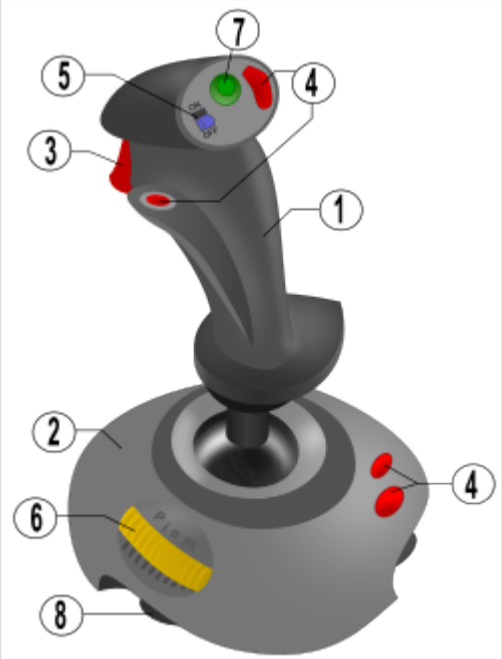
- ATARI 2600 Programming for Newbies (http://atariage.com/forums/topic/33233-sorted-table-of-contents)

- TIA technical information (http://atarihq.com/danb/tia.shtml)
- TIA technical manual (https://web.archive.org/web/20060924093654/http://www.howell1964.freeserve.co.uk/Atari/tia/index.htm)
- TIA schematics (http://www.atariage.com/2600/archives/schematics_tia/index.html)
- TIA high resolution die shots (http://www.visual6502.org/images/pages/Atari_10444D_TIA.html)
- Programming the Atari 2600, and Me - Part 1 (http://www.taotekaching.com/archive/2010/07/02/Programming-the-Atari-2600-and-Me-ndash-Part-1.aspx), part 1 of an 8-part series
- Atari 2600 Development by Joe Decuir (http://www.atariarchives.org/dev/CGEXPO01.html)

Joystick

A **joystick**, sometimes called a **flight stick**, is an input device consisting of a stick that pivots on a base and reports its angle or direction to the device it is controlling. Also known as the **control column**, it is the principal control device in the cockpit of many civilian and military aircraft, either as a centre stick or side-stick. It has various switches to control functions of the aircraft controlled by the Pilot and First Officer of the flight.

Joysticks are often used to control video games, and usually have push-buttons whose state can be read by the computer. A popular variation of the joystick used on modern video game consoles is the analog stick. Joysticks are also used for controlling machines such as cranes, trucks, underwater unmanned vehicles, wheelchairs, surveillance cameras, and zero turning radius lawn mowers. Miniature finger-operated joysticks have been adopted as input devices for smaller electronic equipment such as mobile phones.



Possible elements of a video game joystick: 1. stick, 2. base, 3. trigger, 4. extra buttons, 5. autofire switch, 6. throttle, 7. hat switch (POV hat), 8. suction cups.

Aviation

Joysticks originated as controls for aircraft ailerons and elevators, and are first known to have been used as such on Louis Bleriot's Bleriot VIII aircraft of 1908, in combination with a foot-operated rudder bar for the yaw control surface on the tail.[1]


Cockpit of a glider with its joystick visible

Origins

The name *joystick* is thought to originate with early 20th century French pilot Robert Esnault-Pelterie.[2] There are also competing claims on behalf of fellow pilots Robert Loraine, James Henry Joyce, and A. E. George. Loraine is cited by the *Oxford English Dictionary* for using the term "joystick" in his diary in 1909 when he went to Pau to learn to fly at Blériot's school. George was a pioneer aviator who with his colleague Jobling built and flew a biplane at Newcastle in England in 1910. The George and Jobling aircraft control column is in the collection of the Discovery Museum in Newcastle upon Tyne, England. Joysticks were present in early planes, though their mechanical origins are uncertain.[3] The coining of the term "joystick" may actually be credited to Loraine, as his is the earliest known usage of the term, although he most certainly did not invent the device.

Electronic joysticks

History

The electrical two-axis joystick was invented by C. B. Mirick at the United States Naval Research Laboratory (NRL) and patented in 1926 (U.S. Patent no. 1,597,416)".[4] NRL was actively developing remote controlled aircraft at the time and the joystick was possibly used to support this effort. In the awarded patent, Mirick writes: "My control system is particularly applicable in maneuvering aircraft without a pilot."[5]

The Germans developed an electrical two-axis joystick around 1944. The device was used as part of the Germans' *Funkgerät* FuG 203 *Kehl* radio control transmitter system used in certain German bomber aircraft, used to guide both the rocket-boosted anti-ship missile *Henschel Hs 293*, and the unpowered pioneering precision-guided munition *Fritz-X*,[6] against maritime and other targets. Here, the joystick of the *Kehl* transmitter was used by an operator to steer the missile towards its target. This joystick had on-off switches rather than analogue sensors. Both the Hs 293 and Fritz-X used FuG 230 *Straßburg* radio receivers in them to send the *Kehl's* control signals to the ordnance's control surfaces. A comparable joystick unit was used for the contemporary American Azon steerable munition, strictly to laterally steer the munition in the yaw axis only.[7]

This German invention was picked up by someone in the team of scientists assembled at the *Heeresversuchsanstalt* in Peenemünde. Here a part of the team on the German rocket program was developing the Wasserfall missile, a variant of the V-2 rocket, the first ground-to-air missile. The Wasserfall steering equipment converted the electrical signal to radio signals and transmitted these to the missile.

In the 1960s the use of joysticks became widespread in radio-controlled model aircraft systems such as the Kwik Fly produced by Phill Kraft (1964). The now-defunct Kraft Systems firm eventually became an important OEM supplier of joysticks to the computer industry and other users. The first use of joysticks outside the radio-controlled aircraft industry may have been in the control of powered wheelchairs, such as the Permobil (1963). During this time period NASA used joysticks as control devices as part of the Apollo missions. For example, the lunar lander test models were controlled with a joystick.

A prototype Project Gemini joystick-type hand controller, 1962

In many modern airliners, for example all Airbus aircraft developed from the 1980s, the joystick has received a new lease on life for flight control in the form of the "side-stick", a controller similar to a gaming joystick but which is used to control flight, replacing the traditional yoke. The sidestick saves weight, improves movement and visibility in the cockpit, and may be safer in an accident than the yoke.

Electronic games

In early 1968, Sega released *MotoPolo*, an arcade electro-mechanical game with joystick controllers, used to move miniature motorbikes in any direction on the table.[8] The same year in 1968, Ralph H. Baer developed the first prototype joystick controller for a video game, with a golf ball mounted on the joystick handle as it was intended for a golf game he was working on at the time.[9][10]

Sega's *MotoPolo* (1968), an arcade electro-mechanical game with joystick controls

The earliest known electronic game joystick with a fire button was released by Sega as part of their 1969 arcade game *Missile*, a shooter simulation game that used it as part of an early dual-control scheme, where two directional buttons are used to move a motorized tank and a two-way joystick is used to shoot and steer the missile onto oncoming planes displayed on the screen; when a plane is hit, an explosion is animated on screen along with an explosion sound.[11] In 1970,[12] the game was released in North America as *S.A.M.I.* by Midway Games.[11]

Taito released a four-way joystick as part of their arcade racing video game *Astro Race* in 1973,[13] while their 1975 multidirectional shooter *Western Gun* introduced dual-stick controls with one eight-way joystick for movement and the other for changing the shooting direction. In North America, it was released by Midway under the title *Gun Fight*.[14] In 1976, Taito released *Interceptor*, an early first-person combat flight simulator that involved piloting a jet fighter, using an eight-way joystick to aim with a crosshair and shoot at enemy aircraft.[15]

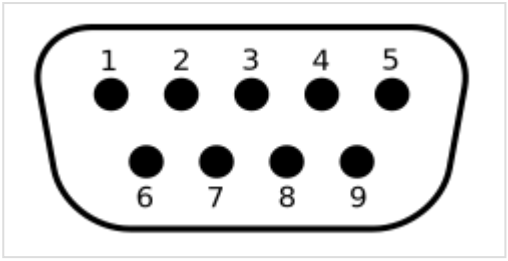

CH Products Mach II analog joystick for Apple II computers. The small knobs are for (mechanical) calibration, and the sliders engage the self-centering springs.

The Atari CX40 joystick, developed for the 1977 Atari Video Computer System,[17] is a digital controller with a single fire button. The Atari joystick port was for many years the *de facto* standard digital joystick specification. Joysticks were commonly used as controllers in first and second generation game consoles, but they gave way to the familiar game pad with the Nintendo Entertainment System and Master System during the mid-1980s, though joysticks—especially arcade-style ones—were and are popular after-market add-ons for any console.[18]

The Armatron, a toy robot arm introduced by Tomy in 1982, was moved by dual analog control joysticks.[19]

In 1985, Sega's third-person arcade rail shooter game *Space Harrier* featured a true analog flight stick, used for movement. The joystick could register movement in any direction as well as measure the degree of push, which could move the player character at different speeds depending on how far the joystick was pushed in a certain direction.[20]

A variation of the joystick is the rotary joystick. It is a type of joystick-knob hybrid, where the joystick can be moved in various direction while at the same time being able to rotate the joystick. It is mainly used in arcade shoot 'em up games, to control both the player's eight-directional movement and the gun's 360-degree direction.[21][22] It was introduced by SNK, initially with the tank shooter *TNK III* (1985) before it was popularized by the run and gun video game *Ikari Warriors* (1986).[21] SNK later used rotary joystick controls in arcade games such as *Guerrilla War* (1987).[23]



Computer port view of the Atari standard connector: **1.** up, **2.** down, **3.** left, **4.** right, **5.** (pot y), **6.** fire button, **7.** +5 V DC, **8.** ground, **9.** (pot x).[16]

A distinct variation of an analog joystick is a positional gun, which works differently from a light gun. Instead of using light sensors, a positional gun is essentially an analog joystick mounted in a fixed location that records the position of the gun to determine where the player is aiming on the screen.[24][25] It is often used for arcade gun games, with early examples including Sega's *Sea Devil* in 1972;[26] Taito's *Attack* in 1976;[27] *Cross Fire* in 1977;[28] and Nintendo's *Battle Shark* in 1978.[29]

During the 1990s, joysticks such as the CH Products Flightstick, Gravis Phoenix, Microsoft SideWinder, Logitech WingMan, and Thrustmaster FCS were in demand with PC gamers. They were considered a prerequisite for flight simulators such as *F-16 Fighting Falcon* and *LHX Attack Chopper*. Joysticks became especially popular with the mainstream success of space flight simulator games like *X-Wing* and *Wing Commander*, as well as the "Six degrees of freedom" 3D shooter *Descent*.[30][31][32][33][34] VirPil Controls' MongoosT-50 joystick was designed to mimic the style of Russian aircraft (including the Sukhoi Su-35 and Sukhoi Su-57), unlike most flight joysticks.[35]


Saitek's Cyborg 3D Gold around the 2000s. Note its throttle, its extra buttons, and its hat switch.

However, since the beginning of the 21st century, these types of games have waned in popularity and are now considered a "dead" genre, and with that, gaming joysticks have been reduced to niche products.[30][31][32][33][34] In NowGamer's interview with Jim Boone, a producer at Volition Inc., he stated that *FreeSpace 2*'s poor sales could have been due to joysticks' being sold poorly because they were "going out of fashion" because more modern first-person shooters, such as *Quake*, were "very much about the mouse and [the] keyboard". He went further on to state "Before that, when we did *Descent* for example, it was perfectly common for people to have joysticks – we sold a lot of copies of Descent. It was around that time [when] the more modern FPS with mouse and keyboard came out, as opposed to just keyboard like *Wolfenstein [3D]* or something.".[36]

Since the late 1990s, *analog sticks* (or *thumbsticks*, due to their being controlled by one's thumbs) have become standard on controllers for video game consoles, popularized by Nintendo's Nintendo 64 controller,[37] and have the ability to indicate the stick's displacement from its neutral position. This means that the software does not have to keep track of the position or estimate the speed at

which the controls are moved. These devices usually use potentiometers to determine the position of the stick,[38] though some newer models instead use a Hall effect sensor for greater reliability and reduced size.

In 1997, ThrustMaster, Inc. introduced a 3D programmable controller, which was integrated into computer games to experience flight simulations. This line adapted several aspects of NASA's RHC (Rotational Hand Controller), which is used for landing and navigation methods.[39]

In 1997 the first gaming joystick with force feedback (haptics) was manufactured by CH Products under license from technology creator, Immersion Corporation.[40] The product, called the Force FX joystick was followed by force feedback joysticks from Logitech, Thrustmaster, and others, also under license from Immersion.[41][42]

Arcade sticks

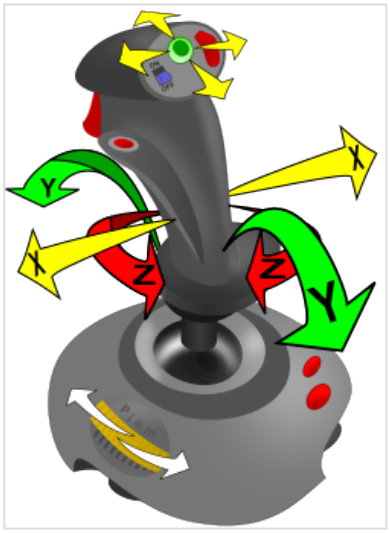
An arcade stick is a large-format controller for use with home consoles or computers. They use the stick-and-button configuration of some arcade cabinets, such as those with particular multi-button arrangements. For example, the six button layout of the arcade games *Street Fighter II* or *Mortal Kombat* cannot be comfortably emulated on a console joypad, so licensed home arcade sticks for these games have been manufactured for home consoles and PCs.[43]

Hat switch

A hat switch is a control on some joysticks. It is also known as a POV (point of view) switch in electronic games, where it allows one to look around in one's virtual world, browse menus, etc. For example, many flight simulators use it to switch the player's views,[44] while other games sometimes use it as a substitute for the D-pad. Computer gamepads with both an analogue stick and a D-pad usually assign POV switch scancodes to the latter.

The term hat switch is a shortening of the term "coolie hat switch", named for the similar looking headgear.[45]

In a real aircraft, the hat switch may control things like aileron or elevator trim.



Hat switch – at top, in green

Cameras

Apart from buttons, wheels and dials as well as touchscreens also miniature joysticks have been established for the efficient manual operation of cameras.[46][47][48]

Miniature joystick on a mirrorless interchangeable-lens camera

Miniature joystick to be operated by the right thumb, next to an electronic viewfinder

Detailed view

Industrial applications

In recent times, the employment of joysticks has become commonplace in many industrial and manufacturing applications, such as cranes, assembly lines, forestry equipment, mining trucks, and excavators. In fact, the use of such joysticks is in such high demand, that it has virtually replaced the traditional mechanical control lever in nearly all modern hydraulic control systems. Additionally, most unmanned aerial vehicles (UAVs) and submersible remotely operated vehicles (ROVs) require at least one joystick to control either the vehicle, the on-board cameras, sensors and/or manipulators.

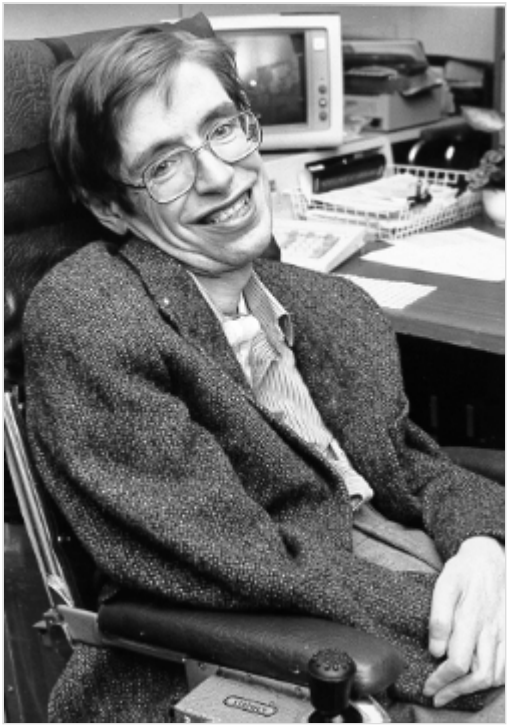
Due to the highly hands-on, rough nature of such applications, the industrial joystick tends to be more robust than the typical video-game controller, and able to function over a high cycle life. This led to the development and employment of Hall effect sensing to such applications in the 1980s as a means of contactless sensing. Several companies produce joysticks for industrial applications using Hall effect technology. Another technology used in joystick design is the use of strain gauges to build force transducers from which the output is proportional to the force applied rather than physical deflection. Miniature force transducers are used as additional controls on joysticks for menu selection functions.

Some larger manufacturers of joysticks are able to customize joystick handles and grips specific to the OEM needs while small regional manufacturers often concentrate on selling standard products at higher prices to smaller OEMs.

Assistive technology

Specialist joysticks, classed as an assistive technology pointing device, are used to replace the computer mouse for people with fairly severe physical disabilities. Rather than controlling games, these joysticks control the pointer. They are often useful to people with athetoid conditions, such as cerebral palsy, who find them easier to grasp than a standard mouse.[49] Miniature joysticks are

available for people with conditions involving muscular weakness such as muscular dystrophy or motor neuron disease as well. They are also used on electric powered wheelchairs for control since they are simple and effective to use as a control method.[50]

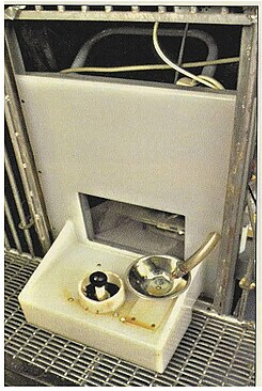


Stephen Hawking

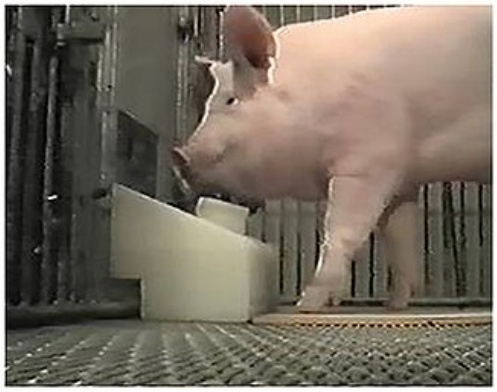
Non-human use

In 1996, a scientific study established that both chimpanzees and rhesus monkeys could be taught to move a pointer on a screen by using a joystick. Both have consistently managed to demonstrate "conceptual knowledge" of the task required of them during trials, although rhesus monkeys were notably slower to do so.[52]

In 2021, another pair of researchers investigated the level of intelligence in domestic pigs by designing a joystick which could be controlled with their snout. Unlike the chimpanzees or the rhesus monkeys, none of the four pigs was able to fully meet the 1996's test criteria for "motoric or conceptual acquisition" of the task, but they still performed "significantly above chance". Notably, the pigs experienced additional difficulties in comparison to the primates, as they were all far-sighted and so may have struggled with the details on screen, and they could not move the target with a joystick without taking their eyes off the screen first.[51]



A joystick designed specifically to be used by pigs



Joystick on the left when in use[51]

See also

- 3D CAD motion controllers like the Spacemouse or Spaceball
- Aircraft flight control system
- The Arcade (joystick)
- Flight simulator
- Game controller
- Gamepad
- Glossary of computer hardware terms
- Gravis PC GamePad
- Kempston joystick
- TAC-2
- Trackball
- Yoke (aircraft)

References

1. AFP (25 July 2009). "English Channel Armada to Mark Centenary of Louis Blériot Flight" (https://www.timesofmalta.com/articles/view/20090725/world/english-channel-armada-to-mark-centenary-of-louis-bleriot-flight.266688). *Times of Malta*. Retrieved 14 September 2015.
2. Zeller, Tom Jr. (2005-06-05). "A Great Idea That's All in the Wrist" (https://www.nytimes.com/2005/06/05/weekinreview/05zeller.html?ex=1275624000&en=127d9054b0921b1d). *New York Times*. Retrieved 2006-09-07.
3. Quinion, Michael (2004-07-17). "Questions & Answers: Joystick" (http://www.worldwidewords.org/qa/qa-joy1.htm). World Wide Words. Retrieved 2006-09-07.
4. "A Timeline of NRL's Autonomous Systems Research" (https://web.archive.org/web/20150908010807/https://www.nrl.navy.mil/lasr/sites/www.nrl.navy.mil.lasr/files/pdfs/Autonomous_Timeline.pdf) (PDF). United States Naval Research Laboratory. 2011. Archived from the original (https://www.nrl.navy.mil/lasr/sites/www.nrl.navy.mil.lasr/files/pdfs/Autonomous_Timeline.pdf) (PDF) on 2015-09-08. Retrieved 2012-10-21.
5. Mirick, C. B. (1926). "Electrical Distant Control System" (https://patents.google.com/patent/US1597416A/en). United States Patent and Trademark Office. Retrieved 2012-10-21.
6. USAAF Wright Field Air Technical Service Command, T-2 Intelligence Department (1946). *WF 12-105, Captured Film, 'Fritz X' German Radio-Controlled Dive Bomb* (https://web.archive.org/web/20140131074257/http://www.youtube.com/watch?v=t1imE2GwDK8) (YouTube). The Digital Implosion. Event occurs at 13:45 to 15:00. Archived from the original (https://www.youtube.com/watch?v=t1imE2GwDK8) (YouTube) on 2014-01-31. Retrieved July 24, 2013.
7. United States Office of Strategic Services (1943). *WW2: Azon (1943) Radio-Controlled Dive Bomb* (https://web.archive.org/web/20131205220405/http://www.youtube.com/watch?v=2qTTgn-PFuM) (YouTube). The Digital Implosion. Archived from the original (https://www.youtube.com/watch?v=2qTTgn-PFuM) on 2013-12-05. Retrieved July 21, 2013.
8. "Sega Intros "Motopolo" Game" (https://www.worldradiohistory.com/Archive-All-Music/Cash-Box/60s/1968/CB-1968-04-13.pdf#page=77) (PDF). *Cash Box*. April 13, 1968. p. 71.
9. "The Brown Box Golf Game Accessory, 1968" (https://www.si.edu/object/brown-box-golf-game-accessory-1968%3Anmah_1302398). *Smithsonian Institution*. 2006. Archived (https://web.archive.org/web/20201031011902/http://www.si.edu/object/brown-box-golf-game-accessory-1968%3Anmah_1302398) from the original on 2020-10-31. Retrieved 2025-06-04.
10. Edwards, Benj (2007-05-15). "Video Games Turn Forty" (http://www.vintagecomputing.com/index.php/archives/1107/video-games-turn-forty). *vintagecomputing.com (originally published at 1UP.com)*. Retrieved 2019-08-27.
11. *Missile* (https://www.arcade-museum.com/game_detail.php?game_id=10600) at the Killer List of Videogames
12. *S.A.M.I.* (https://www.arcade-museum.com/game_detail.php?game_id=5190) at the Killer List of Videogames
13. *Astro Race* (https://www.arcade-museum.com/game_detail.php?game_id=6949) at the Killer List of Videogames
14. Stephen Totilo, In Search Of The First Video Game Gun (https://kotaku.com/in-search-of-the-first-video-game-gun-5626466), Kotaku
15. *Interceptor* (https://www.arcade-museum.com/game_detail.php?game_id=8195) at the Killer List of Videogames
16. Jamie Rigg (22 June 2012). "Joyride to Joystick: Atari Controller Custom-Built from a Car Seat Adjuster" (https://www.engadget.com/2012/06/22/custom-atari-car-seat-joystick/). Engadget. Retrieved 15 September 2015.
17. Grant Brunner (27 May 2013). "Shoulder Buttons of Giants: The Evolution of Controllers Leading Up to PS4 and Xbox One" (http://www.extremetech.com/gaming/156711-evolution-of-video-game-controllers-leading-to-ps4-and-xbox-one). ExtremeTech. Retrieved 11 September 2015.

18. "Masterpiece: The NES Advantage—God's own controller" (https://arstechnica.com/gaming/2011/01/masterpiece-the-nes-advantagegods-own-controller/). *Ars Technica*. Retrieved 2018-10-02.
19. Keegan, Jon (2025-04-17). "How a 1980s toy robot arm inspired modern robotics" (https://www.technologyreview.com/2025/04/17/1114456/toy-armatron-modern-robotics-ai-nostalgia/). *MIT Technology Review*. Retrieved 2025-06-16.
20. Space Harrier Retrospective (http://uk.retro.ign.com/articles/906/906935p2.html), IGN
21. "「怒」を作った男" (http://shmuplations.com/snkgoldenage/) [The Man Who Made "Ikari"]. *Continue* (in Japanese). March 2001.
22. "Arcade Action: Tank" (https://www.solvalou.com/arcade/reviews/45/351). *Computer and Video Games*. No. 52 (February 1986). 16 January 1986. p. 51.
23. "Bustin' Out: SNK's *Beast Busters* dedicated video gun game makes its mark" (https://archive.org/details/re-play-volume-14-issue-no.-5-february-1990-600dpi/RePlay%20-%20Volume%2014%2C%20Issue%20No.%205%20-%20February%201990/page/61). *RePlay*. Vol. 15, no. 5. February 1990. pp. 61–2.
24. Morgan McGuire & Odest Chadwicke Jenkins (2009), *Creating Games: Mechanics, Content, and Technology* (https://books.google.com/books?id=0G3PKwgvizEC), A K Peters, Ltd., p. 408, ISBN 978-1-56881-305-9, retrieved 2011-04-03, "Light guns, such as the NES Zapper or those used in the *House of the Dead* series, are distinctly different from positional guns used by arcade games such as SEGA's Gunblade NY. ... Light guns differ from positional guns, such as in Gunblade NY (bottom), that are essentially analog joysticks. ... Positional guns are essentially analog sticks mounted in a fixed location with respect to the screen. Light guns, in contrast, have no fixed a priori relationship with a display."
25. Yo-Sung Ho & Hyoung Joong Kim (November 13–16, 2005), *Advances in Multimedia Information Processing-PCM 2005: 6th Pacific-Rim Conference on Multimedia, Jeju Island, Korea* (https://books.google.com/books?id=z-KQDQ0BtG4C&pg=PA688), Springer Science & Business, p. 688, ISBN 3-540-30040-6, retrieved 2011-04-03, "The two routes to conventional gun control are light guns and positional guns. Light guns are the most common for video game systems of any type. They work optically with screen and do not keep track of location on the screen until the gun is fired. When the gun is fired, the screen blanks for a moment, and the optics in the gun register where on the screen the gun is aimed. That information is sent to the computer, which registers the shot. ... Positional guns are mounted stationary on the arcade cabinet with the ability to aim left/right and up/down. They function much like joysticks, which maintain a known location on screen at all times and register the current location when fired."
26. *Sea Devil* (https://www.arcade-museum.com/game_detail.php?game_id=10632) at the Killer List of Videogames
27. *Attack* (https://www.arcade-museum.com/game_detail.php?game_id=6971) at the Killer List of Videogames
28. *Cross Fire* (https://www.arcade-museum.com/game_detail.php?game_id=7443) at the Killer List of Videogames
29. *Battle Shark* (https://www.arcade-museum.com/game_detail.php?game_id=7050) at the Killer List of Videogames
30. Peckham, Matt (September 26, 2006). "DarkStar One" (https://web.archive.org/web/20061017014353/http://www.scifi.com/sfw/games/sfw13762.html). SciFi.com. Archived from the original (http://www.scifi.com/sfw/games/sfw13762.html) on 17 October 2006. Retrieved 2007-11-17.
31. "Space Interceptor: Project Freedom" (https://web.archive.org/web/20120310123556/http://www.mygamer.com/index.php?id=550484&page=gameportal&mode=reviews). MyGamer. November 9, 2004. Archived from the original (http://www.mygamer.com/index.php?id=550484&page=gameportal&mode=reviews) on March 10, 2012. Retrieved 2007-11-17.
32. Weise, Matt (May 28, 2003). "Freelancer" (https://web.archive.org/web/20080106234548/http://www.gamecritics.com/review/freelancer/main.php). GameCritics. Archived from the original (http://www.gamecritics.com/review/freelancer/main.php) on January 6, 2008. Retrieved 2007-11-17.

33. LaMosca, Adam (July 18, 2006). "Lost in the Void" (https://web.archive.org/web/20080225101232/http://www.escapistmagazine.com/articles/view/issues/issue_54/324-Lost-in-the-Void). *The Escapist*. Archived from the original (http://www.escapistmagazine.com/articles/view/issues/issue_54/324-Lost-in-the-Void) on 2008-02-25. Retrieved 2007-11-17.
34. Wen, Howard (February 12, 2008). "What Happened To The Last Starfighters?" (https://web.archive.org/web/20090225135411/http://www.escapistmagazine.com/articles/view/issues/issue_136/2918-What-Happened-To-The-Last-Starfighters). *The Escapist*. Archived from the original (http://www.escapistmagazine.com/articles/view/issues/issue_136/2918-What-Happened-To-The-Last-Starfighters) on 2009-02-25. Retrieved 2008-06-20.
35. Hirsch, Matthew (June 4, 2017). "VPC's MongoosT-50 joystick: A rare Russian-style controller for skies or space" (https://web.archive.org/web/20170605202404/https://arstechnica.com/gaming/2017/06/hand-it-to-the-new-guys-ars-reviews-the-vpcs-mongoost-50-joystick/). *Ars Technica*. Archived from the original (https://arstechnica.com/gaming/2017/06/hand-it-to-the-new-guys-ars-reviews-the-vpcs-mongoost-50-joystick/) on June 5, 2017. "Unlike most flight sticks for sale on the US market, which tend to be based with varying levels of verisimilitude on US fighter aircraft control columns, the MongoosT-50 is built to mirror the control stick on Russian aircraft—specifically, the fifth-generation Russian Sukhoi Su-35 and PAK FA (T-50)."
36. Tom Senior (7 February 2011). "Volition Would "Commit Murder" to Make Freespace 3" (http://www.pcgamer.com/volition-would-commit-murder-to-make-freespace-3/). *PC Gamer*. Retrieved 29 May 2015.
37. Jonathan Drake (24 September 2011). "Nintendo 64: Launching a Legacy" (http://www.ign.com/articles/2011/09/24/nintendo-64-launching-a-legacy). *IGN*. Retrieved 9 September 2015.
38. US Patent 5436640 (https://worldwide.espacenet.com/textdoc?DB=EPODOC&IDX=US5436640), David W. Reeves, "Video Game and Simulator Joystick Controller with Geared Potentiometer Actuation", published (1995-07-25), issued (1995-07-25), assigned to Thrustmaster, Inc.
39. Bijlefeld, Marjolijn (2003). *It came from outer space : everyday products and ideas from the space program*. Burke, Robert (Robert L.). Westport, Conn.: Greenwood Press. ISBN 0313058415. OCLC 61247073 (https://search.worldcat.org/oclc/61247073).
40. Manes, Stephen (1997-02-25). "For Your Games, a Joystick That Pushes Back" (https://www.nytimes.com/1997/02/25/science/for-your-games-a-joystick-that-pushes-back.html). *The New York Times*. ISSN 0362-4331 (https://search.worldcat.org/issn/0362-4331). Archived (https://web.archive.org/web/20230521221047/https://www.nytimes.com/1997/02/25/science/for-your-games-a-joystick-that-pushes-back.html) from the original on May 21, 2023.
41. Hutsko, Joe (1999-02-04). "When Joystick Starts Shaking, Hang On" (https://www.nytimes.com/1999/02/04/technology/when-joystick-starts-shaking-hang-on.html). *The New York Times*. ISSN 0362-4331 (https://search.worldcat.org/issn/0362-4331). Archived (https://web.archive.org/web/20230521200547/https://www.nytimes.com/1999/02/04/technology/when-joystick-starts-shaking-hang-on.html) from the original on May 21, 2023.
42. "Good Vibrations" (https://www.wired.com/1999/08/mousing-with-good-vibrations/). *Wired*. ISSN 1059-1028 (https://search.worldcat.org/issn/1059-1028). Archived (https://web.archive.org/web/20230405121752/https://www.wired.com/1999/08/mousing-with-good-vibrations/) from the original on Apr 5, 2023.
43. Gerry Block (December 18, 2007). "Arcade in a Box Xbox 360 Arcade Stick" (http://uk.gear.ign.com/articles/842/842386p1.html). *IGN*. Retrieved 2009-04-21.
44. "Microsoft Combat Flight Simulator 2, EU-Inside Moves Series, Jeff Van West, Book - Barnes & Noble" (https://web.archive.org/web/20070929131538/http://search.barnesandnoble.com/booksearch/isbninquiry.asp?z=y&ean=9780735611764&displayonly=EXC). Search.barnesandnoble.com. Archived from the original (http://search.barnesandnoble.com/booksearch/isbninquiry.asp?z=y&ean=9780735611764&displayonly=EXC) on 2007-09-29. Retrieved 2010-08-18.
45. Cantrell, Paul. "Helicopter Aviation" (http://www.copters.com/mech/cyclics.html). *www.copters.com*. Retrieved 20 December 2015.

46. Fujifilm X100F steps up to 24.3MP, adds AF joystick (https://www.dpreview.com/news/2200224348/fujifilm-x100f-steps-up-to-24-3mp-adds-af-joystick), dpreview.com 19 January 2017, retrieved 19 August 2020.
47. Richard Butler: Panasonic Lumix DMC-LX3 Review (https://www.dpreview.com/reviews/panasonicdmclx3/3), dpreview.com 11 April 2008, retrieved 19 August 2020.
48. Carey Rose, Rishi Sanyal, Dan Bracaglia: Sony a7 III Review (https://www.dpreview.com/reviews/sony-a7-iii-review/3), dpreview.com 23 April 2018, retrieved 19 August 2020.
49. Darleen Hartley (22 May 2009). "Robotics Improves Movement in Kids with Cerebral Palsy" (https://web.archive.org/web/20160820115501/http://www.geek.com/gadgets/robotics-improves-movement-in-kids-with-cerebral-palsy-781412/). geek.com. Archived from the original (http://www.geek.com/gadgets/robotics-improves-movement-in-kids-with-cerebral-palsy-781412/) on August 20, 2016. Retrieved 16 September 2015.
50. Andrew Liszewski (28 April 2012). "If You Don't Find This Video About Robot Wheelchairs for Babies' Heartwarming, You Probably Don't Have a Soul" (https://web.archive.org/web/20120429094231/http://gizmodo.com/5905966/if-you-dont-find-this-video-about-robot-wheelchairs-for-babies-heartwarming-you-probably-dont-have-a-soul). *Gizmodo*. Archived from the original (https://gizmodo.com/5905966/if-you-dont-find-this-video-about-robot-wheelchairs-for-babies-heartwarming-you-probably-dont-have-a-soul) on April 29, 2012. Retrieved 17 September 2015.
51. Croney, Candace C.; Boysen, Sarah T. (11 February 2021). "Acquisition of a Joystick-Operated Video Task by Pigs (Sus scrofa)" (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7928376). *Frontiers in Psychology*. **12**. doi:10.3389/fpsyg.2021.631755 (https://doi.org/10.3389%2Ffpsyg.2021.631755). PMC 7928376 (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7928376). PMID 33679560 (https://pubmed.ncbi.nlm.nih.gov/33679560).
52. Hopkins, William D.; Washburn, David A.; Hyatt, Charles W. (1996). "Video-task acquisition in rhesus monkeys (Macaca mulatta) and chimpanzees (Pan troglodytes): A comparative analysis". *Primates*. **37** (2): 197–206. doi:10.1007/BF02381407 (https://doi.org/10.1007%2FBF02381407). PMID 11541941 (https://pubmed.ncbi.nlm.nih.gov/11541941).

Further reading

- Roch, Axel [at Wikidata]. "Fire-Control and Human-Computer Interaction: Towards a History of the Computer Mouse (1940–1965)" (http://moon.zkm.de/hp_new/pdf/mouse.pdf) (PDF). Mindell, David. Massachusetts Institute of Technology, Program in Science, Technology, and Society. Archived (https://web.archive.org/web/20210628210444/http://moon.zkm.de/hp_new/pdf/mouse.pdf) (PDF) from the original on 2021-06-28. Retrieved 2021-08-24. (11 pages) (NB. This is based on an earlier German article published in 1996 in *Lab. Jahrbuch 1995/1996 für Künste und Apparate* (350 pages) by Kunsthochschule für Medien Köln mit dem Verein der Freunde der Kunsthochschule für Medien Köln; Verlag der Buchhandlung Walther König in Cologne, Germany. ISBN 3-88375-245-2.)

External links

Atari CX40 joystick

The **Atari CX40** joystick was the first widely used cross-platform game controller. The original **CX10** was released with the Atari Video Computer System (later renamed the Atari 2600) in 1977 and became the primary input device for most games on the platform. The CX10 was replaced after a year by the simpler and less expensive CX40. The addition of the Atari joystick port to other platforms cemented its popularity. It was the standard for the Atari 8-bit computers and was compatible with the VIC-20, Commodore 64, Commodore 128, MSX, and later the Atari ST and Amiga. Third-party adapters allowed it to be used on other systems, such as the Apple II, Commodore 16, TI-99/4A, and the ZX Spectrum.

The Atari CX40 joystick with one button and an 8-directional stick

The CX40 was so popular during its run that it became as iconic to Atari as the company's "Fuji" logo;[1] it remains a common staple in video game iconography to this day,[2] and is commonly referred to as *the* symbol of 1980s video game system design.[3] The CX40 has been called "the pinnacle of home entertainment controllers in its day",[4] and remains a staple of industrial design discussions.[5] The CX40 had several well-known problems and was subject to eventual mechanical breakdown. A number of more robust third-party alternatives were available in a thriving market, but generally at much higher prices.[6][a]

The Atari-style joystick declined in popularity as games relied on multiple buttons for gameplay. Systems from the third generation of video game consoles, such as the Nintendo Entertainment System and Master System included two action buttons on their controllers (with the NES controller also including two menu buttons). Atari's own Atari 7800 shipped with two-button controllers as well.[8]

Description

The Atari joystick works by connecting the ground pin to one of several pins in the Atari joystick port, thereby dropping the voltage on that pin and creating a signal that can be noticed by a controller in the computer.[9] For this reason, Atari-style joysticks are sometimes referred to as "digital joysticks", largely to differentiate them from the analog joysticks found on systems like the Apple II and IBM PC.[10]

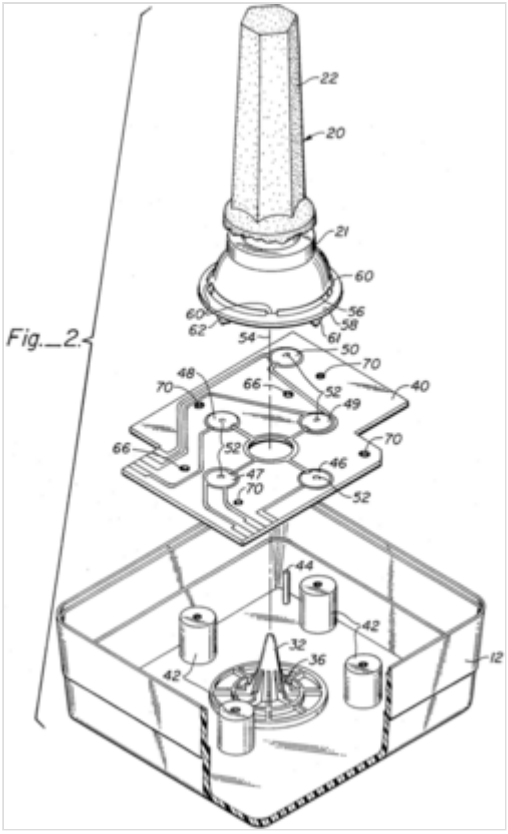
The main structure of the CX40 is formed from a concave moulded thermoplastic base with a separate flat lid that covers the opening on the top of the base. Four cylindrical protrusions on the inside of the base hold a printed circuit board (PCB) above the bottom, roughly centered vertically. A conical post on the base passes vertically through a hole in the middle of the PCB.[11]

The PCB has five membrane switches mounted on top. Four of the switches are arranged in a cross pattern around the hole in the middle of the PCB; the fifth is offset near one of the corners. The PCB connects the switches to pins in the 9-pin D-connector that leads to the console via a cutout in the upper right corner of the base. The cutout is shaped to grip a moulded strain relief on the cable.[11]

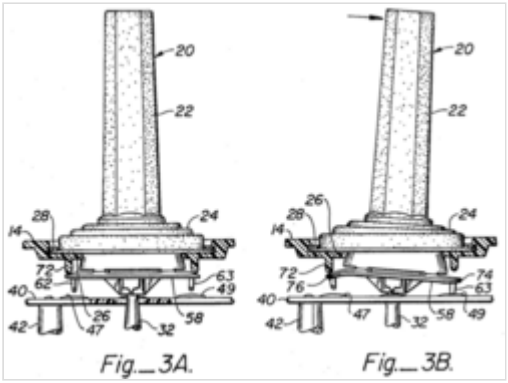
The stick itself is a moulded polypropylene form consisting of a hollow vertical cylinder with a hemispherical dome at one end. The stick is placed on top of the conical post in the base, and the lid is placed over it. This clamps the stick between the post and the circular cutout in the lid. When pressure is applied to move the stick, it can rotate on the post by sliding the hemisphere within the circular cutout.[11]

The hemisphere has four small "fingers" at the bottom, which are positioned to lie over the switches on the PCB. Cutouts in the hemisphere make the fingers mechanically separate from the main section of the stick, allowing them to flex so they do not press too hard on the switches. When the stick is moved, the hemisphere rotates on its support post, bringing the fingers down to press on the appropriate buttons. At the same time, the opposite side of the hemisphere rises, where it comes into contact with short protrusions on the lid. These push down on the flexible section of the hemisphere, providing a centering force that returns the stick to the upright position when pressure is released.[11]

The stick is assembled by placing the PCB within the lower case and routing the cable out of the box. The stick is then placed on top of the post, and a flexible rubbery cover is placed over the stick. A red plastic button is placed over the fifth switch, providing the fire button; and the top lid is then placed on top of the entire assembly. Four machine screws inserted from the bottom of the case through the PCB support protrusions hold the lid on, holding everything in place through compression.[11]



An exploded view of the Atari CX40 joystick shows its basic construction. The top lid is not shown in this diagram.



When the stick is moved, one side of the hemisphere (right) moves down to press on the buttons while the opposite side is forced upward (left) to provide a recentering force.

Although the stick can be pressed in any direction, the four fingers on the hemisphere allow only two switches to be pressed at a time. This allows a total of eight directions: four for up, down, left, and right, and four more for combinations of neighboring switches: up-left, up-right, down-left, and down-right. The physical movement on the post prevents non-neighbouring switches from being pressed; one can not press up and down at the same time, for instance.[11]

The base and its cover are moulded with some roughness in the plastic. The portion directly around the stick and the fire button are smooth. Just around the opening for the stick are a series of rectangular embossings with the four cardinal directions indicated by small wedge shapes. The

12 o'clock position replaces the wedges with the word "TOP". These markings are all painted orange, but this tends to wear off over time.[11]

Problems

Right-handed users would normally hold the stick in their left hand by gripping the left side of the case with their thumb over the fire button, and fingers wrapped around the left side and bottom, while their right hand operated the stick. Some games allowed the stick to be rotated for left-handed users, or this could be done with some minor re-wiring.[12]

The ergonomics of the base and the need to hold it while pressing the fire button led to fatigue of the left thumb that became known as "joystick thumb".[13] This was especially common in games that required the user to fire repeatedly or hold down the button for long periods, like *Eastern Front (1941)*. This led to various "autofire" attachments, available as do-it-yourself plans,[14] pre-assembled, or as parts of 3rd party sticks. These simulated rapid presses of the fire button as long as the button on the stick was held down.[13]

Small rubbery pads on the bottom allowed for stick placement on a desktop. However, the torque needed to operate the internal switches was more than enough to flip over the lightweight stick. Some 3rd party replacements used a much larger base and/or a shorter vertical stick so the torque was reduced. Generally those with bases large enough for one-handed use tended to be too large to use two-handed. Modifications using suction cups, also found on some 3rd party sticks, were generally regarded as more trouble than they were worth.[13]

The CX40 was infamous for its eventual breakdown from one of two problems. One was that the control ring on the bottom of the stick moulding was not very robust, and either the ring itself or the four small tabs that connected it to the stick could be broken by applying too much force. The ring transmitted the force from the stick to the switches, so if it broke, the stick would no longer operate properly in that direction. This happened with "distressing regularity".[6] The other problem was that the switches themselves would eventually wear out due to repeated use, normally with the top membrane cracking or the tape holding it in place wearing off.[15][16]

A common modification was to replace the switches with miniature snap-action switches (microswitches). Some of these, however, have the problem that their actuation is non-linear; they require considerable force to start moving compared to the force needed to complete the motion. When used in an otherwise unmodified CX40, this caused it to be more difficult to move along the diagonals,[13] as one of the two switches being pushed would normally reach the threshold first, causing motion in that direction while the other was not yet pressed. In games that required fine control, like *Jumpman*, these solutions were generally unsuitable. Newer switches improve this action.[17]

Versions

CX10

CX10 joystick

The original CX10 version was designed by Steve Bristow for the 2600[18] and produced only for a single year. Many of these[b] had the word "ATARI" printed in white letters on a thin metal plate at the very top of the stick.[19]

Internally, the CX10 differed from the CX40 primarily in the switch mechanisms. In the CX10, a thin plastic plate was placed directly on top of the PCB, separated by a few millimetres. Cup-shaped protrusions on the top surface held a small metal spring, and opposite these on the bottom surface of the plate was a small metal bar. The plate was positioned so the bars on the bottom of the cups were positioned over similar bars on the PCB, although aligned perpendicularly. Slits cut into the plate on either side of the cup made that section of the plate flexible. When the stick was moved, it pressed on the spring, eventually providing enough force to bend that section of the plate down until the two metal bars made contact. The springs provided the recentering force.[18] This operation required more physical motion to depress the switches than on the CX40, and the CX10 is generally considered to be less suitable for gaming.[1]

CX40

The CX40 for the Atari XE series computer used a matching grey colour instead of the standard black.

The CX40 was designed by James Asher[11] to replace the CX10, with the aim of greatly improving its ability to be inexpensively mass-produced.[1] By 1983, one out of every five American homes had one.[20] This model accounts for the vast majority of Atari's production run.

The CX40 is nearly identical to the CX10 externally, but lacks the printing on the top of the stick, and replaced the uppermost wedge in the ring of embossing with the word "TOP". By 1986 the market had been so flooded with 3rd party clones (see below) that the CX40 was difficult to obtain, and some dealers could only order it with software.[21]

A new CX40 using gray colored plastic for the base was released with the Atari XEGS computer. It also dispensed with the orange paint on the embossing on the base. It was otherwise identical to the earlier CX40, retaining the black plastic cover on the stick and the red fire button.[1]

Other joysticks from Atari

The CX40 remained popular throughout the run of the 2600 and Atari 8-bit computers, but by the end of their run many 3rd party improvements had appeared and Atari introduced new controllers of their own.

Released in the summer of 1983, the CX842 "Remote Control Wireless Joystick" was a rebranded version of the Cynex Game Mate 2. These were essentially CX40's on top of a radio device, so the bases were quite large as a result. A separate receiver box completes the connection to the console.[22]

Atari also advertised the CX43 "Space Age Joystick", the most radical change to the basic concept. This was essentially a very small version of the CX40 mounted on top of a trigger-style handle with a fire button on the front. The handle was intended to be held in one hand while the other operated the very short stick on top. The CX43 may be a rebranded version of the Milton Bradley HD2000, which was never released.[23]

The Atari 7800's CX-24 Pro-Line joystick was designed to be backward compatible with the 2600 and its games. The Pro-Line was originally advertised specifically for the 2600 in 1983,[24] but was not released until it was made the pack-in controller for the 7800. Its right fire button was designed to switch between functioning as a discrete button for 7800 games, and as a duplicate of the left fire button (which was functionally identical to the CX-40's lone fire button) for 2600 games. The Atari CX-78 Joypad, available in PAL markets in place of the CX-24, had the same compatibility as the Pro-Line stick.

3rd party alternatives

The CX40 was the only model in widespread use until about 1981, when the introduction of *Space Invaders* on the 2600 quadrupled that platform's sales.[25] This led to a thriving 3rd party market for better sticks for use on the 2600.[26]

The Commodore VC1311 was introduced after their clone of the CX40 was ordered off the market.

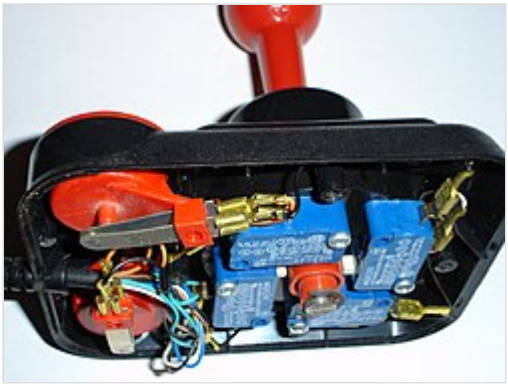
Many were almost identical copies of the CX40. Other examples of barely-modified sticks include the Gemini GemStick, which was essentially a CX40 with a somewhat larger base and the fire button replaced by a larger yellow version. The Gemstick 2 added a second button in the upper right. The Suncom Slik-Stik was slightly more modified with the case rounded off and a large red plastic ball at the tip of a shortened stick. The shorter stick made it more suitable for single-handed use. Suncom later introduced the TAC-2, essentially a larger Slik-Stik with buttons on both sides, for left-handed users.[27]

For the VIC-20, Commodore International introduced a joystick that was essentially identical to the Atari model with the exception that the top plate on the base was white instead of black. This prompted Atari to sue for patent violations.[28][29] Commodore responded by introducing the 1311, a modified version that made the case more rectangular, changed the stick from a tapered

hexagonal prism to a triangular prism, and replaced the single round fire button with a larger one running across the top of the stick, making it suitable for use in either hand. These changes also rendered it painful to use and it was widely panned.[30][31]

Commodore's CX40 clone (right) next to a CX40 (middle)

The Wico Command Control was one of the earliest examples of a stick that differed radically from the Atari pattern in mechanical terms. Wico was a major supplier of arcade game joysticks and adapted these mechanisms for home use.[13] These replaced the membrane switches with leaf switches that were much more robust and provided the recentering force internally. A large rounded-corner square block of plastic provided the moving surface similar to the hemisphere in the CX40, but was shaped to provide more obvious directions when pressed, sliding along the edges of the square. The stick, a steel tube covered in a bat-like red plastic moulding, featured a button on top that pressed a shaft running through the center of the stick to another switch below the main assembly.[32]



Happ's Competition Pro used micro and leaf switches in place of Atari's membrane switches. The red stick presses on the white and blue switch actuators. The fire buttons are activated by long leaf contacts.

The base was greatly enlarged with the specific intent of making it useful in one-handed play, which operated in concert with the stick-top button. A switch on the base selected whether the button on the handle or the base was active. The case also featured moulded indents in the bottom that made it easier to hold in two-hand use. The result was a system that was significantly more robust than the Atari sticks, but also much more complex and expensive. Later versions added a switch for "autofire" that caused the fire button to be repeatedly pressed while held down, and even later the bat-like handle was replaced by a ball like those found on arcade sticks. A flightstick-style handle with finger grooves was also offered. It was consistently rated very highly.[6][27]

The Epyx 500XJ[c] was among a very few designs that broke from the Atari mould completely. Like the Competition Pro, the 500XJ's mechanism was based around a steel shaft pressing on microswitches and offered a similar feel. Unlike the Command Control, the 500XJ's shaft pressed directly on the switches, making it harder to press into the diagonals. More importantly, the base of the unit was completely changed, consisting of a moulded form that was designed to be easily gripped by the left hand with the index finger naturally positioned over a fire button located on the bottom right side of the case. Both robust and unique, the 500XJ garnered widespread praise and was the only other joystick of the era to achieve widespread popularity to the point of becoming a standard of sorts.[33]

The Epyx 500XJ was a radical restyling of the basic CX40 concept. This version, for the NES, has additional buttons.

Early gamepads were essentially CX40s with the base exposed to the user and the joystick on top removed. Sega's Master System and Genesis/Mega Drive controllers are compatible with the 2600, although the console can only read one fire button on the Sega controllers – the 2 button on Master System controllers, and the B button on Genesis controllers. The Sega Control Stick[34] was the only Sega-made controller actually marketed for its compatibility with Atari and Commodore systems. Due to the unique setup of the 7800's fire buttons, Sega controllers are not compatible with 7800 games that require two fire buttons, although they can be used with 7800 games that only use one fire button.

Atari joysticks on other platforms

The Atari joystick was so popular that adaptors for its standard of connector were available for platforms like the Apple II and IBM PC.[35][20] There were even factory modified CX40s, notably the Trisstick from Big Five Software, that placed the converter electronics inside the CX40 case and replaced the cable with one suitable for the TRS-80.[36]

While its single-button configuration makes it unsuitable for general use with Sega's consoles, an Atari joystick can be used in the player two port for certain two-player games with minimal controls, so long as a standard Sega controller is plugged into the player one port. For example, a CX-40 can be used to control Tails in two-player mode in *Sonic the Hedgehog 2*, as all three Genesis fire buttons are mapped to the same jump/spin-dash function (and with the Master System for the 1 and 2 buttons), although player two cannot pause the game due to the absence of a Start button.

Notes

a. CX40s were widely available for under $10.[6][7]
b. Perhaps all of them, sources are not specific
c. Apparently a re-branded Konix Speedking[27]

References

Citations

1. Goldberg & Vendel 2012, p. 323.
2. Wolf, Mark (2012). *Before the Crash: Early Video Game History* (https://books.google.com/books?id=oK3D4i5ldKgC&pg=PA67). Wayne State University Press. p. 67. ISBN 978-0814337226.
3. Lidwell, William; Manacsa, Gerry (2011). *Deconstructing Product Design* (https://books.google.com/books?id=8x9J35ZdHmAC&pg=PA98). Lockport Publishers. p. 97. ISBN 9781592537396.
4. Rollings, Andrew; Adams, Ernest (2003). *Andrew Rollings and Ernest Adams on Game Design* (https://books.google.com/books?id=Qc19ChiOUI4C&pg=PA167). New Riders. p. 167. ISBN 9781592730018.
5. Lidwell, William; Manacsa, Gerry (2011). *Deconstructing Product Design* (https://books.google.com/books?id=8x9J35ZdHmAC&pg=PA98). Rockport Publishers. p. 98. ISBN 9781592537396.
6. Plotkin 1982.

7. "advertisements" (https://books.google.com/books?id=Yjw-AQAAIAAJ). *Modern Photography*: 141. 1982.
8. "Catalog - Atari (CO21776-Rev. A)" (https://atariage.com/catalog_thumbs.php?CatalogID=38). *AtariAge*.
9. Sivakumaran, Soori (1986). *Electronic Computer Projects* (https://archive.org/stream/Electronic_Computer_Projects_for_Commodore_and_Atari_Soori_Sivakumaran#page/n37/mode/1up). COMPUTE! Publications. p. 23. ISBN 0-87455-052-1. Retrieved 2017-09-21.
10. Ahl, David (Fall 1983). "Game Controllers And Accessories" (https://www.atarimagazines.com/cva/v1n2/updatecontrollers.php). *Creative Computing Video & Arcade Games*. p. 115.
11. CX40.
12. Grand & Yarusso 2004, pp. 337–342.
13. Plotkin 1988.
14. "Autofire Circuit" (http://www.playvectrex.com/vectech/autofire.txt).
15. Alaimo, Chris (1 April 2010). "Replacing the PCB in your Atari CX-10 "Heavy Sixer" joystick" (http://www.cgquarterly.com/2010/04/01/replacing-the-pcb-in-your-atari-cx-10-heavy-sixer-joystick/). *Classic Gaming Quarterly*.
16. Grand & Yarusso 2004, pp. 342–349.
17. "A CX-40 Micro Switch Upgrade" (http://atariage.com/forums/blog/572/entry-12134-a-cx-40-micro-switch-upgrade/). *AtariAge*. 2 July 2015.
18. CX10.
19. Goldberg & Vendel 2012, p. 235.
20. Ahl, David H.; Rost, Randi J. (1983), "Blisters And Frustration: Joysticks, Paddles, Buttons and Game Port Extenders for Apple, Atari and VIC" (http://www.atarimagazines.com/cva/v1n1/joysticks.php), *Creative Computing Video & Arcade Games*, **1** (1): 106ff
21. Bisson, Gigi (May 1986). "Antic Then & Now" (https://archive.org/stream/1986-05-anticmagazine/Antic_Vol_5-01_1986-05_Fourth_Anniversary_Issue#page/n15/mode/2up/search/raiders). *Antic*. pp. 16–23. Retrieved 28 January 2015.
22. "The Atari 2600 Remote Controlled Joystick" (https://web.archive.org/web/20030623100648/http://www.atarimuseum.com/videogames/consoles/2600/2600rc.html). *Atari Museum*. Archived from the original (http://www.atarimuseum.com/videogames/consoles/2600/2600rc.html) on 2003-06-23.
23. "Atari Space Age Joystick" (http://www.atariage.com/controller_page.html?SystemID=2600&ControllerID=18). *AtariAge*.
24. "Catalog - Atari (CO21776-Rev. A)" (https://atariage.com/catalog_thumbs.php?CatalogID=38). *AtariAge*.
25. Kent, Steven (2001). *Ultimate History of Video Games*. Three Rivers Press. p. 190. ISBN 0-7615-3643-4.
26. Heinonen, Mikko; Nylund, Niklas (December 2024). "The Joy of Sticks Researching the History of Game Controllers That Used the Atari Standard" (https://romchip.org/index.php/romchip-journal/article/view/204). *ROMchip journal*. **6** (2). "...the market was quickly flooded with third-party controllers to replace the ones Atari shipped with their Video Computer System (VCS) game console (later known as the Atari 2600). Some of them were better in terms of quality and ergonomics than the original Atari controllers, while others were not."
27. Hybner 1986.
28. Goldberg & Vendel 2012, p. 597.
29. "Atari wins joystick battle" (https://books.google.com/books?id=HjAEAAAAMBAJ&pg=PA5). *InfoWorld*: 5. 29 November 1982.
30. "Worst Retro Joystick Ever?" (http://www.retrothing.com/2011/12/worst-retro-joystick-ever.html). *Retro Thing*. 28 December 2011.
31. "1311 Joystick" (http://retro.lonningdal.net/home.php?page=Hardware&select=1311%20Joystick). *Commodore Retro Heaven*.

32. "Inside the WICO Command Control Joystick" (http://atariage.com/forums/blog/572/entry-12118-inside-the-wico-command-control-joystick/). *AtariAge.com*. 26 June 2015.
33. Pearlman, Gregg (January 1987). "500XJ Joystick" (http://www.atarimagazines.com/v5n9/ProductReviews.html). *Antic*.
34. "Control Stick" (https://segaretro.org/Control_Stick). *Sega Retro*. March 13, 2020.
35. Woita, Steve (2007), *Classic Gaming Expo – Steve Woita* (http://www.cgexpo.com/bios/swoita.html), retrieved 2007-03-26
36. "Company" (http://www.bigfivesoftware.com/company/company.htm). *Big Five Software*.

Bibliography

- US expired 4124787 (https://patentimages.storage.googleapis.com/pdfs/702bc21d87f308383367/US4124787.pdf), Gerald R. Aamoth & John K. Hayashi, "Joystick controller mechanism operating one or plural switches sequentially or simultaneously", published 1978-11-07, issued 1978-11-07, assigned to Atari Inc
- US expired 4349708 (https://patentimages.storage.googleapis.com/pdfs/1ae0e2937613724a0e9f/US4349708.pdf), James C. Asher, "Joystick control", published 1982-09-14, issued 1982-09-14, assigned to Atari Inc
- Goldberg, Marty; Vendel, Curt (2012). *Atari Inc: Business is Fun* (https://books.google.com/books?id=3FwGMtRafrAC). Syzygy Press. ISBN 9780985597405.
- Grand, Joe; Yarusso, Albert (2004). *Game Console Hacking*. Syngress.
- Hybner, Tomas (October 1986). "Tovl joystickar testade!" (http://amr.abime.net/review_35186). *Datormagazin*: 18.
- Montfort, Nick; Bogost, Ian (2014). *Stella and Combat: A BIT of Racing the Beam* (https://books.google.com/books?id=r0zFAgAAQBAJ&pg=PT22). MIT Press. p. 22. ISBN 9780262316446.
- Plotkin, Dave (December 1982). "Joystick Survey: Alternatives to the Atari controller" (http://www.atarimagazines.com/v1n5/joysticksurvey.html). *ANTIC*.
- Plotkin, Dave (December 1988). "The Joy of Joysticks" (http://www.atarimagazines.com/v7n8/joysticks.html). *ANTIC*.

External links

- List of Atari-compatible joysticks (https://web.archive.org/web/20161130053753/http://www.2600connection.com/faq/controllers/faq_controllers.html) at the Wayback Machine (archived November 30, 2016)

Trackball

A **trackball** is a pointing device consisting of a ball held by a socket containing sensors to detect a rotation of the ball about two axes—like an upside-down ball mouse with an exposed protruding ball.[1] Users roll the ball to position the on-screen pointer, using their thumb, fingers, or the palm of the hand, while using the fingertips to press the buttons.[2]

With most trackballs, operators have to lift their finger, thumb or hand and reposition it on the ball to continue rolling, whereas a mouse would have to be lifted itself and re-positioned. Some trackballs have notably low friction, as well as being made of a dense material such as phenolic resin, so they can be spun to make them coast. The trackball's buttons may be in similar positions to those of a mouse, or configured to suit the user.

Large trackballs are common on CAD workstations for easy precision. Before the advent of the touchpad, small trackballs were common on portable computers and smartphones (such as a BlackBerry) where there may be no desk space on which to run a mouse. Some small "thumballs" are designed to clip onto the side of the keyboard and have integral buttons with the same function as mouse buttons.[2]

Logitech Cordless TrackMan Wheel trackball mouse

The original version of the Kensington Expert Mouse can use a US-size billiard ball as a trackball.

History

The trackball was invented as part of a post-World War II-era radar plotting system named Comprehensive Display System (CDS) by Ralph Benjamin when working for the British Royal Navy Scientific Service.[3][4] Benjamin's project used analog computers to calculate the future position of target aircraft based on several initial input points provided by a user with a joystick. Benjamin felt that a more elegant input device was needed and invented a *ball tracker*[3][4] system called the *roller ball*[3] for this purpose in 1946.[3][4] The device was patented in 1947,[3] but only a prototype using a metal ball rolling on two rubber-coated wheels was ever built[4] and the device was kept as a military secret.[4] Production versions of the CDS used joysticks.

The CDS system had also been viewed by a number of engineers from Ferranti Canada, who returned to Canada and began development of the Royal Canadian Navy's DATAR system in 1952. Principal designers Tom Cranston, Fred Longstaff and Kenyon Taylor chose the trackball as the

primary input, using a standard five-pin bowling ball as the roller. DATAR was similar in concept to Benjamin's display, but used a digital computer to calculate tracks, and sent the resulting data to other ships in a task force using pulse-code modulation radio signals.[5]

DATAR's trackball used four disks to pick up motion, two each for the X and Y directions. Several additional rollers provided mechanical support. When the ball was rolled, the pickup discs spun and contacts on their outer rim made periodic contact with wires, producing pulses of output with each movement of the ball. By counting the pulses, the physical movement of the ball could be determined.

Since 1966, the American company *Orbit Instrument Corporation* produced a device named *X-Y Ball Tracker*, a trackball, which was embedded into radar flight control desks.[6][7]

A similar trackball device at the German *Bundesanstalt für Flugsicherung* was constructed by a team around Rainer Mallebrein of Telefunken *Konstanz* as part of the development for the Telefunken computer infrastructure around the main frame TR 440, process computer TR 86 and video terminal SIG 100-86,[8] which began in 1965.[6] This trackball was called *Rollkugel* (German for "rolling ball"). Somewhat later, the idea of "reversing" this device led to the introduction of the first computer ball mouse (still named *Rollkugel*, model RKS 100-86), which was offered as an alternative input device to light pens and trackballs for Telefunken's computer systems since 1968.[6][9][10]

In later trackball models the electrical contacts were replaced by an optical chopper wheel, which had small slots cut into it in rather than electrical contacts. With an LED for illumination from one side and an optical sensor on the other, rotation of the wheel periodically blocks and unblocks the light, so the sensor produces electrical pulses to indicate that rotation is occurring.

Mice used the same basic system for determining motion, but had the problem that the ball was in contact with the desk or mousepad. In order to provide smooth motion the balls were often covered with an anti-slip surface treatment, which was, by design, sticky. Rolling the mouse tended to pick up any dirt and drag it into the system where it would clog the chopper wheels, demanding cleanup. In contrast the trackball is in contact only with the user's hand, which tends to be cleaner. In the late 1990s both mice and trackballs began using direct optical tracking which follows dots on the ball, avoiding the need for anti-slip surface treatment.

As with modern mice, most trackballs now have an auxiliary device primarily intended for scrolling. Some have a scroll wheel like most mice, but the most common type is a “scroll ring” which is spun around the ball. Kensington's SlimBlade Trackball similarly tracks the ball itself in three dimensions for scrolling.

As of 1989 and into the 2020s, two major companies developed and produce consumer trackballs, Logitech and Kensington, although Logitech has narrowed its product line to two models. Other smaller companies occasionally offer a trackball in their product line. Microsoft produced popular models including The Microsoft Trackball Explorer, but has since discontinued all of its products.

In September 2017 Logitech announced release of MX-Ergo Mouse,[11] which was released after 6 years of its last trackball mouse.

Special applications

An Apple Pippin gamepad with a trackball

Large trackballs are sometimes seen on computerized special-purpose workstations, such as the radar consoles in an air-traffic control room or sonar equipment on a ship or submarine. Modern installations of such equipment may use mice instead, since most people now already know how to use one. However, military mobile anti-aircraft radars, commercial airliners (such as Airbus A380 and Airbus A350) and submarine sonars tend to continue using trackballs, since they can be made more durable and more fit for fast emergency use. Large and well made ones allow easier high precision work, for which reason they may still be used in these applications (where they are often called "tracker balls") and in computer-aided design.

Trackballs have appeared in video games, particularly early arcade games (see a *List of trackball arcade games*). In March 1978, Sega released *World Cup*, an association football game with trackball controls.[12][13] In October 1978, Atari released *Atari Football*,[14] which popularized the use of a trackball, with the game's developers mentioning it was inspired by an earlier Japanese association football game.[15][16] Other notable trackball games include Atari's *Centipede* and *Missile Command* – Atari trademarked it "TRAK-BALL".

Console trackballs, now fairly rare, were common in the early 1980s: the Atari 2600 and 5200 consoles, as well as the competing ColecoVision console, though using a joystick as their standard controller, each had one as an optional peripheral. The Apple Pippin, a console introduced in 1996, had a trackball built into its gamepad as standard.[17] Trackballs were occasionally used in e-sports prior to the mainstreaming of optical mice in the early 2000s because they were more reliable than ball mice, but now they are extremely rare because optical mice offer superior speed and precision.[11] Trackballs remain in use in pub golf machines (such as *Golden Tee Golf*) to simulate swinging the club.

Trackballs have also been regarded as excellent complements to analog joysticks, as pioneered by the Assassin 3D, a trackball released in 1996 with joystick pass-through capability.[18] Later in 1996, Mad Catz released the Panther XL, which was based on the Assassin 3D. This combination provides for two-hand aiming and a high accuracy and consistency replacement for the traditional mouse and keyboard combo generally used on first-person shooter games. Many such games natively support joysticks and analog player movement, like Valve's *Half-Life* and id Software's *Quake* series. As of 2020, one professional eSport player was known for using a trackball.[19]

Trackballs are provided as the pointing device in some public internet access terminals. Unlike a mouse, a trackball can easily be built into a console, and cannot be ripped away or easily vandalized. Two examples are the Internet browsing consoles provided in some UK McDonald's outlets, and the BT Broadband Internet public phone boxes. This simplicity and ruggedness also makes them ideal for use in industrial computers.

Because trackballs for personal computers are stationary, they may require less space for operation than a mouse, simplifying use in confined or cluttered areas such as a small desk or a rack-mounted terminal. They are generally preferred in laboratory setting for the same reason.

Trackballs were often included in laptop computers, but since the late 1990s these have been replaced by touchpads and pointing sticks. Trackballs are still used as separate input devices with standard desktop computers, but this application is also moving to touchpads due to the prevalence of multi-touch gesture control in new desktop operating systems.[20]

A trackball mouse on an Apple PowerBook 145 laptop computer

Ergonomics

People with a mobility impairment use trackballs as an assistive technology input device. Access to an alternative pointing device has become even more important for them with the dominance of graphically-oriented operating systems. There are many alternative systems to be considered. The control surface of a trackball is easier to manipulate and the buttons can be activated without affecting the pointer position.[21]

Logitech TrackMan Marble Wheel designed to use the ball with the thumb

Trackball users also often state that they are not limited to using the device on a flat desk surface. Trackballs can be used whilst browsing a laptop in bed, or wirelessly from an armchair to a PC playing a movie. They are also useful for computing on boats or other unstable platforms where a rolling deck could produce undesirable input.

A Kensington TurboBall Mouse designed to use the ball with the index or middle finger

Trackballs are generally either thumb-operated, with a ball operated by the thumb, or finger-operated, with a ball usually operated by some combination of the index, middle and ring fingers. Depending on the design of the trackball, the fingers not operating the ball may manipulate other input devices built into the trackball, such as buttons and scroll wheels. Users favor one format or another for reasons of comfort, mobility, precision, or because it reduces strain on one part of the hand/wrist.

Some finger-operated trackballs are symmetrical in design, making them usable by both hands. However, installation of software and/or modification of firmware may be required to mirror the button inputs.

Thumb-operated trackballs and other finger-operated trackballs,[22] are asymmetric, and usually available only in right-handed versions.

Some computer users prefer a trackball over the more common mouse for ergonomic reasons. There seems to be no conclusive evidence from studies performed to determine which type of pointing device works best for most applications. Application users are encouraged to test different devices, and to maintain proper posture and scheduled breaks for comfort. Some disabled users find trackballs easier since they only have to move their thumb relative to their hand, instead of

moving the whole hand, while others incur unacceptable fatigue of the thumb. Elderly people sometimes have difficulty holding a mouse still while double-clicking; the trackball allows them to let go of the ball while using the button.

At times when a user is browsing menus or websites rather than typing, it is also possible to hold a trackball in the right hand like a television remote control, operating the ball with the right thumb and pressing the buttons with the left thumb, thus giving the fingers a rest.[23]

Mobile devices

Some mobile devices have trackballs, including those in the BlackBerry range, the T-Mobile Sidekick 3, and many early HTC smartphones. These miniature trackballs are made to fit within the thickness of a mobile device, and are controlled by the tip of a finger or thumb. These have mostly been replaced on smartphones by touch screens, although on the BlackBerry range they were replaced by an "optical trackball" or "optical trackpad" before later being replaced with touch screens.[24]

Nexus One with a trackball

On mice

In lieu of a scroll wheel, some conventional mice include a tiny trackball sometimes called a scroll ball. A popular example is Apple's Mighty Mouse. Mice with a larger trackball on a side may be designed to stay stationary, using the trackball to move the mouse cursor instead of moving the mouse.[25]

Mighty Mouse with scroll ball in lieu of scroll wheel

See also

- Touchpad
- Pointing stick
- Mechanical mouse

References

1. "The Next Generation 1996 Lexicon A to Z: Track Ball" (https://archive.org/details/nextgen-issue-015/page/n43/mode/2up). *Next Generation*. No. 15. Imagine Media. March 1996. p. 42.
2. This article is based on material taken from tracker+ball (https://foldoc.org/tracker+ball) at the *Free On-line Dictionary of Computing* prior to 1 November 2008 and incorporated under the "relicensing" terms of the GFDL, version 1.3 or later.

3. Hill, Peter C. J. (2005-09-16). "RALPH BENJAMIN: An Interview Conducted by Peter C. J. Hill" (http://www.ieeeghn.org/wiki/index.php/Oral-History:Ralph_Benjamin) (Interview). Interview #465. Archived (https://web.archive.org/web/20131015084700/http://www.ieeeghn.org/wiki/index.php/Oral-History:Ralph_Benjamin) from the original on 2013-10-15. Retrieved 2013-07-18.
4. Copping, Jasper (2013-07-11). "Briton: 'I invented the computer mouse 20 years before the Americans' " (https://www.telegraph.co.uk/technology/news/10174366/Briton-I-invented-the-computer-mouse-20-years-before-the-Americans.html). The Telegraph. Archived (https://web.archive.org/web/20130714164020/http://www.telegraph.co.uk/technology/news/10174366/Briton-I-invented-the-computer-mouse-20-years-before-the-Americans.html) from the original on 2013-07-14. Retrieved 2013-07-18.
5. Vardalas, John (1994). "From DATAR To The FP-6000 Computer: Technological Change In A Canadian Industrial Context" (https://ewh.ieee.org/reg/7/millennium/fp6000/fp6000_datar.html). *IEEE Annals of the History of Computing*. No. 2. IEEE. Archived (https://web.archive.org/web/20080907233232/http://ewh.ieee.org/reg/7/millennium/fp6000/fp6000_datar.html) from the original on 2008-09-07. Retrieved 2007-10-15.
6. "Auf den Spuren der deutschen Computermaus" (https://www.heise.de/newsticker/Auf-den-Spuren-der-deutschen-Computermaus--/meldung/136901) [In the footsteps of the German computer mouse] (in German). Heise Verlag. 2009-04-28. Archived (https://web.archive.org/web/20131127230503/http://www.heise.de/newsticker/meldung/Auf-den-Spuren-der-deutschen-Computermaus-216255.html) from the original on 2013-11-27. Retrieved 2013-01-07.
7. "ORBIT X-Y Ball Tracker" (https://web.archive.org/web/20131005122238/http://www.oldmouse.com/trackball/orbit.shtml). oldmouse.com. Archived from the original on 2013-10-05. Retrieved 2013-08-03.
8. "SIG-100 video terminal and mouse" (http://www.computerhistory.org/revolution/input-output/14/346/1874). Archived (https://web.archive.org/web/20130827055238/http://www.computerhistory.org/revolution/input-output/14/346/1874) from the original on 2013-08-27. Retrieved 2013-08-03.
9. "Telefunken's 'Rollkugel' " (https://web.archive.org/web/20130808075232/http://www.oldmouse.com/mouse/misc/telefunken.shtml). oldmouse.com. Archived from the original on 2013-08-08. Retrieved 2013-08-03.
10. Ebner, Susanne (2018-01-24). "Entwickler aus Singen über die Anfänge der Computermaus: "Wir waren der Zeit voraus" " (https://www.suedkurier.de/ueberregional/wissenschaft/Entwickler-aus-Singen-ueber-die-Anfaenge-der-Computermaus-Wir-waren-der-Zeit-voraus;art1350069,9590558) [Singen-based developer about the advent of the computer mouse: "We were ahead of time"]. Leben und Wissen. *Südkurier* (in German). Konstanz, Germany: Südkurier GmbH. Archived (https://web.archive.org/web/20210302234231/https://www.suedkurier.de/ueberregional/wissenschaft/Entwickler-aus-Singen-ueber-die-Anfaenge-der-Computermaus-Wir-waren-der-Zeit-voraus;art1350069,9590558) from the original on 2021-03-02. Retrieved 2021-08-22.
11. "Gaming Mouse that goes across multiple systems: Logitech's MX-Ergo Trackball Mouse" (https://www.techscoop.in/2017/09/gaming-mouse-that-goes-across-multiple.html). Archived (https://web.archive.org/web/20170914220758/https://www.techscoop.in/2017/09/gaming-mouse-that-goes-across-multiple.html) from the original on 2017-09-14. Retrieved 2017-09-14.
12. *Sega Arcade History* (https://archive.org/details/segaarcadehistoryfamitsudc/page/n35). Famitsu DC (in Japanese). Enterbrain. 2002. p. 34.
13. "WORLD CUP（ワールドカップ）" (https://sega.jp/history/arcade/product/15316/). *Sega* (in Japanese). Archived (https://web.archive.org/web/20210502072259/https://sega.jp/history/arcade/product/15316/) from the original on 2 May 2021. Retrieved 2 May 2021.
14. "Production Numbers" (http://www.atarigames.com/atarinumbers90s.pdf) (PDF). Atari. 1999. Archived (https://web.archive.org/web/20130510143012/http://www.atarigames.com/atarinumbers90s.pdf) (PDF) from the original on 10 May 2013. Retrieved 19 March 2012.

15. Stilphen, Scott (2017). "Michael Albaugh interview" (http://www.ataricompendium.com/archives/interviews/michael_albaugh/interview_michael_albaugh.html). *Atari Compendium*. Archived (https://web.archive.org/web/20210502072258/http://www.ataricompendium.com/archives/interviews/michael_albaugh/interview_michael_albaugh.html) from the original on 2 May 2021. Retrieved 2 May 2021. "I saw a soccer game with one (I remember only that it was Japanese, and a soccer game. Taito is plausible)"
16. Kent, Steve L. (2001). *The ultimate history of video games: from Pong to Pokémon and beyond : the story behind the craze that touched our lives and changed the world*. Prima. p. 118. ISBN 0-7615-3643-4. "Contrary to a popular notion, Football was not the first game to use a trak-ball controller. According to Dave Stubben, who created the hardware for Atari Football, Taito beat Atari to market with a soccer game that used one. According to Steve Bristow, when his engineers saw the game, they brought a copy into their lab and imitated it."
17. "The Pippin Atmark" (https://archive.org/details/GamePro_Issue_094_Volume_08_Number_07_1996-07_IDG_Publishing_US/page/n23/mode/2up). *GamePro*. No. 94. IDG. July 1996. p. 22.
18. "Assassin 3D: Precision Deathmatch Controller" (https://dondeq2.com/2018/11/30/assassin-3d-precision-deathmatch-controller/). *www.dondeq2.com*. 30 November 2018. Archived (https://web.archive.org/web/20210122093150/https://dondeq2.com/2018/11/30/assassin-3d-precision-deathmatch-controller/) from the original on 22 January 2021. Retrieved 17 December 2020.
19. Rouffa, Jonathan (1 March 2014). "Interview with Adrian "Kerp" Wetekam - "Mood kept going down every week" " (https://www.gamespot.com/articles/interview-with-adrian-kerp-wetekam-mood-kept-going/1100-6437175/). *www.gamespot.com*. Archived (https://web.archive.org/web/20211027215616/https://www.gamespot.com/a/v8798520cd6f71f31812f51e79fd207ba/bundles/gamespotsite/css/gamespot_white.css) from the original on 27 October 2021. Retrieved 17 December 2020.
20. Topolsky, Joshua (July 30, 2010). "Apple Magic Trackpad Review" (https://www.engadget.com/2010/07/30/apple-magic-trackpad-review/). *Engadget*. Archived (https://web.archive.org/web/20170220171802/https://www.engadget.com/2010/07/30/apple-magic-trackpad-review/) from the original on February 20, 2017. Retrieved September 17, 2017.
21. Dennis van der Heijden (2006-03-15). "Alternative Pointing Systems for Mobility Impaired People" (http://www.axistive.com/alternative-pointing-systems-for-mobility-impaired-people.html). Axistive. Archived (https://web.archive.org/web/20070928044208/http://www.axistive.com/alternative-pointing-systems-for-mobility-impaired-people.html) from the original on 2007-09-28. Retrieved 2007-06-05.
22. For example, the Logitech Cordless Optical TrackMan (https://web.archive.org/web/20090916025144/http://www.logitech.com/index.cfm/mice_pointers/trackballs/devices/189%26cl%3DUS%2CEN).
23. "Center for Disease Control web page about computer ergonomics" (https://www.cdc.gov/od/ohs/Ergonomics/compergo.htm#MOUSE,%20TRACKBALL,%20OR%20OTHER%20INPUT%20DEVICE). Archived (https://web.archive.org/web/20100322222204/http://www.cdc.gov/od/ohs/ergonomics/compergo.htm#MOUSE,%20TRACKBALL,%20OR%20OTHER%20INPUT%20DEVICE) from the original on 2010-03-22. Retrieved 2017-09-17.
24. "The history of Blackberry: The best BlackBerry phones" (https://www.pocket-lint.com/phones/news/137319-farewell-blackberry-os-here-are-the-23-best-blackberry-phones-that-changed-the-world). Archived (https://web.archive.org/web/20200806070650/https://www.pocket-lint.com/phones/news/137319-farewell-blackberry-os-here-are-the-23-best-blackberry-phones-that-changed-the-world) from the original on 2020-08-06. Retrieved 2020-08-02.
25. "Logitech M570 Wireless Trackball Mouse Review: Unconventional Features" (https://www.lifewire.com/logitech-m570-wireless-trackball-mouse-review-4691293). *Lifewire*. Archived (https://web.archive.org/web/20200815000859/https://www.lifewire.com/logitech-m570-wireless-trackball-mouse-review-4691293) from the original on 2020-08-15. Retrieved 2020-08-02.

External links

- Media related to Trackballs at Wikimedia Commons

Gamepad

A **gamepad** is a type of video game controller held in two hands, where the fingers (especially thumbs) are used to provide input. They are typically the main input device for video game consoles.

A Nintendo Switch Pro Controller, a typical modern gamepad

Features

Some common additions to the standard pad include shoulder buttons (also called "bumpers") and triggers placed along the edges of the pad (shoulder buttons are usually digital, i.e. merely on/off; while triggers are usually analog); centrally placed *start*, *select*, and *home* buttons, and an internal motor to provide force feedback. Analog triggers, like that of the GameCube controller, are pressure-sensitive and games can read in the amount of pressure applied to one to control the intensity of a certain action, such as how forceful water is to be sprayed in *Super Mario Sunshine*.[1]

Shoulder buttons ("bumpers") and triggers on an Xbox 360 controller

There are programmable joysticks that can emulate keyboard input. Generally they have been made to circumvent the lack of joystick support in some computer games, e.g. the Belkin Nostromo SpeedPad n52. There are several programs that emulate keyboard and mouse input with a gamepad such as the free and open-source cross-platform software antimicro,[2][3] Enjoy2,[4] or proprietary commercial solutions such as JoyToKey, Xpadder, and Pinnacle Game Profiler.

One common issue with modern game controllers is stick drift, where the analog stick registers movement even when not being touched. This problem can affect gameplay accuracy and responsiveness. To diagnose stick drift, various online stick drift tester tools are available, allowing users to visualize stick movement and detect irregular inputs. These tools, often web-based, help determine whether recalibration, cleaning, or hardware repair is necessary.[5][6] Some platforms, like Steam, also include built-in calibration settings to mitigate minor drift issues.

History

The 1962 video game *Spacewar!* initially used toggle switches built into the computer readout display to control the game. These switches were awkward and uncomfortable to use, so Alan Kotok and Bob Saunders built and wired in a detached control device for the game. This device has been called the earliest gamepad.[7]

Entry into the mass market

The NES controller

It would take many years for the gamepad to rise to prominence, as during the 1970s and the early 1980s joysticks and paddles were the dominant video game controllers,[7] though several Atari joystick port-compatible pushbutton controllers were also available.[8] The third generation of video games saw many major changes, and the eminence of gamepads in the video game market.

Nintendo developed a gamepad device for directional inputs, a D-pad with a "cross" design for their *Donkey Kong* handheld game. This design would be incorporated into their "Game & Watch" series and console controllers such as the standard NES controller. Though developed because they were more compact than joysticks, and thus more appropriate for handheld games, D-pads were soon found by developers to be more comfortable to use than joysticks.[7] The D-pad soon became a ubiquitous element on console gamepads, though to avoid infringing on Nintendo's patent, most controller manufacturers use a cross in a circle shape for the D-pad instead of a simple cross.[9]

Continued refinements

Six-button Genesis/Mega Drive controller that was released later

The original Sega Genesis/Mega Drive control pad has three face buttons,[10] but a six-button pad was later released.[11] The SNES controller also featured six action buttons, with four face buttons arranged in a diamond formation, and two shoulder buttons positioned to be used with the index fingers, a design which has been imitated by most controllers since. The inclusion of six action buttons was influenced by the popularity of the *Street Fighter* arcade series, which utilized six buttons.[12]

The SNES/Super Famicom gamepad (Japanese Super Famicom version shown), which popularized the layout used by most modern gamepads

For most of the 1980s and early 1990s, analog joysticks were the predominant form of gaming controller for PCs, while console gaming controllers were mostly digital.[7] This changed in 1996 when all three major consoles introduced an optional analog control. The Sony Dual Analog Controller had twin convex analog thumbsticks, the Sega Saturn 3D Control Pad had a single analog thumbstick, and the Nintendo 64 controller combined digital and analog controllers in a single body, starting a trend to have both an analog stick and a d-pad.

Despite these changes, gamepads essentially continued to follow the template set by the NES controller (a horizontally-oriented controller with two or more action buttons positioned for use with the right thumb, and a directional pad positioned for use with the left thumb).[7]

Three-dimensional control

The Wii Remote can also be played by holding it sideways with two hands like a conventional gamepad controller.

Though three-dimensional games rose to prominence in the mid-1990s, controllers continued to mostly operate on two-dimensional principles. Players would have to hold down a button to change the axes along which the controls operate rather than being able to control movement along all three axes at once. One of the first gaming consoles, the Fairchild Channel F, did have a controller which provided six degrees of freedom, but the processing limitations of the console itself prevented there from being any software to take advantage of this ability.[7] In 1994, Logitech introduced the CyberMan, the first practical six-degrees-of-freedom controller; however, it sold poorly due to its high price, poor build quality, and limited software support. Industry insiders blame the CyberMan's high profile and costly failure for the gaming industry's lack of interest in developing 3D control over the next several years.[7] The Wii Remote is shaped like a television remote control and contains tilt sensors and three-dimensional pointing which the system uses to understand all directions of movement and rotation (back and forth around the pitch, roll, and yaw axes). The controller is also multifunctional and has an expansion port which can be used for a variety of peripherals. An analog stick peripheral, called "Nunchuk," also contains an accelerometer[13] but unlike the Wii Remote, it lacks any pointer functionality.

Grip

Gamepads may be gripped differently for better ergonomics or a gaming advantage.[14]

Standard grip

The standard grip involves operating the trigger buttons with the index fingers, with the thumbs operating both the analog sticks and digital buttons. This grip is common among gamers, but it leaves the thumbs unable to operate the digital buttons while operating the analog sticks, and vice versa, leading to a time consuming alternation.[14]

Claw grip

The claw grip attempts to alleviate the standard grip's problem of alternation by operating the trigger buttons with the middle fingers, the directional buttons with the index fingers and the analog sticks with the thumbs.[14] This grip may be used exclusively, or with only one hand, with the other hand using the standard grip.[15] The claw grip is named as such because the player's index fingers take the shape of a claw or hook when used.[16]

The claw grip may cause pain or injury due to strain on the index finger.[16] Although the grip is commonly used in certain games, player Nickmercs warned his audience that the claw grip may cause complications in 2019.[14]

Usage across platforms

Gamepads are also available for personal computers. Examples of PC gamepads include the Asus Eee Stick, the Gravis PC, the Microsoft SideWinder and Saitek Cyborg range, and the Steam Controller. Third-party USB adapters and software can be employed to utilize console gamepads on PCs; the DualShock 3, DualShock 4, DualSense, Wii Remote, Wii U Pro Controller, Joy-Con, Joy-Con 2, Nintendo Switch Pro Controller and Nintendo Switch 2 Pro Controller can be used with third-party software on systems with Bluetooth functionality, with USB additionally usable on DualShock 3, DualShock 4, DualSense, Nintendo Switch Pro Controller and Nintendo Switch 2 Pro Controller. Xbox 360, Xbox One and Xbox Series X/S controllers are officially supported on Windows with Microsoft-supplied drivers; a dongle can be used to connect them wirelessly, or the controller can be connected directly to the computer over USB (wired versions of Xbox 360 controllers were marketed by Microsoft as PC gamepads, while the Xbox One/Series X/S controllers can be connected to a PC via its Micro USB/USB-C slot).[17][18][19]

Non-gaming use

Gamepads or devices closely modelled on them are sometimes used for controlling real machinery and vehicles, as they are familiar to users and (in the case of actual gamepads) provide an off-the-shelf solution. The US Army and US Navy use Xbox controllers[20] for operating devices, and the British Army uses a device modelled on gamepads to operate systems on the Challenger 2 main battle tank.[21] The *Titan* submersible used a gamepad for control.[22]

Trent Tresch piloting the OceanGate *Cyclops 1* submersible using a modified Logitech F710 Game Controller

See also

- Computer keyboard
- Computer mouse
- Game port
- Sim racing wheel

References

1. Nintendo (2001). "Super Mario Sunshine instruction booklet, Nintendo Gamecube" (https://www.gamesdatabase.org/media/system/nintendo_gamecube/manual/formated/super_mario_sunshine_-_2002_-_nintendo.pdf) (PDF). *gamesdatabase.org*. p. 11.
2. Schaaf, Tobiasa (July 2014). "Gamestation Turbo" (https://magazine.odroid.com/wp-content/uploads/ODROID-Magazine-201407.pdf) (PDF). *ODROID Magazine*. No. 7. p. 17. Archived (https://web.archive.org/web/20160326041358/https://magazine.odroid.com/wp-content/uploads/ODROID-Magazine-201407.pdf) (PDF) from the original on March 26, 2016.
3. Ryochan7. "Graphical program used to map keyboard keys and mouse controls to a gamepad" (https://github.com/AntiMicro/antimicro/releases). *GitHub*. Retrieved July 6, 2016.
4. Yifeng Huang (May 6, 2013), *Enjoy2 v1.2 released: control games with your gamepad on OSX* (http://nongraphical.com/2013/05/enjoy2-v12-released-control-games-with-your-gamepad-on-osx/), retrieved May 19, 2017

5. "Gamepad Tester" (https://www.hlplanet.com/gamepad-tester/). *HL Planet*. Retrieved 3 March 2025.
6. "Gamepad Tester" (https://hardwaretester.com/gamepad). *Hardware Tester*. Retrieved 3 March 2025.
7. "Get a Grip!!!: Joysticks Past, Present & Future" (https://archive.org/details/Next-Generation-1996-05/page/n39) (PDF). *Next Generation*. No. 17. Imagine Media. May 1996. pp. 34–42. Retrieved November 20, 2019.
8. Ahl, David H.; Rost, Randi J. (1983), "Blisters And Frustration: Joysticks, Paddles, Buttons and Game Port Extenders for Apple, Atari and VIC" (http://www.atarimagazines.com/cva/v1n1/joysticks.php), *Creative Computing Video & Arcade Games*, **1** (1): 106ff
9. "The Next Generation 1996 Lexicon A to Z: Joypad" (https://archive.org/details/nextgen-issue-015/page/n35) (PDF). *Next Generation*. No. 15. Imagine Media. March 1996. p. 35. Retrieved November 20, 2019.
10. "face buttons" (https://www.gematsu.com/2010/08/playstations-iconic-face-buttons-explained). *Gematsu*. sal romano. 26 August 2010. Retrieved 26 August 2010.
11. "6 Button Controller" (https://web.archive.org/web/20160303170435/http://www.segagagadomain.com/hardware-mega/megadrive-6button.htm). segagagadomain.com. Archived from the original (http://www.segagagadomain.com/hardware-mega/megadrive-6button.htm) on March 3, 2016. Retrieved 1 August 2010.
12. Ashcraft, Brian (2008). *Arcade Mania!: The Turbo-Charged World of Japan's Game Centers*. Kodansha. p. 192. ISBN 978-4-7700-3078-8.
13. Levin, Phillip (April 25, 2006). "Nintendo Revolution ::: Advanced Media Network - Mario, Zelda, Revolution Controller, Innovation" (https://web.archive.org/web/20060427212400/http://revolution.advancedmn.com/article.php?artid=6601). *Revolution Advanced*. Archived from the original (http://revolution.advancedmn.com/article.php?artid=6601) on April 27, 2006. Retrieved 2019-11-20.
14. Lee, Helen A. (2020-08-03). "What Happens To Your Hands When You Play Claw On Controller Every Day" (https://www.svg.com/232953/what-happens-to-your-hands-when-you-play-claw-on-controller-every-day/). *SVG*. Retrieved 2025-09-13.
15. Kurosawa, Yuki (2022-05-26). "The "Monster Hunter claw grip" was trending on Twitter in Japan" (https://automaton-media.com/en/news/20220526-12851/). *AUTOMATON WEST*. Retrieved 2025-09-13.
16. "Claw grip for controller users: 7 steps to stay healthy – Esports Healthcare" (https://esportshealthcare.com/claw-grip-for-controller/). 2020-06-17. Retrieved 2025-09-13.
17. Jamin Brophy-Warren, Magic Wand: How Hackers Make Use Of Their Wii-motes (https://www.wsj.com/articles/SB117772630151685703), *Wall Street Journal*, April 28, 2007
18. Hanson, Matt. "How to use the PS4 DualShock 4 controller on a PC" (https://www.techradar.com/how-to/gaming/how-to-use-the-ps4-dualshock-4-controller-on-a-pc-1309014). *TechRadar*. Archived (https://web.archive.org/web/20160119100213/http://www.techradar.com/us/how-to/gaming/how-to-use-the-ps4-dualshock-4-controller-on-a-pc-1309014) from the original on January 19, 2016. Retrieved 4 June 2016.
19. Plunkett, Luke (July 23, 2013). "How To Use A Console Controller On Your PC" (https://kotaku.com/how-to-use-a-console-controller-on-your-pc-889800353). *Kotaku*. Retrieved 4 June 2016.
20. "From Joysticks to Warfare: Military's Rising Use of Video Game Controllers in Submarines, Tanks" (https://web.archive.org/web/20230620230215/https://themessenger.com/news/from-joysticks-to-warfare-militarys-rising-use-of-video-game-controllers-in-submarines-tanks). 20 June 2023. Archived from the original (https://themessenger.com/news/from-joysticks-to-warfare-militarys-rising-use-of-video-game-controllers-in-submarines-tanks) on June 20, 2023.
21. "Real life gaming: How the British Army modelled tank controls on a gamepad" (https://www.techradar.com/news/real-life-gaming-how-the-british-army-modelled-tank-simulation-on-a-games-controller#:~:text=The%20firing%20controls%20inside%20the,grown%20up%20playing%20video%20games). 14 October 2016.
22. "What it was like inside the lost Titanic-touring submersible" (https://edition.cnn.com/2023/06/21/us/inside-missing-titan-submersible-titanic-tour/index.html). 22 June 2023.

Atari Mindlink

The **Atari Mindlink** is an unreleased video game controller for the Atari 2600, originally intended for release in 1984.[1] The Mindlink was unique in that its headband form factor controls the game by reading the myoneural signal voltage from the player's forehead.[2] The player's forehead movements are read by infrared sensors and transferred as movement in the game.[3]

Specially supported games are similar to those that use the paddle controller, but with the Mindlink controller instead. Three games were in development for the Mindlink by its cancellation: *Bionic Breakthrough*, *Telepathy*, and *Mind Maze*. *Bionic Breakthrough* is basically a *Breakout* clone, controlled with the Mindlink. *Mind Maze* uses the Mindlink for a mimicry of ESP, to pretend to predict what is printed on cards. Testing showed that players frequently got headaches[4] due to moving their eyebrows to play the game. None of these games were ever released in any other form.

Mindlink

A Mindlink controller at the National Videogame Museum

Developer	Atari
Type	Video game controller
Connectivity	Controller port

References

1. Top 5 Hardware Super Fails. "Top 5 Hardware Super Fails | Top 5 with Lisa Foiles Video Gallery | The Escapist" (https://web.archive.org/web/20180707201630/http://www.escapistmagazine.com/videos/view/top-5-with-lisa-foiles/2796-Top-5-Hardware-Super-Fails). Escapistmagazine.com. Archived from the original (http://www.escapistmagazine.com/videos/view/top-5-with-lisa-foiles/2796-Top-5-Hardware-Super-Fails) on 2018-07-07. Retrieved 2014-08-18.
2. Vendel, Curt. "The Atari Mindlink System" (http://www.atarimuseum.com/videogames/consoles/2600/mindlink.html). Atari Museum. Archived (https://web.archive.org/web/20180919114640/http://www.atarimuseum.com/videogames/consoles/2600/mindlink.html) from the original on 2018-09-19. Retrieved 2018-12-08.
3. Scullion, Chris (2014-03-10). "The Atari Mindlink and other outrageous controllers" (https://web.archive.org/web/20140313015713/http://www.computerandvideogames.com/453147/blog/the-atari-mindlink-and-other-outrageous-controllers/). *Computer and Video Games*. Archived from the original (http://www.computerandvideogames.com/453147/blog/the-atari-mindlink-and-other-outrageous-controllers/) on March 13, 2014. Retrieved 2014-08-18.
4. "20 Worst game accessories ever" (https://web.archive.org/web/20140819090558/http://www.t3.com/features/20-worst-game-accessories-ever-1/mindlink-jpg). T3. 2012-03-23. Archived from the original (http://www.t3.com/features/20-worst-game-accessories-ever-1/mindlink-jpg) on 2014-08-19. Retrieved 2014-08-18.

Swordquest

Swordquest is a series of action-adventure video games developed and published by Atari, Inc. in the 1980s for the Atari 2600. It was developed as part of a contest, consisting of three finished games, ***Earthworld***, ***Fireworld*** and ***Waterworld*** (with these titles occasionally appearing on cartridge labels and boxes with capitalized central Ws, e.g. *EarthWorld*), and a planned fourth game, ***Airworld***.

Swordquest

Genre	Action-adventure game
Developers	Atari, Inc. Digital Eclipse
Publishers	Atari, Inc.
Creators	Dan Hitchens Tod Frye
Platform	Atari 2600
Original release	▪ *Earthworld*: October 1982 ▪ *Fireworld*: February 1983 ▪ *Waterworld*: February 1984 (limited release) ▪ *Airworld*: August 2022 (original version unreleased)

About

Each of the games came with a comic book that explained the plot, as well as containing part of the solution to a major puzzle that had to be solved to win the contest, with a series of prizes whose total value was $150,000. The series had its genesis as a possible sequel to Atari's groundbreaking 1979 title *Adventure*, but it developed mythology and a system of play that was unique.[1][2]

The comic books were produced by DC Comics, written by Roy Thomas and Gerry Conway, and drawn and inked by George Pérez and Dick Giordano. All three game box covers were illustrated by an Atari in-house illustrator, Warren Chang. A special fan club offer was provided, allowing those who wanted the game to also get a T-shirt and poster for each game.[1]

The games of the Swordquest series (along with Atari 2600 *Raiders of the Lost Ark*) were some of the earliest attempts to combine the narrative and logic elements of the adventure game genre with the twitch gameplay of the action genre, making them some of the first action-adventure games. However, due to Atari's financial problems related to the video game crash of 1983, the last contest along with the grand finale contest were never held and the final game in the series, *Airworld* was not released. As such the contest was never completed and the current unknown fate of some of the prizes has become an urban legend in the gaming community.

As part of *Atari 50: The Anniversary Celebration*, a collection of Atari games for its 50th anniversary in 2022, Digital Eclipse created a version of *Airworld* that completes the *Swordquest* series. In April 2025, Atari partnered with The Sandbox[3] to release a version of the game on their platform which included all four worlds.

Gameplay

Each game of the *Swordquest* series was themed after the classical elements: earth, fire, water, and air. Each game required the player to move through a maze of rooms, collecting objects from one and placing them in other rooms. The arrangement or theme of the rooms varied with each game: *Earthworld* was themed after the Western zodiac, *Fireworld* after the Kabbalah tree of life, *Waterworld* after the chakras, and *Airworld* was to have been modeled after the *I Ching*.[4] Traversing between rooms sometimes required the player to complete a "twitch"-style minigame to progress. When the player placed an item in its correct room, they would be presented with numerical clues that referred to a page and panel within the comic that was packaged with the game. There, the player would find a hidden word that was part of the larger *Swordquest* contest, as by submitting all the correct words in the correct order to Atari, they would be entered into the next phase of the project.[5] The discovered words would form a relevant phrase towards the larger contest. In at least two cases, for *Earthworld* and *Fireworld*, there were more clues indicated by the game than required to be submitted. Players also had to identify a second clue in the game's instruction manual (for *Earthworld*, indicating prime numbers to use only clues on prime numbered pages) to know which clues to send in.[6][4][1]

Plot

The games follow twins named Tarra and Torr. Their parents were slain by King Tyrannus's guards, prompted by a prophecy by the king's wizard Konjuro that the twins would slay Tyrannus. The twins were then raised as commoners by thieves to avoid being slain by the king. When they go to plunder Konjuro's sea keep, they accidentally reveal their identities to him. The twins then start running from a demon summoned to kill them, but it appears that a jewel they stole attracts it. After smashing the stone to avoid the demon, two of Tyrannus's old advisers appear and tell the two about the "Sword of Ultimate Sorcery" and the "Talisman of Penultimate Truth." They are then transported to Earthworld.[1][7]

After defeating many beasts of the Zodiac and another thief (Herminus) in Earthworld, the twins are transported to the "central chamber" where the "Sword of Ultimate Sorcery" and the "Talisman of Penultimate Truth" are kept. Upon reaching them, the sword burns a hole through its altar all the way to Fireworld. In Fireworld, the twins split up to look for water, and Torr, with the aid of the talisman, summons Mentorr who shows Torr the "Chalice of Light," which will quench his thirst. The twins reunite eventually and find the chalice. However, Torr drops it after he is startled, and it is revealed that the one they found was not the *true* chalice. Herminus then gives them the chalice, and it grows until it becomes large enough to swallow the twins and transports them to Waterworld.

Upon reaching Waterworld, the twins become separated. Konjuro casts a spell that causes the twins to lose their memories. Tarra travels to a ship made of ice and meets Cap'n Frost, who desires to find the "Crown of Life" and rule Waterworld. Meanwhile, Torr travels to an undersea kingdom and meets the city's ex-queen Aquana, who desires to find the "Crown of Life" in order to regain her throne. After a brief war between the ex-queen and captain, Herminus sets the twins to duel each other. They then pray to their deities for guidance, which summons Mentorr who allows them to regain their memories. The twins throw down their swords, causing the crown to be

revealed and split in half. The halves are given to the ex-queen and the captain, who then rule as equals. The "Sword of Ultimate Sorcery" then transports the twins to Airworld where they would have to do battle with King Tyrannus and Konjuro.

While the comic for *Airworld* was started, the cancellation of the series left the comic unfinished.[4]

Development

The concept of *Swordquest* originated from Atari's previous *Adventure* video game, which is notable for one of the first documented Easter eggs. *Adventure* drew more interest once the Easter egg was found and documented, leading Atari to come up with a type of sequel where "marketing thought it would be a great idea to create a series of games where players would have to find clues both in the game [and in its physical materials]", as described by Atari historian Curt Vendel.[4] As Atari was owned by Warner Communications at this point, they were able to use two of Warner's subsidiaries to help with this contest.[6] DC Comics was used to create the comic book that would help create the setting where the word clues would be hidden, written by Gerry Conway and Roy Thomas and illustrated by George Pérez.[4] The Franklin Mint crafted the game's prizes.[6] The games themselves were programmed by Tod Frye.[4]

Contest

Atari had designed the *Swordquest* contest to award a winner for each of the four games. For each game, they had planned to bring all winners to the Atari headquarters in Sunnyvale, California, to race to complete a specially-programmed version of that game to be the first to finish it. The person with the fastest completion would be named the winner and be awarded a "treasure", produced by Franklin Mint, each valued at around US$25,000 at the time of *Swordquest*'s release. The prizes were:[6]

- *Earthworld*: The "Talisman of Penultimate Truth", an 18-karat solid gold disc studded with 12 diamonds, the birthstones of the 12 Zodiac signs and a miniature white gold sword set atop it.
- *Fireworld*: The "Chalice of Light", a goblet made of platinum and gold studded with diamonds, rubies, sapphires, pearls, and green jade.
- *Waterworld*: The "Crown of Life", a solid gold crown decorated with diamonds, rubies, sapphires, and aquamarines.
- *Airworld*: The "Philosopher's Stone", a large piece of white jade encased in an 18-karat gold box encrusted with emeralds, rubies, and diamonds.

The four winners would then have competed in a final contest to win the ultimate prize, "The Sword of Ultimate Sorcery" with a silver blade and an 18-carat gold handle covered with diamonds, emeralds, sapphires, and rubies, that was valued at US$50,000.[6]

For *Earthworld*, about 5000 entries were received, but only eight answered correctly. The contest was held in May 1983, with Stephen Bell winning the Talisman. For *Fireworld*, Atari received several more entries, with 73 of these being correct. For practicality, Atari required the 73 finalists to write a brief essay of what they liked about the game, selecting the top 50 replies to continue to the final competition, held in January 1984. This was won by Michael Rideout, who was awarded the Chalice.[6][4]

At this point in time, Atari had suffered major financial setbacks due to the 1983 video game crash. Atari was further in the midst of dealing with fallout from an insider trading scandal by former CEO Ray Kassar; Kassar was replaced by James J. Morgan in mid-1983, and looking to cut financial losses, eventually cancelled the *Swordquest* project, despite work having already started on *Airworld*.[8][4] However, because the company had already advertised the availability of the *Waterworld* contest, Atari's lawyers required the company to continue the contest.[8] To limit the number of entries, *Waterworld* was only made available to members of the Atari Club. During the contest period, in mid-1984, Atari was sold to Jack Tramiel, the owner of Commodore International. Tramiel, who had been more focused on the success of home computers than gaming consoles, placed the Atari divisions in a new company, Tramel Technology, and reviewed the state of all divisions, furthering the troubles in completing the *Waterworld* contest. Most who did enter the *Waterworld* contest were told they did not qualify for the final, but according to Vendel, Atari was legally required to follow through as advertised on the *Waterworld* contest. Vendel stated that Atari did secretly invite those with correct entries to hold the final round, and the Crown was awarded to a person, their name remaining anonymous due to legal requirements.[4] Because they could not hold the ultimate final round, Bell and Rideout were both awarded an additional US$15,000 as well as an Atari 7800 as a compensation prize, and granting the ten finalists of *Waterworld* US$2,000 each.[4][6]

The fate of the prizes has become an urban legend in the gaming community since the cancellation of the project. Of the five treasures, Rideout has claimed, as recently as 2017, that he still has the Chalice in his possession, stored in a safe deposit box.[6] Bell fell out of contact following the *Swordquest* event, but according to Vendel and Rideout, Bell appeared to have had the disc part of the Talisman melted down for its value (about US$15,000 at the time), keeping the small sword, diamonds, and birthstones; the current fate of these is unknown.[6] The fate of the Crown is unknown; Vendel stated that while Atari was required to hold the contest, they could have simply awarded the winner with a cash prize equivalent as opposed to the Crown.[6]

Since they were never part of any contest, the Philosopher's Stone and the Sword have seemingly disappeared. Some sources have claimed that Tramiel took possession of the prizes himself, based on rumoured observations that Atari staff or associates of Tramiel had made of seeing a similar looking sword mounted in Tramiel's office or on his home mantel. However, Vendel believes that the persons who started this rumor may have mistaken a Tramiel family heirloom for the *Swordquest* sword. Vendel believes that it is unlikely that Tramiel would have been able to keep the Stone, Sword, and (if not given away) Crown, as when Atari, Inc was sold, these items were still the property of Warner Communications, and would have been returned to the Franklin Mint. With the Franklin Mint later being sold in 1985 to American Protective Services, and the original Atari business no longer existing, the prizes were most likely melted back down to their base components for reuse elsewhere, according to Vendel.[6]

Atari released the *Atari 50* collection in 2022. As part of the collection, Digital Eclipse developed a new version of *Airworld*.[9][10]

Comic books

Original mini-comics

Each of the three released games shipped with a comic book, published jointly by Atari and DC Comics. The books included clues to solve the puzzles within each of the games.

Dynamite Entertainment mini-series

In February 2017, Dynamite Entertainment announced a new comic book series, called *Swordquest*, but based on the actual contest around the three games, rather than the story within the games. It was a six-issue series, starting with a special #0 "Preview" book that sold with a cover price of 25¢ and was published in May 2017. The remaining 5 issues, published monthly after the preview, sold at $3.99 each. In addition, Dynamite released a trade paperback that reprinted the three mini-comics along with the mini-comic for the game *Yars' Revenge*. As with the originals, the TPB is sized as a mini-comic.

The series featured the story of a person who had played the three *Swordquest* games (with help from two friends who were brother and sister) when he was younger and was anticipating *Airworld*. Now as an adult, he continues his efforts to play *Airworld* using his old Atari hardware, but is caught up with a mysterious figure who offers to help him obtain the real "Sword of Ultimate Sorcery" from its resting place in the World Arcade Museum. As well as being valuable, it may have its own mysterious powers. The man contacts his two childhood friends to accompany him on his new "Swordquest".

The comic was written by Chad Bowers and Chris Sims and had art by Scott Kowalchuk under the pseudonym "Ghostwriter X". A trade paperback reprint of all six issues, titled *Swordquest: Realworld* was released in February 2018.[11]

Reception

Richard A. Edwards reviewed *Swordquest: Earthworld* in *The Space Gamer* No. 61.[12] Edwards commented that "The only reason to purchase a copy of *Swordquest: Earthworld* is to try and solve the puzzle and win the prize. Gamers not interested in spending the time required should pass this one."[12] In 1995, *Flux* magazine ranked *Swordquest: Earthworld* 71st on their Top 100 Video Games.[13]

In popular culture

Both the novel *Ready Player One* and the film adaptation reference the *Swordquest* series.

SCP-1926, an entry on the SCP Foundation wiki, is based on the unreleased *Swordquest: Airworld* game.

References

1. GRUNDHAUSER, Eric (March 8, 2016). "The Quest for the Real-Life Treasures of Atari's Swordquest" (https://www.atlasobscura.com/articles/the-quest-for-the-reallife-treasures-of-ataris-swordquest). *Atlas Obscura*. Retrieved July 10, 2023.
2. Grundhauser, Eric (March 8, 2016). "The Quest for the Real-Life Treasures of Atari's Swordquest" (http://www.atlasobscura.com/articles/the-quest-for-the-reallife-treasures-of-ataris-swordquest). *Atlas Obscura*. Retrieved September 7, 2023.
3. "The Sandbox Unveils Alpha Season 5 Featuring Iconic Brands: Jurassic World, Teletubbies, Deepak Chopra, Atari, Attack on Titan, Hellboy, and More" (https://www.businesswire.com/news/home/20250328817345/en/The-Sandbox-Unveils-Alpha-Season-5-Featuring-Iconic-Brands-Jurassic-World-Teletubbies-Deepak-Chopra-Atari-Attack-on-Titan-Hellboy-and-More). *Business Wire*. March 31, 2025. Retrieved April 28, 2025.
4. Grundhauser, Eric (March 8, 2016). "The Quest for the Real-Life Treasures of Atari's Swordquest" (https://www.atlasobscura.com/articles/the-quest-for-the-reallife-treasures-of-ataris-swordquest). *Atlas Obscura*. Retrieved September 28, 2018.
5. "The Players Guide to Fantasy Games" (https://archive.org/stream/electronic-games-magazine-1983-06/Electronic_Games_Issue_16_Vol_02_04_1983_Jun#page/n45/mode/2up). *Electronic Games*. June 1983. p. 47. Retrieved January 6, 2015.
6. Iwaniuk, Phil (August 6, 2017). "The 35-year hunt for Swordquest's lost treasures" (https://www.eurogamer.net/articles/2017-08-06-the-35-year-hunt-for-swordquests-lost-treasures). *Eurogamer*. Retrieved September 28, 2018.
7. "Swordquest" (https://gamebooks.org/swdquest.htm). *gamebooks.org*. Retrieved September 7, 2023.
8. Parr, Andrew (October 2018). "The $378,870.10 Contest That Wasn't". *Games World of Puzzles*. pp. 38–39.
9. "Real Otaku Gamer Providing You With The Best Otaku News, Reviews and Entertainment" (https://realotakugamer.com/atari-50-the-anniversary-celebration-announced-includes-over-90-titles-all-atari-platforms-reimagined-games/83071/). June 29, 2022. Retrieved June 29, 2022.
10. Webster, Andrew (November 11, 2022). "Atari 50 is an incredible playable tour through video game history" (https://www.theverge.com/23451349/atari-50-review-xbox-playstation-switch-steam). *The Verge*. Retrieved November 11, 2022.
11. McWhertor, Michael (February 20, 2017). "Atari's bringing back its Swordquest comics" (http://www.polygon.com/2017/2/20/14678122/atari-swordquest-comics-return-dynamite-entertainment). *Polygon*. Retrieved February 20, 2017.
12. Edwards, Richard A. (March 1983). "Capsule Reviews" (https://archive.org/stream/space-gamer_201601/Space_Gamer_61#page/n45/mode/1up). *The Space Gamer* (61). Steve Jackson Games: 42, 44.
13. "Top 100 Video Games" (https://archive.org/details/flux-issue-4/page/n29/mode/2up). *Flux* (4). Harris Publications: 31. April 1995.

External links

- Atari Protos SwordQuest: AirWorld (http://www.atariprotos.com/2600/software/airworld/airworld.htm)
- Atari Protos SwordQuest: EarthWorld (http://www.atariprotos.com/2600/software/earthworld/earthworld.htm)
- Atari Protos SwordQuest: FireWorld (http://www.atariprotos.com/2600/software/fireworld/fireworld.htm)
- Atari Protos SwordQuest: WaterWorld (http://www.atariprotos.com/2600/software/waterworld/waterworld.htm)

- The SwordQuest Comic Book Archive (https://web.archive.org/web/19990221102152/http://www.tripoint.org/sq/sq.html)
- Swordquest Interview With Michael Rideout (http://www.atarihq.com/2678/swordqst.html)
- *SwordQuest: EarthWorld* (https://www.mobygames.com/game/swordquest-earthworld) at MobyGames

---

Atari 2600 hardware

The **Atari 2600 hardware** was based on the MOS Technology 6507 chip, offering a maximum resolution of 160 × 192 pixels (NTSC), 128 colors, 128 bytes of RAM with 4 KB on cartridges (64 KB via bank switching). The design experienced many makeovers and revisions during its 14-year production history, from the original "heavy sixer" to the Atari 2600 Jr. at the end. The system also has many controllers and third-party peripherals.

The Atari 2600 in "Darth Vader" design shown with a joystick

Technical specifications

- CPU: 1.19 MHz MOS Technology 6507
- Audio + Video processor: Television Interface Adaptor (TIA)
  - Playfield resolution: 40 × 192 pixels (NTSC). Uses a 20-pixel register that is mirrored or copied, left side to right side, to achieve the width of 40 pixels.
  - Player sprites: 8 × 192 pixels (NTSC). Player, ball, and missile sprites use pixels that are 1/4 the width of playfield pixels (unless stretched).
  - Ball and missile sprites: 1 × 192 pixels (NTSC).
  - Maximum resolution: 160 × 192 pixels (NTSC). Max resolution is only somewhat achievable with programming tricks that combine sprite pixels with playfield pixels.
  - 128 colors (NTSC). 128 possible on screen. Max of 4 per line: background, playfield, player0 sprite, and player1 sprite. Palette switching between lines is common. Palette switching mid line is possible but not common due to resource limitations.
  - 2 channels of 1-bit monaural sound with 4-bit volume control.
- RAM (within a MOS Technology RIOT chip): 128 bytes (additional RAM may be included in the game cartridges)
- ROM (game cartridges): 4 KB maximum capacity (64 KB with bank switching)
- Input (controlled by MOS RIOT):
  - Two screw-less DE-9[a] controller ports, for single-button joysticks, paddles, trackballs, driving controllers, 12-key keyboard controllers (0–9, #, and *), and third party controllers with additional functions
  - Six switches (original version): Power on/off, TV signal (B/W or Color), Difficulty for each player (called A and B), Select, and Reset. Except for the power switch, games could (and did) assign other meanings to the switches. On later models, the difficulty switches were miniaturized and moved to the back of the unit.
- Output: B/W or color TV picture and sound signal through RF modulator (NTSC, PAL, or SECAM, depending on region; game cartridges are exchangeable between NTSC and PAL/SECAM machines, but this will result in wrong or missing colors and often a rolling picture.)

Controllers

The Atari 2600 has many input devices such as joysticks, paddles, and keyboards, as well as third-party components. The console was originally packaged with two standard Atari CX10 joysticks, later upgraded to the more common CX40 model, and a set of paddles. Joysticks with a single button and eight-directional stick are the predominant input device for Atari 2600 games.

Atari-compatible joysticks are also used for the VIC-20, Commodore 64, Commodore 128, Amiga, Atari 8-bit, Atari ST, Amstrad CPC, MSX and several Japanese home computers; they could be used with fairly common adapters on Plus/4, Commodore 16, ZX81, and ZX Spectrum. Sega video game consoles such as the Master System and Genesis can also use Atari-compatible joysticks for games that only require one button.

Late European versions of the 2600 Jr. included the CX-78 joypad instead of CX40 joystick, the same controller used in the European Atari 7800.[1]

The other main controller, the Atari CX30-04 paddle, is used for games based on one-dimensional movement. These included *Pong*, *Breakout*, and *Circus Atari*, among others.[2]:59–60

The Atari CX20-01 "driving controller" appears similar in design to the paddle, but there is only one per DE-9 port rather than two paddles per port. The key difference in function between the paddle and driving controller is that the paddle's wheel had a finite amount it would turn before hitting a stop, while the driving controller's wheel could rotate continuously. This is essential for overhead-view driving games, for which the player would turn the wheel a total of 360 degrees in one direction on every lap. The driving controller is used for games such as *Indy 500*.[2]:59–60

The Atari CX50 keyboard controller functions as a computer keyboard and is required for games such as Concentration.

The Atari Mindlink is a prototyped motion controller which measures the movement of the user's eyebrows via a fitted headband, which replaces the paddle controller; however, the Mindlink was cancelled early in its development.

Atari controllers

Standard CX40 joystick

CX30-04 paddle controller

CX20-01 driving controller

CX50 Keyboard Controller

CX21 Video Touch Pad

Sears Video Arcade II Controller with integrated paddle

CX78 Power Control Pad (only for European 2600 Jr)

Console models

Six switch models

There were two different designs for the six switch models, so named for the six prominent aluminium switch levers present on the control panel. Both designs incorporated a switch board and a motherboard which were connected by a 12-pin ribbon cable. Both designs were originally sold in North America with or without an additional switch accessible via a hole in the bottom which can toggle the console's TV output to either channel 2 or channel 3. Those without the switch can output only on channel 3, which was the VHF channel originally least used in the most populous broadcast regions.[3] In addition to the traditional "Atari" branded consoles, Sears, Roebuck and Co. purchased the rights to sell Atari consoles in their stores under their Tele-Games store brand, with the console itself labeled as the Sears "Video Arcade."[4] Sears released several versions of the 2600 as the Sears Video Arcade series from 1977 to 1983. These include the "Heavy Sixer" model in 1977, the "Light Sixer" model in 1978, the "4 switch" model in 1980, and an analog to the "Atari 2600 Junior" model.[4][5]

CX2600 "Heavy Sixer"

In the first year of production (1977), Atari manufactured the CX2600 with heavy aluminum radio-frequency shielding as well as ½-inch-thick (12 mm) plastic bottom half. These early units are differentiated from subsequent units by their thick plastic molding on the sides of the case, the curved molding on the front of the unit, as well as their heavier weight. Due to their heavier weight, these early consoles are sometimes referred to as "Heavy Sixers".[3] The majority of the Heavy Sixer consoles were manufactured in Sunnyvale, California, after which Atari moved most console manufacturing overseas.[4] Originally these consoles came with a grey power supply and spring-

loaded joysticks, which differed slightly from the later models.[6] Due to the generally higher quality parts and components that are used in these early models, collectors and enthusiasts claim that the Heavy Sixers have superior color to the subsequent 4 switch and Light Sixer models.[6] The Heavy Sixers are considered rare given their limited production run before the Light Sixer models made their debut.[7]


The CX2600 "Heavy Sixer"

In addition to the Atari-branded Heavy Sixer, Atari also produced a version of the console for Sears called "Video Arcade".[4] The Sears Video Arcade sports aluminium trim, the brand "Tele-Games" printed in green capital letters above the cartridge slot, the brand "Video Arcade" printed in chrome letters on the front right hand corner, and faux marbleized wood, but is otherwise identical to the Atari-branded console.[4] These models can also be identified by the white paper label located underneath the console itself, which identifies the unit as being manufactured by Atari for "Sears Roebuck and Co."[8] Sears also sold their own "Sears" branded paddle controllers for the Heavy Sixer.[8]

CX2600 "Light Sixer"

These models were introduced in 1978 and stayed in production for about two years. The thick molding on the sides and curved molding on the front gave way to thinner and more sharply angled molding reducing the weight of the system. The front right and left molding are angular and overlap the woodgrain. The thick RF shielding remained until the four switch models came out.[3] Atari also produced a version of the "Light Sixer" for Sears, which had some minor aesthetic differences to the Atari-branded console.[3]


The CX2600 "Light Sixer"

Four switch models

These models also have two different designs, but retained much of the same plastic moldings as the Light Sixer. The major difference between the four-switch models and the Light Sixer is that there are only four switches on the main control panel. The two difficulty switches were moved from the front of the console to the upper back, alongside the controller ports, power jack, and channel selection switch (which was no longer optional but now included on all North American consoles). Instead of having two separate boards connected through a ribbon cable, the CX2600-A has one motherboard, which is oriented at an angle inside the case. This resulted in the controller ports moving from the lower back to the upper back of the console.

CX2600-A

This model was introduced in 1980. Some early examples of this console used the same lower case mold as the light sixers, with a piece of thin plastic adhered over several now-unneeded holes.

Atari 2500


The 4-switch CX2600-A

The Atari 2500 is a prototype created in 1981. It was intended as a replacement for the existing 2600, but never saw release.[9] The technical specifications are no different from the Atari 2600, except for combination joystick/paddle controllers installed in the system itself (though normal controllers were usable). It is light grey, and appears sleeker than current model 2600s.

Atari 2600


The Atari 2600 "Darth Vader"

This model was introduced in 1982 and was the first to use "2600" in its name (the previous models all being officially named the "Video Computer System"). Besides containing a different logo than earlier models, this model does not have woodgrain on the front and is primarily black, resulting in the nickname of "Darth Vader".[3]

Atari 2600 Jr.

The Atari 2600 Jr.

In 1986, a new version of the 2600 was released (although it was planned for release two years earlier). The new redesigned version of the 2600, unofficially referred to as the 2600 Jr., features a smaller, cost-reduced form factor with a modernized Atari 7800-like appearance. The redesigned 2600 was advertised as a budget gaming system (under $50) that has the ability to run a large collection of classic games. There are several minor stylistic variations of the 2600 Jr. design, including the "large rainbow" (shown at right), "small rainbow", and the rare all-black "Irish" version (made in Ireland).

Motherboard revisions

The Atari 2600 VCS Domestic Field Service Manual describes the differences as follows:[10]

> **2600A model revisions 1-13**
> In addition to the component changes, the physical location of several parts has also been changed. Instead of having the right and left difficulty switches placed on top of the game console, they are located at the rear, next to the game controller plugs. The channel selector switch is also located at the rear of the console. The game cartridge socket is no longer angled, but is mounted vertically on the board.
> **2600A model differences - revisions 14 and 15**
> Revisions 14 and 15 contain the model differences described above, and in addition have new components on the TIA lines, LM1 and Sync. There are two 1N914 diodes to prevent

feedback on the lines and two additional pull-up resistors to insure the signal is at +5v. To compensate for any signal loss, R215 and 217 have been changed to 47K (R215) and 24K (R217).

2600A model differences - revisions 16 and up

Revisions 16 and up contain the model differences described above; they also include a timer chip (A205) added to the reset circuitry of the MPU chip. This chip eliminates the problem of power-on reset failures.

2600AP model differences - revision 6

Specs about this Atari 2600AP need to be added / edited by experts (1981 - C017879 Rev. 6)

Atari 2600 hardware internals

CX2600 Sunnyvale "Heavy Sixer"

CX2600 "Light Sixer"

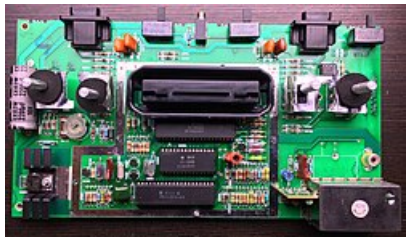
CX2600A "Darth Vader" model

An Atari Jr.

Motherboard flat shots

REV B C010433 (CX2600 Light Sixer)

REV 16 C015519 (CX2600A Darth Vader)



REV 6 C017879 (CX2600AP Darth Vader)

REV F C021503 (Atari Jr.)

Color palette

The Atari 2600 uses different color palettes depending on the television signal format used.[11] With the NTSC format, a 128-color palette is available, while in PAL, only 104 colors are available. Additionally, the SECAM palette consists of only 8 colors.

Only the Television Interface Adaptor (TIA) IC chip (part number CO10444 in NTSC flavor) is different for NTSC and PAL markets. SECAM units use a daughterboard adapter to convert the output. The CPU chip CO10745, and combination Ram+I/O chip CO10750 were used throughout the 2600's production for all regions.

Third-party peripherals

- Starpath Supercharger, a cartridge with a cassette player connector, giving $6\frac{1}{8}$ KB RAM capacity
- GameLine Master Module, a modem allowing downloads of games from an extensive catalog which could be playable for a limited amount of time.
- Yoko Game Copier, a device that allows the user to copy the ROM from a cartridge to a blank cartridge. The Yoko Game Copier was distributed by C.K.B. in Europe.
- Coleco Kid Vid system, a voice module controller. Only two games were released using this module: *Berenstain Bears* and *The Smurfs Save the Day*.

Notes

a. The screwless DE-9 controller ports subsequently became the mechanical and electrical de facto standard for game controllers in the 8-bit and early 16-bit era and were used in most subsequent Atari and Commodore consoles and home computers, among many others including the Sega Genesis.

References

1. "Atari 2600 / Atari Video Computer System / Atari 2800 (1977–1993) (In German)" (http://www.atari-computermuseum.de/2600.htm#2600jr). *www.atari-computermuseum.de*. Archived (https://web.archive.org/web/20040211001455/http://www.atari-computermuseum.de:80/2600.htm) from the original on 2004-02-11. Retrieved 2021-08-23.
2. Wielage, Marc; Wielage, Robert (May 1983). "Getting a Grip on Joysticks" (http://www.ataricompendium.com/archives/magazines/video/video_may83.pdf#page=16) (PDF). *Video*. **7** (2). Reese Communications: 58–60, 106–111. ISSN 0147-8907 (https://search.worldcat.org/issn/0147-8907). Archived (https://web.archive.org/web/20190129235406/http://www.ataricompendium.com/archives/magazines/video/video_may83.pdf) (PDF) from the original on January 29, 2019.
3. "Listing of games by Atari for all systems" (https://web.archive.org/web/20101202135041/http://www.atariguide.com/menu/sysManmenu3frame.htm). Atari Guide Classic Game Archive. Archived from the original (http://www.atariguide.com/menu/sysManmenu3frame.htm) on December 2, 2010. Retrieved January 2, 2009.
4. "Atari Age" (http://www.atariage.com/2600/archives/consoles.html). *Atariage.com*.

5. Yarusso, Albert. "2600 Consoles and Clones" (https://atariage.com/2600/archives/consoles.html). *AtariAge*. Archived (https://web.archive.org/web/20071006124404/http://www.atariage.com/2600/archives/consoles.html) from the original on October 6, 2007. Retrieved October 7, 2007.
6. "Atari Guide" (https://web.archive.org/web/20160303210753/http://www.atariguide.com/10/1050.php). *AtariGuide*. Archived from the original (http://www.atariguide.com/10/1050.php) on March 3, 2016.
7. Lyon, Tony (December 19, 2009). "Atari 2600 – Facts You Might Not Know!" (http://retrovideogamesystems.com/atari-2600-facts-you-might-not-know/). *RVGS*. Archived (https://web.archive.org/web/20180826091100/http://retrovideogamesystems.com/about/) from the original on August 26, 2018.
8. Williams, Jeff (July 20, 2008). "Sears Video Arcade" (http://www.jwnyc.com/games/videoarcade.html). *Jwnyc.com*. Archived (https://web.archive.org/web/20170523111959/http://www.jwnyc.com/games/videoarcade.html) from the original on May 23, 2017.
9. "The Atari 2500" (http://www.atarimuseum.com/videogames/consoles/2500/2500.html). *Atari History Museum*. Archived (https://web.archive.org/web/20030808121237/http://www.atarimuseum.com/videogames/consoles/2500/2500.html) from the original on August 8, 2003.
10. *ATARI 2600/2600A VCS Domestic Field Service Manual; FD100133* (https://web.archive.org/web/20160406120736/http://www.atariguide.com/pdfs/Atari_2600_VCS_Domestic_Field_Service_Manual.pdf) (PDF). Rev.02. Atari. January 21, 1983. Archived from the original (http://www.atariguide.com/pdfs/Atari_2600_VCS_Domestic_Field_Service_Manual.pdf) (PDF) on April 6, 2016. Retrieved January 2, 2009.
11. Saunders, Glenn (September 17, 2001). "TIA Color Charts" (https://www.biglist.com/lists/stella/archives/200109/msg00285.html). Archived (https://web.archive.org/web/20110707234118/http://www.biglist.com/lists/stella/archives/200109/msg00285.html) from the original on July 7, 2011.

External links

- Atari 2600 Specifications (https://www.astro.physik.uni-potsdam.de/~mwendt/2600scene/specs.html)

Patents

- Joystick controller (https://patents.google.com/patent/US4275611)
- Remote control unit for electronic game (https://patents.google.com/patent/USD268689) – Wireless controller design patent
- Controller unit for video game (https://patents.google.com/patent/US4469330) – Joystick and paddle controller patent

---

Atari 2700

The **Atari 2700** (also known the **Atari Remote Control VCS**) was a prototype home video game console that was developed by Atari, Inc. to be a wirelessly controlled version of Atari's popular Atari 2600 system. Intended for release in 1981, the 2700 was one of several planned follow-ups to the 2600, but the system was never put into full production. While It is unclear how many of these systems exist, former Atari employee Dan Kramer has stated that at least 12 consoles were made (one is owned by The National Videogame Museum), plus extra controllers.

Atari 2700

Developer	Atari, Inc.
Type	Home video game console
Released	Cancelled
Media	Cartridge
CPU	MOS Technology 6507 @ 1.19 MHz

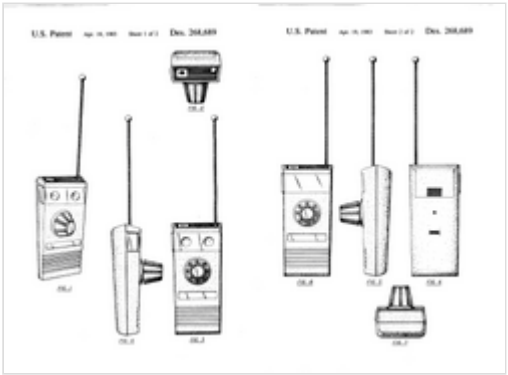
The 2700 is fully compatible with the Atari 2600 system and was intended to use that system's games and accessories. The 2700's new features over the 2600 include wireless controllers featuring a combination of a joystick and paddle, touch sensitive switches, and a streamlined wedge–shaped case.

Internally, the product was also called the "RC Stella", where "RC" referred to Radio Control and "Stella" was the internal Atari codename for the 2600.

Features

Controllers

The 2700 wireless controllers operate via radio signals. They feature an on/off switch and are powered by a replaceable 9-volt battery. Communication with the console is achieved via a flexible antenna. Each controller is designated as either a left (player 1) or right (player 2) and cannot be swapped.[1]



USPTO image of Atari 2700 controller

Each 2700 controller features a single fire button and a short stick which combines the features of a standard 8 position joystick and a 270 degree paddle controller.[2] Game Select and Reset buttons appear on both the controllers and the console, the latter presumably for instances where standard wired controllers would be used instead of the wireless units.

Console

The console features two standard Atari 9-pin controller ports on its right side, allowing for use of other 2600 compatible controllers such as Atari-made and third-party joysticks, as well as Atari's own Driving Controller, Paddles, Kid's Controller, Keypad Controller, and Trak-Ball. The top

surface features a 2600 style cartridge slot and touch-sensitive buttons with associated red LEDs, including buttons for functions directly related to the wireless controllers, such as selecting between the wireless controllers and any plugged in, and for switching the function of the wireless controllers between joystick and paddle mode.

The case represented a significant departure from previous Atari consumer product designs, dispensing with aesthetics of earlier Atari consoles. Faux wood grain inlays and mechanical throw switches were replaced by a sleek, dark brown wedge with indented touch sensitive switches. The casing featured a hinge-topped storage bay for the wireless controllers and a built-in belly groove for winding excess cable to connect to a TV.

Cancellation

Although they were the primary innovation of the 2700, it was the wireless controllers that actually caused the console to be cancelled prior to release. Specifically, the wireless controllers had a working radius of approximately 1,000 feet (300 m), but there was no mechanism for pairing a given set of controllers with a specific console, which meant controllers for any one 2700 could unintentionally affect other nearby 2700s. Furthermore, the controllers were based on the design of garage door openers, which led to concerns that they could accidentally trigger other remote controlled devices.

Legacy

Although abandoned, the 2700 case design became the model for a number of later Atari game systems, notably the very similar looking Atari 2800[3] for Japan and the similar Atari-made Sears-branded Video Arcade II, both of which featured (wired) controllers which combined the functions of joystick and paddle. The case design also influenced a whole range of subsequent Atari home consoles, including the Atari 5200 (which featured a 2700-like controller bay), as well as the Atari 2600 Jr., and Atari 7800.

The idea of wireless controllers for the 2600 and joystick compatible systems re-emerged in 1983 with the release of the Atari 2600 Wireless Remote Controlled Joystick, a plug-in accessory (Model No., CX 42).[4] However, to house additional electronics to correct the interference problem, the controllers are bulky. Additionally, they are difficult to control and suffer from poor battery life. The 2012-released Atari Flashback 4 also features wireless controllers based on infrared technology.

Technical specifications

- CPU: MOS Technology 6507 @ 1.19 MHz
- Audio+video processor: TIA. 160 x ≈192 pixel, 128 colors (121 of them actually different from each other on NTSC, 114 on PAL), 2 channel mono sound.
- RAM: 128 bytes (plus up to 256 bytes built into the game cartridges)
- ROM (game cartridges): 4 KB maximum capacity (32 KB+ with paging)
- Output: B/W or color TV picture and sound signal

References

1. 2700 at the Atari History Museum website (http://www.atarimuseum.com/videogames/consoles/2700/a2700.html)
2. Patent image of 2700 controller (https://patents.google.com/patent/USD268689)
3. Atari 2800 on Atari Museum (http://www.atarimuseum.com/videogames/consoles/2800/A2800.html)
4. "The Atari 2600 Remote Controlled Joystick (http://www.atarimuseum.com/videogames/consoles/2600/2600rc.html)". *Atari History Museum*.

External links

- Atari 2700 RC Stella history & information (http://www.atarimuseum.com/videogames/consoles/2700/a2700.html)
- Video of a surviving Atari 2700 console (https://www.youtube.com/watch?v=0HPr5h-BUg0) on YouTube

Atari 5200

The **Atari 5200 SuperSystem** or simply **Atari 5200** is a home video game console introduced in 1982 by Atari, Inc. as a higher-end complement for the popular Atari Video Computer System.[3] The VCS was renamed to Atari 2600 at the time of the 5200's launch.[4] Created to compete with Mattel's Intellivision, the 5200 wound up a direct competitor of ColecoVision shortly after its release.[5] While the Coleco system shipped with the first home version of Nintendo's *Donkey Kong*, the 5200 included the 1978 arcade game *Super Breakout*, which had already appeared on previous Atari home platforms.

The system architecture is almost identical to that of the Atari 8-bit computers, although software is not directly compatible between them. The 5200's controllers have an analog joystick and a numeric keypad along with start, pause, and reset buttons. The 360-degree non-centering joystick was touted as offering more control than the eight-way Atari CX40 joystick of the 2600, but it was a focal point for criticism.

On May 21, 1984, during a press conference at which the Atari 7800 was introduced, company executives revealed that the 5200 had been discontinued after less than two years on the market.[6] Total sales of the system were reportedly in excess of 1 million units.[2]

Atari 5200

Atari 5200 and one of its controllers

Manufacturer	Atari, Inc.
Type	Home video game console
Generation	Second
Released	NA: October 1982[1]
Discontinued	May 21, 1984
Units sold	1 million[2]
Media	ROM cartridge
CPU	MOS 6502C @ 1.79 MHz
Memory	16 KB RAM
Controller input	Joystick Trak-Ball
Predecessor	Atari 2600
Successor	Atari 7800

History

Development

Following the release of the Video Computer System in 1977, Atari began development on hardware for its next generation of video game consoles. When Ray Kassar took over as Atari CEO in November 1978, this development shifted entirely towards home computers as the Atari 400 and 800 home computer systems.[7]

Atari's Consumer Division moved on to a more direct upgrade of the Atari 2600 known internally as "Super Stella" or the Atari 3200. The company proposed a three console product line with the 2600 on the low end, a modified Atari 400 computer on the high end, and the 3200 in the middle.

As development stalled on the 3200 following a number of technical issues, the 3200 was dropped in favor of the modified Atari 400 design.[8]

In 1981, Atari's Advanced Technology Group began work on this next generation console under the codename "PAM" (short for Personal Arcade Machine). Lead engineer on the project was Pete Gerrard and the machine's operating system was written by Rob Zdybel.[9] Early prototypes of the system were also known as the "Atari Video System X – Advanced Video Computer System".[10]

Release

In January 1982 during the Winter CES trade show in Las Vegas, Atari unveiled the PAM project publicly for the first time. Announced as the "Supergame", the system was set to be released in time for the 1982 Christmas season.[11] At the Summer CES show in June of the same year, Atari officially announced the Atari 5200 name, and set an October release date for the system.[12] A voice synthesis module (similar to Mattel's Intellivoice), an Atari 2600 adapter (allowing the 5200 to play Atari 2600 games), and a trackball controller were all teased for later release in 1983.[1]

In October 1982, the 5200 began appearing on store shelves in a handful of major department stores. The console saw an extremely limited initial run, and only became available nationwide starting in January 1983.[13] 10 games were announced for the system's launch, with Atari planning a total of 14 releases by the end of the year.[1] In total, only 9 games were actually released for the 5200 in 1982, and one of the announced launch titles, *Asteroids*, was fully cancelled.[14]

In early 1983, a number of third-party publishers, including Activision, Imagic, Parker Brothers, and CBS Electronics, who had all already seen success publishing Atari 2600 games, announced they would start releasing games for the 5200 by the end of the year. Meanwhile, in June 1983 during Summer CES, Atari announced a price drop for the 5200, along with a new model for the system with only two controller ports, modified controllers, and compatibility with the still upcoming Atari 2600 adapter. This newer two port model was released later that summer, including *Pac-Man* as a pack-in title, along with the trackball controller and Atari 2600 adapter.[15] The voice synthesis module, initially promised for the system at launch, was never released.

A model of the system for the european market was planned for a late 1983 release. Atari cancelled those plans in early July 1983, with poor american sales being the main reason cited.[16]

Decline

The Atari 5200 failed to gain market traction almost immediately, and only sold a fraction of the units its predecessor had sold.[2] The 5200's problems were also compounded by the video game crash of 1983. By the start of 1984, many companies had begun to pull out of the video game market, dropping support for the under-performing 5200. This included Atari themselves, who only released four games for the system in that year, ending with *Choplifter* in May.[17] Atari also announced in May that it had officially discontinued the platform.[6]

In July, Atari Inc.'s consumer division was sold to Jack Tramiel, who followed up by renaming his own company Atari Corporation. Atari Corp retained the rights to the Atari 5200 platform, but following the acquisition, all marketing and development around the 5200 ceased. Parker Brothers and Activision continued to publish games for the system through the end of 1984, but only one

game, *Bounty Bob Strikes Back!* by Big Five Software, was released in 1985, which was also the last third party release for the system.[18] By February 1986, *Computer Entertainer* declared the 5200 had "gone to video game heaven".[19]

Three final games were released for the 5200 by Atari Corp in 1986. All three, *Ballblazer*, *Rescue on Fractalus!*, and *Gremlins*, had been part of major licensing agreements between popular Hollywood directors George Lucas and Steven Spielberg and all three had begun manufacture before Jack Tramiel's acquisition. These games saw almost no marketing upon their release.[20][21]

Hardware

The original model of the system released in 1982 has four controller ports, compared to the two seen in most other consoles released at the time. The controllers have an analog joystick, numeric keypad, two fire buttons on each side of the controller, and three dedicated keys labeled "Start", "Pause", and "Reset". The 5200 also features an automatic TV switch box which allows the console to automatically switch from a regular TV signal to the console's video signal whenever the game system is turned on. Previous RF adapters, like those seen on the Atari 2600, had required the user to slide a switch on the adapter by hand to accomplish the same task. Power supply to the console is also handled through that same unique RF adapter. A single cable coming out of the 5200 plugs into the adapter and carries both electricity and video signal for the console.[22]

The 5200's large size is due in part to controller storage in the back of the unit.

The second revision of the 5200

A revision of the Atari 5200 released in 1983 removed two of the original model's four controller ports and reverted the system back to a separate more conventional power supply and standard RF adapter with no auto-switching. This hardware revision also altered the system's cartridge port to allow for compatibility with the system's Atari 2600 adapter, which released that same year.[23] While the adapter was only designed to work with the 1983 revision of the system, modifications can be made to the console's original model to make it compatible with the adapter.[24] In fact, towards the end of the original model's production run, a limited number of consoles were produced with these modifications included. These consoles can be identified by an asterisk in their serial numbers.[25]

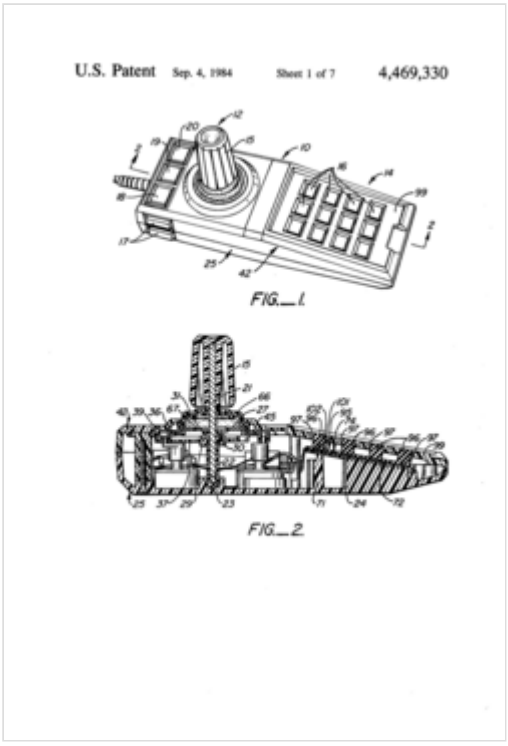
At one point following the 5200's release, Atari planned a smaller, cost-reduced version of the Atari 5200, which removed the console's controller storage bin. Code-named the "Atari 5100" (a.k.a. "Atari 5200 Jr."), only a few fully working prototypes were produced before the project was canceled.[26]

Technical specifications

- CPU: SALLY @ 1.79 MHz (Custom MOS Technology 6502)

- Graphics chips: ANTIC and GTIA
- Support hardware: 3 custom VLSI chips
- Screen resolution: 14 modes: Six text modes (8×8, 4×8, and 8×10 character matrices supported), Eight graphics modes including 80 pixels per line (16 color), 160 pixels per line (4 color), 320 pixels per line (2 color),[27] variable height and width up to overscan 384×240 pixels
- Color palette: 128 (16 hues, 8 luma) or 256 (16 hues, 16 luma)
- Colors on screen: 2 (320 pixels per line) to 16 (80 pixels per line).[27] Up to 23 colors per line with player/missile and playfield priority control mixing. Register values can be changed at every scanline using ANTIC display list interrupts, allowing up to 256 (16 hues, 16 luma) to be displayed at once, with up to 16 per scanline.
- Sprites: Four 8-pixel-wide sprites, four 2-pixel-wide sprites; height of each is either 128 or 256 pixels; 1 color per sprite
- Scrolling: Coarse and fine scrolling horizontally and vertically. (Horizontal coarse scroll 4, 8, or 16-pixel/color clock increments, and vertically by mode line height 2, 4, 8, or 16 scan lines.) (Or horizontal fine scroll 0 to 3, 7, or 15 single-pixel/color clock increments and then a 4, 8, or 16-pixel/color clock increment coarse scroll; and vertical fine scroll 0 to 1, 3, 7, or 15 scan line increments and then a 2, 4, 8, or 16 scan line increment coarse scroll)[28]
- Sound: 4-channel PSG sound via POKEY sound chip, which also handles keyboard scanning, serial I/O, high resolution interrupt capable timers (single cycle accurate), and random number generation.
- RAM: 16 KB[29]
- ROM:
  - 2 KB on-board BIOS for system startup and interrupt routing.
  - 32 KB ROM window for standard game cartridges, expandable using bank switching techniques.
- Dimensions: 13" × 15" × 4.25"

A first revision 5200's motherboard



Joystick schematic from patent

Controllers

The controller prototypes used in the electrical development lab employed a yoke-and-gimbal mechanism that came from an RC airplane controller kit. The design of the analog joystick, which used a weak rubber boot rather than springs to provide centering, proved to be ungainly and unreliable. They quickly became the Achilles' heel of the system due to the combination of an overly complex mechanical design and a very low-cost internal flex circuit system.[30] Another major flaw of the controllers was that the design did not translate into a linear acceleration from the center through the arc of the stick travel. The controllers did, however, include a pause button, a unique feature at the time.[31] Various third-party replacement joysticks were also released, including those made by Wico.[32]

Atari Inc. released the Pro-Line Trak-Ball controller, which was used for games such as *Centipede* and *Missile Command*. A paddle controller[33] and an updated self-centering version of the original controller[34] were also in development, but never made it to market.

Games were shipped with plastic card overlays that snapped in over the keypad. The cards indicated which game functions, such as changing the view or vehicle speed, were assigned to each key.[35]

The primary controller was ranked the 10th worst video game controller by IGN editor Craig Harris.[36] An editor for *Next Generation* said that their non-centering joysticks "rendered many games nearly unplayable".[31]

The Atari 5200 controller included with the console

The Pro-Line Trak-Ball controller

Differences from Atari 8-bit computers

David H. Ahl in 1983 described the Atari 5200 as "a 400 computer in disguise".[22] Its internal design is similar to that of Atari 8-bit computers using the ANTIC, POKEY, and GTIA coprocessors. Software designed for one does not run on the other, but source code can be mechanically converted unless it uses computer-specific features. *Antic* magazine reported in 1984 that "the similarities grossly outweigh the differences, so that a 5200 program can be developed and almost entirely debugged [on an Atari 8-bit computer] before testing on a 5200".[29] John J. Anderson of *Creative Computing* alluded to the incompatibility being intentional, caused by Atari's console division removing 8-bit compatibility to not lose control to the rival computer division.[37]

Besides the 5200's lack of a keyboard, the differences are:[29]

- The Atari computer 10 KB operating system is replaced with a simpler 2 KB version, of which 1 KB is the built-in character set.
- Some hardware registers, such as those of the GTIA and POKEY chips, are at different memory locations.
- The purpose of some registers is slightly different on the 5200.
- The 5200's analog joysticks appear as pairs of paddles to the hardware, which requires different input handling from the digital joystick input on the Atari computers.
- The SIO port was not present.
- An expansion edge connector located in the top left corner of the system. No accessories were released that utilized it.

In 1987, Atari Corporation released the XE Game System console, which is a repackaged 65XE (from 1985) with a detachable keyboard that can run home computer titles directly,[38] unlike the 5200.[29] Anderson wrote in 1984 that Atari could have released a console compatible with computer software in 1981.[37]

Games

Reception

The Atari 5200 did not fare well commercially compared to its predecessor, the Atari 2600.[39] While it touted superior graphics to the 2600 and Mattel's Intellivision, the system was initially incompatible with the 2600's expansive library of games, and some market analysts have speculated that this hurt its sales,[40][41] especially since an Atari 2600 cartridge adapter had been released for the Intellivision II.[42] In its list of the top 25 game consoles of all time, IGN claimed that the main reason for the 5200's market failure was the technological superiority of its main competitor, the ColecoVision.[43] However, other sources maintain that the two consoles were released with roughly equivalent hardware capabilities.[44]

Many of the 5200's games appeared simply as updated versions of 2600 titles, which failed to excite consumers.[45] This lack of new games was due in part to a lack of funding, with Atari continuing to develop most of its games for the saturated 2600 market.[46] The Atari 5200's pack-in title, *Super Breakout*, was criticized for not doing enough to demonstrate the system's capabilities.[22] This gave the ColecoVision a significant advantage as its pack-in, *Donkey Kong*, delivered a more authentic arcade experience than any previous game cartridge.[46]

The 5200 received much criticism for the "sloppy" design of its non-centering analog controllers.[47] Anderson described the controllers as "absolutely atrocious".[37]

David H. Ahl of *Creative Computing Video & Arcade Games* said in 1983 that the "Atari 5200 is, dare I say it, Atari's answer to Intellivision, Colecovision, and the Astrocade", describing the console as a "true mass market" version of the Atari 8-bit computers despite the software incompatibility. He criticized the joystick's imprecise control but said that "it is at least as good as many other controllers", and wondered why *Super Breakout* was the pack-in game when it did not use the 5200's improved graphics.[22]

Due to the system's failure, a PAL release was eventually cancelled, though a few prototypes of this model exist.

Popular culture

Critical to the plot of the 1984 film *Cloak & Dagger* is an Atari 5200 game cartridge called *Cloak & Dagger*. The arcade version appears in the movie. In actuality the Atari 5200 version was started but never completed. The game was under development with the title *Agent X* when the movie producers and Atari learned of each other's projects and decided to cooperate. This collaboration was part of a larger phenomenon, of films featuring video games as critical plot elements (as with *Tron* and *The Last Starfighter*) and of video game tie-ins to the same films (as with the *Tron* games for the Intellivision and other platforms).[48]

See also

- List of Atari 5200 emulators
- Video game crash of 1983

References

1. "Atari News" (https://archive.gamehistory.org/item/f6490686-9efa-4c88-b01e-ebe2b7078839). *Computer Entertainer*. Vol. 1, no. 6. September 1982. p. 4. Retrieved January 23, 2026.
2. Schrage, Michael (May 22, 1984). "Atari Introduces Game In Attempt for Survival" (https://www.washingtonpost.com/archive/business/1984/05/22/atari-introduces-game-in-attempt-for-survival/f4cc0a87-e30a-4d64-a105-49b73cdee36e/). *Washington Post*. p. C3. "The company has stopped producing its 5200 SuperSystem games player, more than 1 million of which were sold."
3. "The Atari 5200 will be available in October" (https://web.archive.org/web/20230310233948/https://news.google.com/newspapers?id=HN0VAAAAIBAJ&pg=929,140029&dq=atari+5200&hl=en). *The Milwaukee Sentinel*. September 1, 1982. Archived from the original (https://news.google.com/newspapers?id=HN0VAAAAIBAJ&pg=929,140029&dq=atari+5200&hl=en) on March 10, 2023. Retrieved January 12, 2011.
4. Barton, Matt; Loguidice, Bill (February 28, 2008). "A History of Gaming Platforms: Atari 2600 Video Computer System/VCS" (https://www.gamedeveloper.com/design/a-history-of-gaming-platforms-atari-2600-video-computer-system-vcs). *Gamasutra*. Retrieved September 11, 2018.
5. G4TV's Icons season 2 episode 1 "Atari"
6. Sanger, David E. (May 22, 1984). "Atari Video Game Unit Introduced" (https://www.nytimes.com/1984/05/22/business/atari-video-game-unit-introduced.html). *New York Times*: 3 (Section D). "Company officials disclosed for the first time yesterday that the 5200 is no longer in production, and Atari appears to be selling off its inventory."
7. "Computer Systems" (https://web.archive.org/web/20210505141552/http://www.atarimuseum.com/computers/computers.html). *Atari*. Archived from the original (http://www.atarimuseum.com/computers/computers.html) on May 5, 2021. Retrieved September 23, 2019.
8. Bunch, Kevin. "Steeplechase" (https://www.atariarchive.org/blog/steeplechase-march-1981/). *Atari Archive*. Retrieved February 1, 2026.
9. Current, Michael. "A History of WCI Games/Atari/Atari Games/Atari Holdings" (https://mcurrent.name/atarihistory/wci_games.html). *Atari History Timelines*. Retrieved February 1, 2026.
10. Curt Vendel. "Video System X" (http://www.atarimuseum.com/videogames/consoles/5200/vsx.html). Atarimuseum.com. Retrieved January 12, 2011.
11. "Atari News" (https://archive.gamehistory.org/item/3945176d-1fa1-429a-b8cc-90d3f86d75e5). *Computer Entertainer*. Vol. 1, no. 1. January 1982. p. 1. Retrieved February 1, 2026.
12. "Atari News" (https://archive.gamehistory.org/item/f2b85b5b-6a2a-4d16-a5bf-a7fed65f68c7). *Computer Entertainer*. Vol. 1, no. 4. July 1982. p. 1. Retrieved February 1, 2026.
13. "Critically Speaking: Atari 5200" (https://archive.gamehistory.org/item/bdea2ede-676f-4319-8fdc-8d9602e3ee7a). *Computer Entertainer*. Vol. 1, no. 8. November 1982. p. 4. Retrieved February 1, 2026.
14. "The Clubhouse Store". *Atari Age*. Vol. 1, no. 4. November–December 1982. p. 14.
15. "Bits & Bytes" (https://archive.gamehistory.org/item/4f15e4a0-29f7-4f48-b78b-26b0db25a607). *Computer Entertainer*. Vol. 2, no. 4. July 1983. p. 12. Retrieved February 1, 2026.
16. "Atari: The most popular video game in the world" (https://archive.org/details/TV_Gamer_1983-09_Boytonbrook_GB/page/n19/mode/2up). *TV Gamer*. No. 2. UK. September 1983. p. 19.
17. Bunch, Kevin. "Atari 5200 Game Release Dates" (https://www.atariarchive.org/atari-5200-game-release-dates/). *Atari Archive*. Retrieved January 9, 2026.

18. "Looking Back on an Interesting C.E.S." (https://archive.gamehistory.org/item/4cc67eab-e26a-4820-981b-95e4abe36dd3) *Computer Entertainer*. Vol. 3, no. 11. February 1985. p. 1. Retrieved February 1, 2026.
19. "Computer and Video Games" (https://archive.gamehistory.org/item/8d4ed6a6-ad4a-4f2a-a959-9378e8b4d172). *Computer Entertainer*. Vol. 4, no. 11. February 1986. p. 1. Retrieved February 1, 2026.
20. "Atari 2600 and 7800 Sellouts in '86" (https://archive.gamehistory.org/item/7f8d19fd-3fc0-4187-9aaf-d7e46224c7ef). *Computer Entertainer*. Vol. 5, no. 11. February 1987. p. 11. Retrieved February 3, 2026.
21. Meharry, Brendan (January 27, 2019). "The Last Official Release: Atari 5200 – Gremlins (1986)" (https://www.oldschoolgamermagazine.com/the-last-official-release-atari-5200-gremlins-1986). *Old School Gamer Magazine*.
22. Ahl, David H. (Spring 1983). "Atari 5200 Advanced Game System" (https://www.atarimagazines.com/cva/v1n1/atari5200.php). *Creative Computing Video & Arcade Games*. p. 46.
23. Buchholz, Claus (February 1984). "5200 Article Update" (https://archive.org/details/analog-computing-magazine-16/page/n11/mode/1up). *ANALOG Computing*. No. 16. p. 10.
24. "Colecovision vs. Atari 5200: Accessories" (https://archive.gamehistory.org/item/44285d8f-76e8-46d8-b07d-c184d55cec2f). *Electronic Games*. Vol. 2, no. 11. March 1984. p. 30.
25. Vendel, Curt. "Atari CX-55" (https://web.archive.org/web/20260207075106/https://atarimuseum.ctrl-alt-rees.com/videogames/consoles/5200/cx55.html). Atarimuseum.com. Archived from the original (https://atarimuseum.ctrl-alt-rees.com/videogames/consoles/5200/cx55.html) on February 7, 2026. Retrieved February 7, 2026.
26. Curt Vendel. "5100/5200 Jr" (http://www.atarimuseum.com/videogames/consoles/5100/5100.html). Atarimuseum.com. Retrieved January 12, 2011.
27. "Atari 8-bit Forever by Bostjan Gorisek" (https://web.archive.org/web/20170701190029/http://gury.atari8.info/card_graphics_modes.php). Archived from the original (http://gury.atari8.info/card_graphics_modes.php) on July 1, 2017. Retrieved January 1, 2017.
28. Wiegers, Karl E. "Atari Fine Scrolling" (https://www.atarimagazines.com/compute/issue67/338_1_Atari_Fine_Scrolling.php). Retrieved January 1, 2017.
29. Buchholz, Claus (January 1984). "Transporting Atari Computer Programs to the 5200" (https://archive.org/stream/analog-computing-magazine-15/Analog_Computing_15_1984-01_Inside_the_600XL#page/n59/mode/2up). *ANALOG Computing*. No. 15. p. 59.
30. "The Atari 5200 Super System" (http://www.atarimuseum.com/videogames/consoles/5200/A5200.html). atarimuseum.com. Archived (https://web.archive.org/web/20030808134516/http://www.atarimuseum.com/videogames/consoles/5200/A5200.html) from the original on August 8, 2003. Retrieved July 6, 2014.
31. "The Next Generation 1996 Lexicon A to Z: 5200" (https://archive.org/details/nextgen-issue-015/page/n33/mode/2up). *Next Generation*. No. 15. Imagine Media. March 1996. p. 33.
32. "WICO Command Control Atari 5200 Analog WICO Joystick" (https://archive.gamehistory.org/item/986f042e-b8fd-4c7a-94fd-d86c3065e39c). *Computer Entertainer*. Vol. 2, no. 8. November 1983. p. 10.
33. Curt Vendel. "Atari 5200 Paddle Controller Prototypes" (http://www.atarimuseum.com/videogames/consoles/5200/5200paddle.html). Atarimuseum.com. Archived (https://web.archive.org/web/20040703205537/http://www.atarimuseum.com/videogames/consoles/5200/5200paddle.html) from the original on July 3, 2004. Retrieved January 12, 2011.
34. Curt Vendel. "Self Centering Joystick Prototypes" (http://www.atarimuseum.com/videogames/consoles/5200/5200joy.html). Atarimuseum.com. Archived (https://web.archive.org/web/20040703210439/http://www.atarimuseum.com/videogames/consoles/5200/5200joy.html) from the original on July 3, 2004. Retrieved January 12, 2011.
35. "Atari 5200 overlays" (https://atariage.com/system_items.php?SystemID=5200&ItemTypeID=OVERLAY). *Atari Age*. January 31, 2018. Retrieved January 31, 2018.

36. "Top 10 Tuesday: Worst Game Controllers" (https://web.archive.org/web/20060303093919/http://xbox360.ign.com/articles/690/690449p1.html). *IGN*. February 21, 2006. Archived from the original (http://xbox360.ign.com/articles/690/690449p1.html) on March 3, 2006. Retrieved December 13, 2019.
37. Anderson, John J. (March 1984). "Atari" (https://archive.org/stream/creativecomputing-1984-03/Creative_Computing_v10_n03_1984_Mar#page/n51/mode/2up). *Creative Computing*. p. 51. Retrieved February 6, 2015. "The games division [..] saw the home computer division as a threat [..] If any of their new machines could expand into true computers, the reins would automatically be handed over [..] To the games division, this was a fate worse than death [so] they chose death. [The 5200 was internally] very nearly an Atari 800 [but] all compatibility and expandability had been designed out [..] If, in 1981, the next-generation game machine *had* been designed to be compatible with the Atari 400 and 800 microcomputers, Atari would not be in the state it is today. Instead, the 5200 game unit was launched. Internally, it was very nearly an Atari 800, and as such was a fabulous game machine. The notable exceptions were that all compatibility and expandability had been designed out [..] with an external keyboard and 800 compatibility, could have been transformed into a product superior to the famed Coleco Adam, way back in 1982."
38. Harris, Neil (May 12, 1987). "Re: Is Atari killing the 8 bit?" (http://groups.google.ca/group/comp.sys.atari.8bit/msg/98a62e383f31d6cc?dmode=source). Atari Corp. Retrieved June 5, 2014. "So what we have with the XE Game System is essentially a 65XE in disguise. [..] It is completely compatible with the current 8-bit line, including software."
39. Moss, Stuart (2007). *The Entertainment Industry: An Introduction* (https://books.google.com/books?id=UiBDGdvlumwC&q=atari+5200+failed+console&pg=PA158). CABI. p. 158. ISBN 978-1-84593-551-1.
40. Mace, Scott (August 6, 1984). "A New Atari Corp.: The House That Jack Tramiel Emptied" (https://books.google.com/books?id=HC8EAAAAMBAJ&q=atari+5200+failed&pg=PA52). *InfoWorld*. p. 52. Retrieved January 27, 2011.
41. "Atari 7200" (https://retrocdn.net/images/b/b2/EGM_US_091.pdf) (PDF). *Electronic Gaming Monthly*. No. 91. Ziff Davis. February 1997. p. 97. Archived (https://ghostarchive.org/archive/20221009/https://retrocdn.net/images/b/b2/EGM_US_091.pdf) (PDF) from the original on October 9, 2022. "The 7800 was compatible with the 2600 (but not the 5200) which was the main reason why the 5200 didn't succeed."
42. "Atari CX-55 2600 Cartridge Adapter for the Atari 5200 Supersystem" (https://web.archive.org/web/20040703205534/http://www.atarimuseum.com/videogames/consoles/5200/cx55.html). *Atari Museum*. Archived from the original (http://www.atarimuseum.com/videogames/consoles/5200/cx55.html) on July 3, 2004. Retrieved January 31, 2018.
43. "Atari 5200 is number 23" (http://www.ign.com/top-25-consoles/23.html). *IGN*. Archived (https://web.archive.org/web/20101203105717/http://www.ign.com/top-25-consoles/23.html) from the original on December 3, 2010. Retrieved January 12, 2011.
44. "Colecovision vs Atari 5200 Hardware Comparison" (https://www.atarihq.com/5200/cv52/). AtariHQ.com. Retrieved January 12, 2011.
45. Staff, New York Times (2007). *The New York Times Guide To Essential Knowledge: A Desk Reference for the Curious Mind* (https://books.google.com/books?id=-BIGv9vIoqcC&q=atari+5200+failed&pg=PA472). New York: Macmillan Publishers. p. 472. ISBN 978-0-312-37659-8.
46. Kent, Steven (2001). *The Ultimate History of Video Games*. Prima Publishing. p. 230. ISBN 0-7615-3643-4.
47. Hubner, John (December 5, 1983). "What Went Wrong At Atari" (https://books.google.com/books?id=6C8EAAAAMBAJ&q=atari+5200+review&pg=PA148). *InfoWorld*. p. 148. Retrieved January 27, 2011.
48. Parish, Jeremy (August 10, 2015). "Cloak & Dagger, the Video Game Movie That Wasn't About Video Games" (https://web.archive.org/web/20211122055943/https://www.usgamer.net/articles/cloakdagger-the-video-game-movie-that-wasnt-about-video-games). *USGamer*. Archived from the original (https://www.usgamer.net/articles/cloakdagger-the-video-game-movie-that-wasnt-about-video-games) on November 22, 2021. Retrieved November 21, 2021.

External links

- AtariAge – Comprehensive Atari 5200 database and information (http://www.atariage.com/software_search.html?SystemID=5200) Archived (https://web.archive.org/web/20190421025250/http://www.atariage.com/software_search.html?SystemID=5200) April 21, 2019, at the Wayback Machine
- Atari Museum 5200 Super System section (http://www.atarimuseum.com/videogames/consoles/5200/A5200.html) Deprecated link archived July 23, 2012, at archive.today

Video game crash of 1983

The **video game crash of 1983** (often referred to as the **Atari shock** in Japan)[1] was a large-scale recession in the video game industry that occurred from 1983 to 1985 in the United States. The crash was attributed to several factors, including market saturation in the number of video game consoles and available games, many of which were of poor quality. Waning interest in console games in favor of personal computers also played a role. Home video game revenue peaked at around $3.2 billion in 1983 (equivalent to $10.34 billion in 2025), and fell to around $100 million in 1985 (equivalent to $299.35 million in 2025), a drop of almost 97%. The crash abruptly ended what is retrospectively considered the second generation of console video gaming in North America. To a lesser extent, the arcade video game market also weakened as the golden age of arcade video games came to an end.

Lasting about two years, the crash shook a then-booming video game industry and led to the bankruptcy of several companies producing home computers and video game consoles. Analysts of the time expressed doubts about the long-term viability of video game consoles and software.

The North American video game console industry recovered a few years later, mostly due to the widespread success of Nintendo's Western branding for its Famicom console, the Nintendo Entertainment System (NES), released in October 1985. The NES was designed to avoid the missteps that caused the 1983 crash and the stigma associated with video games at that time.

Causes and factors

Flooded console market

Atari VCS, also known as the Atari 2600, the most popular console prior to the crash

The Atari VCS (renamed the Atari 2600 in late 1982) was not the first home system with swappable game cartridges, but by 1980 it was the most popular second-generation console by a wide margin. Launched in 1977 just ahead of the collapse of the market for home *Pong* console clones, the Atari VCS experienced modest sales for its first few years. In 1980, Atari's licensed version of *Space Invaders* from Taito became the console's killer application; sales of the VCS quadrupled, and the game was the first title to sell more than a million copies.[2][3] Spurred by the success of the Atari VCS, other consoles were introduced, both from Atari and other companies: Odyssey², Intellivision, ColecoVision, Atari 5200, and Vectrex. Notably, Coleco sold an add-on allowing Atari VCS games to be played on the ColecoVision, as well as bundling the console with a licensed home version of Nintendo's arcade hit *Donkey Kong*. In 1982, the ColecoVision held roughly 17% of the hardware market, compared to the VCS's 58%. This was the first real threat to Atari's dominance of the home console market.[4]

Each new console had its own library of games produced exclusively by the console maker, while the Atari VCS also had a large selection of titles produced by third-party developers. In 1982, analysts marked trends of saturation, mentioning that the amount of new software coming in would only allow a few big hits, that retailers had devoted too much floor space to systems, and that price drops for home computers could result in an industry shakeup.[5] Atari had a large inventory after significant portions of the 1982 orders were returned.[6]

In addition, the rapid growth of the video game industry led to an increased demand, which the manufacturers over-projected. In 1983, an analyst for Goldman Sachs stated the demand for video games was up 100% from the previous year, but the manufacturing output had increased by 175%, creating a significant surplus. Atari CEO Raymond Kassar recognized in 1982 that the industry's saturation point was imminent. However, Kassar expected this to occur when about half of American households had a video game console. The crash occurred when about 15 million machines had been sold, which soundly under-shot Kassar's estimate.[7] Michael Katz, the president of Atari's electronic division, stated that the console market was too saturated as 30 million consoles were sold by 1982, out of the 35 million households with children between the ages of six and sixteen.[8]

Loss of publishing control

Prior to 1979, there were no third-party developers, with console manufacturers like Atari publishing all the games for their respective platforms. This changed in 1979, when Activision was founded by four former Atari video game programmers who left the company because they felt that Atari's developers should receive the same recognition and accolades (specifically in the form of sales-based royalties and public-facing credits) as the actors, directors, and musicians working for other subsidiaries of Warner Communications (Atari's parent company at the time). Already being quite familiar with the Atari VCS, the four programmers developed their own games and cartridge manufacturing processes. Atari quickly sued to block sales of Activision's products but failed to secure a restraining order, and they ultimately settled the case in 1982. While the settlement stipulated that Activision pay royalties to Atari, this case ultimately legitimized the viability of third-party game developers. Activision's games were as popular as Atari's, with *Pitfall!* (released in 1982) selling over four million units.

Prior to 1982, Activision was one of only a handful of third parties publishing games for the Atari VCS. By 1982, Activision's success emboldened numerous other competitors to penetrate the market. However, Activision co-founder David Crane observed that several of these companies were supported by venture capitalists attempting to emulate the success of Activision. Without the experience and skill of Activision's team, these inexperienced competitors mostly created games of poor quality,[9] which Crane notably described as "the worst games you can imagine".[10] While Activision's success could be attributed to the team's existing familiarity with the Atari VCS, other publishers had no such advantage.

The rapid growth of the third-party game industry was easily illustrated by the number of vendors present at the semi-annual Consumer Electronics Show (CES). According to Crane, the number of third-party developers jumped from 3 to 30 between two consecutive events.[10] At the Summer 1982 CES,[7] there were 17 companies, including MCA Inc. and Fox Video Games, announcing a combined 90 new Atari games.[11] By 1983, an estimated 100 companies were attempting to leverage the CES into a foothold in the market. *AtariAge* documented 158 different vendors that

had developed for the Atari VCS.[12] In June 1982, the Atari games on the market numbered just 100, which grew to over 400 by December. Experts predicted a glut in 1983, with only 10% of games producing 75% of sales.[13]

BYTE stated in December, "in 1982 few games broke new ground in either design or format ... If the public really likes an idea, it is milked for all its worth, and numerous clones of a different color soon crowd the shelves. That is, until the public stops buying or something better comes along. Companies who believe that microcomputer games are the hula hoop of the 1980s only want to play Quick Profit."[14] Bill Kunkel said in January 1983 that companies had "licensed everything that moves, walks, crawls, or tunnels beneath the earth. You have to wonder how tenuous the connection will be between the game and the movie *Marathon Man*. What are you going to do, present a video game root canal?"[15] By September 1983, the *Phoenix* stated that 2600 cartridges were "no longer a growth industry".[16] Activision, Atari, and Mattel all had experienced programmers, but many of the new companies rushing to join the market did not have the expertise or talent to create quality games. Titles such as the *Kaboom!*-like *Lost Luggage*, rock band tie-in *Journey Escape*, and plate-spinning game *Dishaster*, were examples of titles made in the hopes of taking advantage of the video-game boom, but later proved unsuccessful with retailers and potential customers.

The flood of new games was released into a limited competitive space. According to Activision's Jim Levy, they had projected that the total cartridge market in 1982 would be around 60 million, anticipating Activision would be able to secure between 12% and 15% of that market for their production numbers. However, with at least 50 different companies in the new marketspace, and each having produced between one and two million cartridges, along with Atari's own estimated 60 million cartridges in 1982, there was over 200% production of the actual demand for cartridges in 1982, which contributed to the stockpiling of unsold inventory during the crash.[17]

Competition from home computers

The Commodore 64 survived the crash and became one of the best-selling computers of all time.

Inexpensive home computers had been first introduced in 1977. By 1979, Atari unveiled the 400 and 800 computers, built around a chipset originally meant for use in a game console, and which retailed for the same price as their respective names. In 1981, IBM introduced the first IBM Personal Computer with a $1,565 base price[18] (equivalent to $5,542 in 2025). By 1982, new desktop computer designs were commonly providing better color graphics and sound than game consoles and personal computer sales were booming. The TI-99/4A and the Atari 400 were both at $349 (equivalent to $1,164 in 2025), the TRS-80 Color Computer sold at $379 (equivalent to $1,264 in 2025), and Commodore International had just reduced the price of the VIC-20 to $199 (equivalent to $664 in 2025) and the Commodore 64 to $499 (equivalent to $1,665 in 2025).[19][20]

Because computers generally had more memory and faster processors than a console, they permitted more sophisticated games. A 1984 compendium of reviews of Atari 8-bit software used 198 pages for games, compared to 167 for all other software types.[21] Home computers could also be used for tasks such as word processing and home accounting. Games were easier to distribute, since they could be sold on floppy disks or cassette tapes instead of ROM cartridges. This opened

the field to a cottage industry of third-party software developers. Writeable storage media allowed players to save games in progress, a useful feature for increasingly complex games which was not available on the consoles of the era.

In 1982, a price war that began between Commodore and Texas Instruments led to home computers becoming as inexpensive as video-game consoles;[22] after Commodore cut the retail price of the C64 to $300 in June 1983, some stores began selling it for as little as $199.[16] Dan Gutman, founder in 1982 of *Video Games Player* magazine in an article in 1987, recalled in 1983 that "People asked themselves, 'Why should I buy a video game system when I can buy a computer that will play games and do so much more?'"[23] *The Boston Phoenix* stated in September 1983 about the cancellation of the Intellivision III, "Who was going to pay $200-plus for a machine that could only play games?"[16] Commodore explicitly targeted video game players. Spokesman William Shatner asked in VIC-20 commercials "Why buy just a video game from Atari or Intellivision?", stating that "unlike games, it has a real computer keyboard" yet "plays great games too".[24] Commodore's ownership of chip fabricator MOS Technology allowed manufacture of integrated circuits in-house, so the VIC-20 and C64 sold for much lower prices than competing home computers. In addition, both Commodore computers were designed to utilize the ubiquitous Atari controllers so they could tap into the existing controller market.

"I've been in retailing 30 years and I have never seen any category of goods get on a self-destruct pattern like this", a Service Merchandise executive told *The New York Times* in June 1983.[22] The price war was so severe that in September Coleco CEO Arnold Greenberg welcomed rumors of an IBM 'Peanut' home computer because although IBM was a competitor, it "is a company that knows how to make money". "I look back a year or two in the videogame field, or the home-computer field", Greenberg added, "how much better everyone was, when most people were making money, rather than very few".[25] Companies reduced production in the middle of the year because of weak demand even as prices remained low, causing shortages as sales suddenly rose during the Christmas season;[26] only the Commodore 64 was widely available, with an estimated more than 500,000 computers sold during Christmas.[27] The 99/4A was such a disaster for TI, that the company's stock immediately rose by 25% after the company discontinued it and exited the home-computer market in late 1983.[28][29] JCPenney announced in December 1983 that it would soon no longer sell home computers, because of the combination of low supply and low prices.[30] Radio Shack avoided drastic price cuts for its home computers and remained profitable in 1983.[31]

By that year, Gutman wrote, "Video games were officially dead and computers were hot". He renamed his magazine *Computer Games* in October 1983, but "I noticed that the word *games* became a dirty word in the press. We started replacing it with *simulations* as often as possible". Soon "The computer slump began ... Suddenly, everyone was saying that the home computer was a fad, just another hula hoop". *Computer Games* published its last issue in late 1984.[23] In 1988, *Computer Gaming World* founder Russell Sipe noted that "the arcade game crash of 1984 took down the majority of the computer game magazines with it." He stated that, by "the winter of 1984, only a few computer game magazines remained", and by mid-1985, *Computer Gaming World* "was the only 4-color computer game magazine left".[32]

Immediate effects

With the release of so many new games in 1982 that flooded the market, most stores had insufficient space to carry new games and consoles. As stores tried to return the surplus games to the new publishers, the publishers had neither new products nor cash to issue refunds to the retailers. Many publishers, including Games by Apollo[33] and U.S. Games,[34] quickly folded. Unable to return the unsold games to defunct publishers, stores marked down the titles and placed them in discount bins and sale tables. Recently released games which initially sold for US$35 (equivalent to $116 in 2024) were in bins for $5 ($16 in 2024).[34][35][17]

The presence of third-party sales drew the market share that the console manufacturers had. Atari's share of the cartridge-game market fell from 75% in 1981 to less than 40% in 1982, which negatively affected their finances.[36] The bargain sales of poor-quality titles further drew sales away from the more successful third-party companies like Activision due to poorly informed consumers being drawn by price to purchase the bargain titles rather than quality. By June 1983, the market for the more expensive games had shrunk dramatically and was replaced by a new market of rushed-to-market, low-budget games.[37] Crane said that "those awful games flooded the market at huge discounts, and ruined the video game business".[38]

A massive industry shakeout resulted. Magnavox abandoned the video game business entirely. Imagic withdrew its IPO the day before its stock was to go public; the company later collapsed. Activision had to downsize across 1984 and 1985 due to loss of revenue, and to stay competitive and maintain financial security, began development of games for the personal computer. Within a few years, Activision no longer produced cartridge-based games and focused solely on personal computer games.[37][17]

Partially surviving cases and cartridges retrieved during the 2014 excavation of the Alamogordo, New Mexico landfill Atari had used in 1983. *E.T.*, *Centipede*, and other Atari materials can be seen.

Atari was one of the companies most affected by the crash. As a company, its revenue dropped significantly due to dramatically lower sales and cost of returned stock. By mid-1983, the company had lost US$356 million, was forced to lay off 30% of its 10,000 employees, and moved all manufacturing to Hong Kong and Taiwan.[39] Unsold *Pac-Man*, *E.T. the Extra-Terrestrial*, and other 1982 and 1983 games and consoles started to fill their warehouses. In September 1983, Atari discreetly buried much of this excess stock in a landfill near Alamogordo, New Mexico, though Atari did not comment about their activity at the time. Misinformation related to sales of *Pac-Man* and *E.T.* led to the urban legend of the Atari video game burial, that millions of unsold cartridges were buried there. Gaming historians received permission to dig up the landfill as part of a documentary in 2014, during which former Atari executive James Heller, who had overseen the original burial clarified that only about 728,000 cartridges had been buried in 1982, backed by estimates made during the excavation, and disproving the scale of the urban legend.[40] Atari's burial remains an iconic representation of the 1983 video game crash.[41][42][43] By the end of 1983, Atari had over US$536 million in losses, leading Warner Communication to sell Atari's consumer products division in July 1984 to Jack Tramiel, who had recently departed Commodore

International. Tramiel's new company took the name Atari Corporation, and they directed their efforts into developing their new personal computer line, the Atari ST, over the console business.[44]

Lack of confidence in the video game sector caused many retailers to stop selling video game consoles or reduced their stock significantly, reserving floor or shelf space for other products.[45] Retailers established to exclusively sell video games folded, which impacted sales of personal computer games.[17]

The full effects of the industry crash were not felt until 1985.[46] Despite Atari's claim of 1 million in worldwide sales of its 2600 game system that year,[47] recovery was slow. The sales of home video games had dropped from $3.2 billion in 1982[48] to $100 million in 1985.[49] Analysts doubted the long-term viability of the video game industry,[50] and, according to Electronic Arts' Trip Hawkins, it had been very difficult to convince retailers to carry video games due to the stigma carried by the fall of Atari until 1985.[17]

In late 1985, the Nintendo Entertainment System saw a limited release in North America, with a nationwide release the following year.[17] Following 1986, the industry began recovering, and by 1988, annual sales in the industry exceeded $2.3 billion, with 70% of the market dominated by Nintendo.[51] In 1986, Nintendo president Hiroshi Yamauchi noted that "Atari collapsed because they gave too much freedom to third-party developers and the market was swamped with rubbish games". In response, Nintendo limited the number of titles that third-party developers could release for their system each year, and promoted its "Seal of Quality", which it allowed to be used on games and peripherals by publishers that met Nintendo's quality standards.[52]

Long-term effects

The crash in 1983 had the largest impact in the United States. It rippled through all sectors of the global video game market worldwide, though sales of video games still remained strong in Japan, Europe, and Canada from the beleaguered American companies.[54] It took several years for the U.S. industry to recover. The estimated US$42 billion worldwide market in 1982, including arcade, console, and computer games, dropped to US$14 billion by 1985. There was also a significant shift in the home video game market, away from consoles to personal computer software, between 1983 and 1985.[53]

Global revenue of the video game industry from 1978 to 1990.[53] The 1983 crash had rippling effects across the video game industry.

1984 is when some of the longer-term effects started to take a toll on the video game console. Companies like Magnavox had decided to pull out of the video game console industry. The general consensus was that video games were just

a fad that came as quickly as they left. But outside of North America the video game industry was doing very well. Home consoles were growing in popularity in Japan while home computers were surging across Europe.

United States sales fell from $3 billion to around $100 million in 1985. During the holiday season of 1985 Hiroshi Yamauchi decided to go to New York small markets about putting their products in their stores. Minoru Arakawa offered a money back guarantee from Nintendo that they would pay back for any stock that was left unsold. In total Nintendo sold 50,000 units, about half of the units they shipped to the US.[55]

Japanese domination

The U.S. video game crash had two long-lasting results. The first result was that dominance in the home console market shifted from the United States to Japan. The crash did not directly affect the financial viability of the video game market in Japan, but it still came as a surprise there and created repercussions that changed that industry, and thus became known as the "Atari shock".[56]

Prior to the crash, Jonathan Greenberg of *Forbes* had predicted in early 1981 that Japanese companies would eventually dominate the North American video game industry, as American video game companies were increasingly licensing products from Japanese companies, who in turn were opening up North American branches.[57] By 1982–1983, Japanese manufacturers had captured a large share of the North American arcade market, which Gene Lipkin of Data East USA partly attributed to Japanese companies having more finances to invest in new ideas.[58]

As the crash was happening in the United States, Japan's game industry started to shift its attention from arcade games to home consoles. On July 15, 1983, two new home consoles were released in Japan: the Nintendo Family Computer (Famicom) and Sega's SG-1000 (which was later supplanted by the Master System) heralding the third generation of home consoles retrospectively.[59] These two consoles were very popular, buoyed by an economic bubble in Japan. The units readily outsold Atari and Mattel's existing systems, and with both Atari and Mattel focusing on recovering domestic sales, the Japanese consoles effectively went uncontested over the next few years.[59] By 1986, three years after its introduction, 6.5 million Japanese homes – 19% of the population – owned a Famicom, and Nintendo began exporting it to the U.S., where the home console industry was only just recovering from the crash.[52]

The impact on the retail sector of the crash was the most formidable barrier that confronted Nintendo as it tried to market the Famicom in the United States. A planned deal with Atari to distribute the Famicom in North America fell apart in the wake of the crash, resulting in Nintendo handling the international release themselves two years later.[60]:283–285 Additionally, retailer opposition to video games was directly responsible for causing Nintendo to brand its product the Nintendo Entertainment System (NES) rather than a "video game system", and using terms such as "control deck" and "Game Pak", as well as producing a toy robot called R.O.B. to convince toy retailers to allow it in their stores. Furthermore, the design for the NES used a front-loading cartridge slot to mimic how video cassette recorders, popular at that time, were loaded, further pulling the NES away from previous console designs.[45][61][62]

By the time the U.S. video game market recovered in the late 1980s, the NES was by far the dominant console in the United States, leaving only a fraction of the market to Atari. By 1989, home video game sales in the United States had reached $5 billion, surpassing the 1982 peak of $3 billion during the previous generation. A large majority of the market was controlled by Nintendo;

it sold more than 35 million units in the United States, exceeding the sales of other consoles and personal computers by a considerable margin.[63] New Japanese companies entered the market to challenge Nintendo's success in the United States, with NEC's TurboGrafx-16 and the Sega Genesis both released in the U.S. in 1989. While the TurboGrafx underwhelmed in the market, the Genesis' release set the stage for a major rivalry between Sega and Nintendo in the early 1990s in the United States video game market.

Following the crash, Nintendo became the market leader in America with the Nintendo Entertainment System (top), with Japanese companies dominating the market for years to come. The Sega Genesis (bottom), released in 1989, was the first real challenger to Nintendo's market dominance in North America.

Impact on third-party software development

A second, highly visible result of the crash was the advancement of measures to control third-party development of software. Using secrecy to combat industrial espionage had failed to stop rival companies from reverse engineering the Mattel and Atari systems and hiring away their trained game programmers. While Mattel and Coleco implemented lockout measures to control third-party development (the ColecoVision BIOS checked for a copyright string on power-up), the Atari 2600 was completely unprotected and once information on its hardware became available, little prevented anyone from making games for the system. Nintendo thus instituted a strict licensing policy for the NES that included equipping the cartridge and console with lockout chips, which were region-specific, and had to match in order for a game to work. In addition to preventing the use of unlicensed games, it also was designed to combat software piracy, rarely a problem in North America or Western Europe, but rampant in East Asia. The concepts of such a control system remain in use on every major video game console produced today, even with fewer cartridge-based consoles on the market than in the 8/16-bit era. Replacing the security chips in most modern consoles are specially encoded optical discs that cannot be copied by most users and can only be read by a particular console under normal circumstances. Accolade achieved a technical victory in one court case against Sega, challenging this control, even though it ultimately yielded and signed the Sega licensing agreement. Several publishers, notably Tengen (Atari Games), Color Dreams, and Camerica, challenged Nintendo's control system during the 8-bit era by producing unlicensed NES games.

Initially, Nintendo was the only developer for the Famicom. Under pressure from Namco and Hudson Soft, it opened the Famicom to third-party development, but instituted a license fee of 30% per game cartridge for these third-parties to develop games, a system used by console manufacturers to this day.[64] Nintendo maintained strict manufacturing control and requiring payment in full before manufacturing. Cartridges could not be returned to Nintendo, so publishers assumed all the financial risk of selling all units ordered. Nintendo limited most third-party publishers to only five games per year on its systems (some companies tried to get around this by creating additional company labels like Konami's Ultra Games label). Nintendo ultimately dropped this rule by 1993, after the release of the successor Super Nintendo Entertainment System.[65] Nintendo's all-encompassing oversight of the creation of Famicom cartridges led to the manufacture of bootleg cartridges in Asian regions. Outside of Japan, Nintendo placed its Nintendo Seal of Quality on all licensed games released for the system to try to promote authenticity and detract from bootleg sales, but failed to make significant traction to stalling these sales.[66]

As Nintendo prepared to release the Famicom in the United States, it wanted to avoid both the bootleg problem it had in Asia as well as the mistakes that led up to the 1983 crash. The company created the proprietary 10NES system, a lockout chip which was designed to prevent cartridges made without the chip from being played on the NES. The 10NES lockout was not perfect, as later in the NES' lifecycle methods were found to bypass it, but it did sufficiently allow Nintendo to strengthen its publishing control to avoid the mistakes Atari had made and initially prevent bootleg cartridges in the Western markets.[67] These strict licensing measures backfired somewhat after Nintendo was accused of monopolistic behavior.[68] In the long run, this pushed many western third-party publishers such as Electronic Arts away from Nintendo consoles and supported competing consoles such as the Sega Genesis or Sony PlayStation. Most of the Nintendo platform-control measures were adopted by later console manufacturers such as Sega, Sony, and Microsoft, although not as stringently.

Computer game growth

With waning console interests in the United States, the computer game market was able to gain a strong foothold in 1983 and beyond.[59] Developers that had been primarily in the console games space, like Activision, turned their attention to developing computer game titles to stay viable.[59] Newer companies also were founded to capture the growing interest in the computer games space with novel elements that borrowed from console games, as well as taking advantage of low-cost dial-up modems that allowed for multiplayer capabilities.[59] The computer game market grew between 1983 and 1984, overtaking the console market, but overall video game revenue had declined significantly due to the considerable decline of the console market as well as the arcade market to an extent.[53] The home computer industry, however, experienced a downturn in mid-1984,[69] with global computer game sales declining in 1985 to a certain extent.[53]

Microcomputers dominated the European market throughout the 1980s and with domestic production for those formats thriving over the same period. There was minimal trans-Atlantic ripple from American game production and trends, and thus minimal affect from the crash.[70][71] Partly as a distant knock-on effect of the crash and partly due to the continuing quality of homegrown computer and microcomputer games, consoles did not achieve a dominant position in some European markets until the early 1990s.[72] In the United Kingdom, there was a short-lived home console market between 1980 and 1982, but the 1983 crash led to the decline of consoles in the UK, which was offset by the rise of LCD games in 1983 and then the rise of computer games in 1984. It was not until the late 1980s with the arrival of the Master System and NES that the home console market recovered in the UK. Computer games remained the dominant sector of the UK home video game market up until they were surpassed by Sega and Nintendo consoles in 1991.[72]

References

1. Koyama, Yuhsuke (2023). "Preface". *History of the Japanese Video Game Industry*. Springer Nature. p. V. ISBN 978-981-99-1341-1.
2. Kent, Steven (2001). "Chapter 12: The Battle for the Home" (https://archive.org/details/ultimatehistoryofvideogamesrevisited/page/n193/mode/2up). *Ultimate History of Video Games* (https://archive.org/details/ultimatehistoryofvideogamesrevisited/). Three Rivers Press. p. 190. ISBN 0-7615-3643-4.
3. Weiss, Brett (2007). *Classic home video games, 1972–1984: a complete reference guide*. Jefferson, N.C.: McFarland. p. 108. ISBN 978-0-7864-3226-4.

4. Gallager, Scott; Ho Park, Seung (February 2002). "Innovation and Competition in Standard-Based Industries: A Historical Analysis of the U.S. Home Video Game Market". *IEEE Transactions on Engineering Management*. **49** (1): 67–82. Bibcode:2002ITEM...49...67G (https://ui.adsabs.harvard.edu/abs/2002ITEM...49...67G). doi:10.1109/17.985749 (https://doi.org/10.1109%2F17.985749).
5. Jones, Robert S. (December 12, 1982). "Home Video Games Are Coming Under a Strong Attack" (https://news.google.com/newspapers?nid=1320&dat=19821212&id=L2tWAAAAIBAJ&sjid=q-kDAAAAIBAJ&pg=1609,4274079&hl=en). *Gainesville Sun*. p. 21F. Archived (https://web.archive.org/web/20200625171614/https://news.google.com/newspapers?nid=1320&dat=19821212&id=L2tWAAAAIBAJ&sjid=q-kDAAAAIBAJ&pg=1609,4274079&hl=en) from the original on June 25, 2020. Retrieved July 26, 2016 – via Google Books.
6. Gallagher, S.; Seung Ho Park (February 2002). "Innovation and competition in standard-based industries: a historical analysis of the US home video game market". *IEEE Transactions on Engineering Management*. **49** (1): 67–82. Bibcode:2002ITEM...49...67G (https://ui.adsabs.harvard.edu/abs/2002ITEM...49...67G). doi:10.1109/17.985749 (https://doi.org/10.1109%2F17.985749).
7. Kleinfield, N.R. (October 17, 1983). "Video Games Industry Comes Down To Earth" (https://www.nytimes.com/1983/10/17/business/video-games-industry-comes-down-to-earth.html). *The New York Times*. Archived (https://web.archive.org/web/20180913223742/https://www.nytimes.com/1983/10/17/business/video-games-industry-comes-down-to-earth.html) from the original on September 13, 2018. Retrieved September 21, 2018.
8. Provenzo 1991, p. 11.
9. Fleming, Jeffrey. "The History Of Activision" (https://www.gamedeveloper.com/business/the-history-of-activision). *Gamasutra*. Archived (https://web.archive.org/web/20161220122651/http://www.gamasutra.com/view/feature/1537/the_history_of_activision.php?print=1) from the original on December 20, 2016. Retrieved December 30, 2016.
10. Adrian (May 9, 2016). "INTERVIEW – DAVID CRANE (ATARI/ACTIVISION/SKYWORKS)" (http://www.arcadeattack.co.uk/david-crane/). *Arcade Attack*. Archived (https://web.archive.org/web/20160509160135/http://www.arcadeattack.co.uk/david-crane/) from the original on May 9, 2016. Retrieved May 10, 2016.
11. Goodman, Danny (Spring 1983). "Home Video Games: Video Games Update" (http://www.atarimagazines.com/cva/v1n1/vgupdate.php). *Creative Computing Video & Arcade Games*. p. 32. Archived (https://web.archive.org/web/20171107020633/http://www.atarimagazines.com/cva/v1n1/vgupdate.php) from the original on November 7, 2017.
12. Ernkvist, Mirko (2006). *Down Many Times, but Still Playing the Game: Creative Destruction and Industry Crashes in the Early Video Game Industry 1971–1986* (http://www.helsinki.fi/iehc2006/papers2/Ernkvist.pdf) (PDF). XIV International Economic History Congress. Helsinki. Archived (https://web.archive.org/web/20200810104521/http://www.helsinki.fi/iehc2006/papers2/Ernkvist.pdf) (PDF) from the original on August 10, 2020. Retrieved September 11, 2020.
13. "Stream of video games is endless" (https://web.archive.org/web/20160312093025/https://news.google.com/newspapers?id=nwsdAAAAIBAJ&sjid=QX8EAAAAIBAJ&pg=3635%2C1989311). *Milwaukee Journal*. December 26, 1982. pp. Business 1. Archived from the original (https://news.google.com/newspapers?id=nwsdAAAAIBAJ&pg=3635%2C1989311) on March 12, 2016. Retrieved January 10, 2015.
14. Clark, Pamela (December 1982). "The Play's the Thing" (https://archive.org/stream/byte-magazine-1982-12/1982_12_BYTE_07-12_Game_Plan_1982#page/n7/mode/2up). *BYTE*. p. 6. Retrieved October 19, 2013.
15. Harmetz, Aljean (January 15, 1983). "New Faces, More Profits For Video Games" (https://news.google.com/newspapers?id=jnhcAAAAIBAJ&pg=4201,2482231). *Times-Union*. p. 18. Archived (https://web.archive.org/web/20190801133617/https://news.google.com/newspapers?id=jnhcAAAAIBAJ&sjid=a1cNAAAAIBAJ&pg=4201,2482231) from the original on August 1, 2019. Retrieved February 28, 2012.

16. Mitchell, Peter W. (September 6, 1983). "A summer-CES report" (https://news.google.com/newspapers?id=gn0hAAAAIBAJ&pg=5584%2C3561802). *Boston Phoenix*. p. 4. Archived (https://web.archive.org/web/20210209104106/https://news.google.com/newspapers?id=gn0hAAAAIBAJ&pg=5584%2C3561802) from the original on February 9, 2021. Retrieved January 10, 2015.
17. DeMaria, Rusel; Wilson, Johnny L. (2003). *High Score!: The Illustrated History of Electronic Games* (2 ed.). New York: McGraw-Hill/Osborne. pp. 103–105. ISBN 0-07-223172-6.
18. "IBM Archives: The birth of the IBM PC" (https://web.archive.org/web/20140102212336/http://www-03.ibm.com/ibm/history/exhibits/pc25/pc25_birth.html). January 23, 2003. Archived from the original (http://www-03.ibm.com/ibm/history/exhibits/pc25/pc25_birth.html) on January 2, 2014.
19. Ahl, David H. (1984 November). The first decade of personal computing (http://www.atarimagazines.com/creative/v10n11/30_The_first_decade_of_perso.php) Archived (https://web.archive.org/web/20161210124312/http://www.atarimagazines.com/creative/v10n11/30_The_first_decade_of_perso.php) December 10, 2016, at the Wayback Machine. *Creative Computing*, vol. 10, no. 11: p. 30.
20. "The Inflation Calculator" (http://www.westegg.com/inflation/infl.cgi). Archived (https://web.archive.org/web/20180326173743/https://westegg.com/inflation/infl.cgi) from the original on March 26, 2018.
21. Stanton, Jeffrey; Wells, Robert P.; Rochowansky, Sandra; Mellin, Michael (1984). *The Addison-Wesley Book of Atari Software 1984* (https://archive.org/stream/Atari_Software_1984#page/n3/mode/2up). Addison-Wesley. pp. TOC. ISBN 020116454X.
22. Pollack, Andrew (June 19, 1983). "The Coming Crisis in Home Computers" (https://www.nytimes.com/1983/06/19/business/the-coming-crisis-in-home-computers.html?pagewanted=all). *The New York Times*. Archived (https://web.archive.org/web/20150120040951/http://www.nytimes.com/1983/06/19/business/the-coming-crisis-in-home-computers.html?pagewanted=all) from the original on January 20, 2015. Retrieved January 19, 2015.
23. Gutman, Dan (December 1987). "The Fall And Rise of Computer Games" (https://archive.org/stream/COMPUTEs_Apple_Applications_Vol._5_No._2_Issue_6_1987-12_COMPUTE_Publications_US#page/n65/mode/2up). *Compute!'s Apple Applications*. Vol. 5, no. 2 #6. p. 64. Retrieved August 18, 2014.
24. *Commodore VIC-20 ad with William Shatner* (https://www.youtube.com/watch?v=UK9VU1aJvTI). June 9, 2010. Archived (https://web.archive.org/web/20170406170423/https://www.youtube.com/watch?v=UK9VU1aJvTI) from the original on April 6, 2017.
25. *Coleco Presents The Adam Computer System* (https://www.youtube.com/watch?v=gg_I9TGYM-w). YouTube. May 3, 2016 [1983-09-28]. Event occurs at 1:06:55. Archived (https://web.archive.org/web/20170103132547/https://www.youtube.com/watch?v=gg_I9TGYM-w) from the original on January 3, 2017. "IBM is just not another strong company making a positive statement about the home-computer field's future. IBM is a company that knows how to make money. IBM is a company that knows how to make money in hardware, and makes more money in software. What IBM can bring to the home-computer field is something that the field collectively needs, particularly now: A respect for profitability. A capability to earn money. That is precisely what the field needs ... I look back a year or two in the videogame field, or the home-computer field, how much better everyone was, when most people were making money, rather than very few were making money."
26. Rosenberg, Ronald (December 8, 1983). "Home Computer? Maybe Next Year". *The Boston Globe*.
27. "Under 1983 Christmas Tree, Expect the Home Computer" (https://www.nytimes.com/1983/12/10/business/under-1983-christmas-tree-expect-the-home-computer.html). *The New York Times*. December 10, 1983. ISSN 0362-4331 (https://search.worldcat.org/issn/0362-4331). Archived (https://web.archive.org/web/20171107112231/http://www.nytimes.com/1983/12/10/business/under-1983-christmas-tree-expect-the-home-computer.html) from the original on November 7, 2017. Retrieved July 2, 2017.
28. "IBM's Peanut Begins New Computer Phase". *The Boston Globe*. Associated Press. November 1, 1983.

29. Mace, Scott (November 21, 1983). "TI retires from home-computer market" (https://books.google.com/books?id=uy8EAAAAMBAJ&pg=PA22). *InfoWorld*. pp. 22, 27. Retrieved February 25, 2011.
30. "Penney Shelves its Computers". *The Boston Globe*. December 17, 1983.
31. Ahl, David (November 1984). "Tandy Radio Shack enters the magic world of computers" (http://www.atarimagazines.com/creative/v10n11/292_Tandy_Radio_Shack_enters_.php). *Creative Computing*. p. 292. Retrieved February 26, 2011.
32. Sipe, Russell (August 1988). "The Greatest Story Ever told" (http://www.cgwmuseum.org/galleries/issues/cgw_50.pdf#page=7) (PDF). *Computer Gaming World*. No. 50. pp. 6–7. Archived (https://web.archive.org/web/20160418152038/http://www.cgwmuseum.org/galleries/issues/cgw_50.pdf) (PDF) from the original on April 18, 2016.
33. Seitz, Lee K., *CVG Nexus: Timeline – 1980s* (https://web.archive.org/web/20071013165228/http://home.hiwaay.net/~lkseitz/cvg/nexus/features/timeline/1980s.shtml), archived from the original (http://home.hiwaay.net/~lkseitz/cvg/nexus/features/timeline/1980s.shtml) on October 13, 2007, retrieved November 16, 2007
34. Prince, Suzan (September 1983). "Faded Glory: The Decline, Fall and Possible Salvation of Home Video" (https://archive.org/stream/Video_Games_Volume_1_Number_12_1983-09_Pumpkin_Press_US#page/n17/mode/2up). *Video Games*. Pumpkin Press. Retrieved February 24, 2016.
35. Daglow, Don L. (August 1988). "The Changing Role of Computer Game Designers" (https://archive.org/details/Computer_Gaming_World_Issue_50/page/n17/mode/2up). *Computer Gaming World*. No. 50. pp. 18, 42.
36. Rosenberg, Ron (December 11, 1982). "Competitors Claim Role in Warner Setback" (https://web.archive.org/web/20121107073803/http://pqasb.pqarchiver.com/boston/access/666912291.html?FMT=ABS&FMTS=ABS:FT&type=current&date=Dec+11%2C+1982&author=Ron+Rosenberg+Globe+Staff&pub=Boston+Globe+%28pre-1997+Fulltext%29&desc=COMPETITORS+CLAIM+ROLE+IN+WARNER+SETBACK&pqatl=google). *The Boston Globe*. p. 1. Archived from the original (https://pqasb.pqarchiver.com/boston/access/666912291.html?FMT=ABS&FMTS=ABS:FT&type=current&date=Dec+11%2C+1982&author=Ron+Rosenberg+Globe+Staff&pub=Boston+Globe+%28pre-1997+Fulltext%29&desc=COMPETITORS+CLAIM+ROLE+IN+WARNER+SETBACK&pqatl=google) on November 7, 2012. Retrieved March 6, 2012.
37. Flemming, Jeffrey. "The History Of Activision" (https://www.gamedeveloper.com/business/the-history-of-activision). *Gamasutra*. Archived (https://web.archive.org/web/20161220122651/http://www.gamasutra.com/view/feature/1537/the_history_of_activision.php?print=1) from the original on December 20, 2016. Retrieved December 30, 2016.
38. Adrian (May 9, 2016). "INTERVIEW – DAVID CRANE (ATARI/ACTIVISION/SKYWORKS)" (http://www.arcadeattack.co.uk/david-crane/). *Arcade Attack*. Archived (https://web.archive.org/web/20160509160135/http://www.arcadeattack.co.uk/david-crane/) from the original on May 9, 2016. Retrieved May 10, 2016.
39. Kocurek, Carly A. (2015). *Coin-operated Americans: rebooting boyhood at the video game arcade*. Minneapolis London: University of Minnesota Press. ISBN 978-0-8166-9183-8.
40. "Diggers Find Atari's E.T. Games in Landfill" (https://web.archive.org/web/20140426232656/http://www.npr.org/templates/story/story.php?storyId=307031037). Associated Press. April 26, 2014. Archived from the original (https://www.npr.org/templates/story/story.php?storyId=307031037) on April 26, 2014. Retrieved April 26, 2014.
41. Dvorak, John C (August 12, 1985). "Is the PCJr Doomed To Be Landfill?" (https://books.google.com/books?id=Ai8EAAAAMBAJ&q=atari+landfill&pg=RA1-PA64). *InfoWorld*. Vol. 7, no. 32. p. 64. Archived (https://web.archive.org/web/20230209133536/https://books.google.com/books?id=Ai8EAAAAMBAJ&q=atari+landfill&pg=RA1-PA64) from the original on February 9, 2023. Retrieved September 10, 2011.
42. Jary, Simon (August 19, 2011). "HP TouchPads to be dumped in landfill?" (http://www.pcadvisor.co.uk/news/tablets/3298074/hp-touchpads-to-be-dumped-in-landfill/). PC Advisor. Archived (https://web.archive.org/web/20111108045640/http://www.pcadvisor.co.uk/news/tablets/3298074/hp-touchpads-to-be-dumped-in-landfill/) from the original on November 8, 2011. Retrieved September 10, 2011.

43. Kennedy, James (August 20, 2011). "Book Review: Super Mario" (https://www.wsj.com/articles/SB10001424053111904006104576502744235853146?mod=googlenews_wsj). *Wall Street Journal*. Archived (https://web.archive.org/web/20170906225910/https://www.wsj.com/articles/SB10001424053111904006104576502744235853146?mod=googlenews_wsj) from the original on September 6, 2017. Retrieved September 10, 2011.
44. Kent, Steven (2001). "Chapter 14: The Fall" (https://archive.org/details/ultimatehistoryofvideogamesrevisited/page/n233/mode/2up). *Ultimate History of Video Games* (https://archive.org/details/ultimatehistoryofvideogamesrevisited/). Three Rivers Press. p. 190. ISBN 0-7615-3643-4.
45. "NES" (http://g4tv.com/gamemakers/episodes/4844/NES.html). *Icons*. Season 4. Episode 5010. December 1, 2005. G4. Archived (https://web.archive.org/web/20121016233741/http://www.g4tv.com/gamemakers/episodes/4844/NES.html) from the original on October 16, 2012.
46. Katz, Arnie (January 1985). "1984: The Year That Shook Electronic Gaming" (https://archive.org/stream/electronic-games-magazine-1985-01/Electronic_Games_Issue_35_Vol_03_11_1985_Jan#page/n29/mode/2up). *Electronic Games*. Vol. 3, no. 35. pp. 30–31 [30]. Retrieved February 2, 2012.
47. Halfhill, Tom R. "A Turning Point for Atari? Report from the Winter Consumer Electronics Show" (http://www.atarimagazines.com/compute/issue71/electronics_show.php). Archived (https://web.archive.org/web/20160409221229/http://www.atarimagazines.com/compute/issue71/electronics_show.php) from the original on April 9, 2016.
48. Liedholm, Marcus and Mattias. "The Famicom rules the world! – (1983–89)" (https://web.archive.org/web/20100101161115/http://nintendoland.com/history/hist3.htm). *Nintendo Land*. Archived from the original (http://nintendoland.com/history/hist3.htm) on January 1, 2010. Retrieved February 14, 2006.
49. Dvorchak, Robert (July 30, 1989). "NEC out to dazzle Nintendo fans" (https://news.google.com/newspapers?id=qKIbAAAAIBAJ&pg=5459,6856521). *The Times-News*. p. 1D. Archived (https://web.archive.org/web/20160512205357/https://news.google.com/newspapers?id=qKIbAAAAIBAJ&sjid=R04EAAAAIBAJ&pg=5459,6856521) from the original on May 12, 2016. Retrieved May 11, 2017.
50. "Gainesville Sun – Google News Archive Search" (https://news.google.com/newspapers?nid=1320&dat=19821212&id=L2tWAAAAIBAJ&pg=1609,4274079&hl=en). Archived (https://web.archive.org/web/20210201160250/https://news.google.com/newspapers?nid=1320&dat=19821212&id=L2tWAAAAIBAJ&pg=1609,4274079&hl=en) from the original on February 1, 2021. Retrieved November 22, 2020.
51. "Toy Trends" (https://books.google.com/books?id=82AEAAAAMBAJ&pg=PA88), *Orange Coast*, vol. 14, no. 12, Emmis Communications, p. 88, December 1988, ISSN 0279-0483 (https://search.worldcat.org/issn/0279-0483), archived (https://web.archive.org/web/20230209133536/https://books.google.com/books?id=82AEAAAAMBAJ&pg=PA88) from the original on February 9, 2023, retrieved April 26, 2011
52. Takiff, Jonathan (June 20, 1986). "Video Games Gain in Japan, Are Due For Assault on U.S." (https://news.google.com/newspapers?id=QBhcAAAAIBAJ&pg=2846,1271636) *The Vindicator*. p. 2. Archived (https://web.archive.org/web/20210202203249/https://news.google.com/newspapers?id=QBhcAAAAIBAJ&pg=2846,1271636) from the original on February 2, 2021. Retrieved April 10, 2012.
53. Naramura, Yuki (January 23, 2019). "Peak Video Game? Top Analyst Sees Industry Slumping in 2019" (https://www.bloomberg.com/news/articles/2019-01-23/peak-video-game-top-analyst-sees-industry-slumping-in-2019). *Bloomberg L.P.* Archived (https://web.archive.org/web/20190715024243/http://www.bloomberg.com/news/articles/2019-01-23/peak-video-game-top-analyst-sees-industry-slumping-in-2019) from the original on July 15, 2019. Retrieved January 29, 2019.
54. Kent, Steven (2001). "Chapter 17: We Tried to Keep from Laughing" (https://archive.org/details/ultimatehistoryofvideogamesrevisited/page/n291/mode/2up). *Ultimate History of Video Games* (https://archive.org/details/ultimatehistoryofvideogamesrevisited/). Three Rivers Press. p. 190. ISBN 0-7615-3643-4.
55. Wardyga, Brian (2018). *The Video Games Textbook*. New York: A K Peters/ CRC Press. p. 113. ISBN 9781351172363.

56. "Down Many Times, but Still Playing the Game: Creative Destruction and Industry Crashes in the Early Video Game Industry 1971–1986" (http://sh.diva-portal.org/smash/get/diva2:213024/FULLTEXT01.pdf) (PDF). Archived (https://web.archive.org/web/20140501201148/http://sh.diva-portal.org/smash/get/diva2:213024/FULLTEXT01.pdf) (PDF) from the original on May 1, 2014.
57. Greenberg, Jonathan (April 13, 1981). "Japanese invaders: Move over Asteroids and Defenders, the next adversary in the electronic video game wars may be even tougher to beat" (https://jonathangreenberg.com/wp-content/uploads/2018/01/Japanese-Invaders-April-13-1981.pdf) (PDF). *Forbes*. Vol. 127, no. 8. pp. 98, 102. Archived (https://web.archive.org/web/20211202200213/https://jonathangreenberg.com/wp-content/uploads/2018/01/Japanese-Invaders-April-13-1981.pdf) (PDF) from the original on December 2, 2021. Retrieved December 2, 2021.
58. "Special Report: Gene Lipkin (Data East USA)" (https://archive.org/details/re-play-volume-16-issue-no.-4-january-1991-600dpi/RePlay%20-%20Volume%2016%2C%20Issue%20No.%204%20-%20January%201991/page/92). *RePlay*. Vol. 16, no. 4. January 1991. p. 92.
59. Parish, Jeremy (August 28, 2014). "Greatest Years in Gaming History: 1983" (https://www.usgamer.net/articles/greatest-years-in-gaming-history-1983). *USGamer*. Archived (https://web.archive.org/web/20210129233449/https://www.usgamer.net/articles/greatest-years-in-gaming-history-1983) from the original on January 29, 2021. Retrieved September 13, 2019.
60. Kent, Steven L. (2001). *The Ultimate History of Video Games: The Story Behind the Craze that Touched our Lives and Changed the World*. Roseville, California: Prima Publishing. ISBN 0-7615-3643-4.
61. "25 Smartest Moments in Gaming" (http://archive.gamespy.com/articles/july03/25smartest/index22.shtml). GameSpy. July 21–25, 2003. p. 22. Archived (https://web.archive.org/web/20120902124439/http://archive.gamespy.com/articles/july03/25smartest/index22.shtml) from the original on September 2, 2012.
62. O'Kane, Sean (October 18, 2015). "7 things I learned from the designer of the NES" (https://www.theverge.com/2015/10/18/9554885/nintendo-entertainment-system-famicom-history-masayuki-uemura). *The Verge*. Archived (https://web.archive.org/web/20151019130146/http://www.theverge.com/2015/10/18/9554885/nintendo-entertainment-system-famicom-history-masayuki-uemura) from the original on October 19, 2015. Retrieved September 21, 2018.
63. Kinder, Marsha (1993), *Playing with Power in Movies, Television, and Video Games: From Muppet Babies to Teenage Mutant Ninja Turtles* (https://books.google.com/books?id=raDNu1IThHQC&pg=PA90), University of California Press, p. 90, ISBN 0-520-07776-8, archived (https://web.archive.org/web/20230209133536/https://books.google.com/books?id=raDNu1IThHQC&pg=PA90) from the original on February 9, 2023, retrieved April 26, 2011
64. Mochizuki, Takahashi; Savov, Vlad (August 25, 2020). "Epic's Battle With Apple and Google Actually Dates Back to Pac-Man" (https://www.bloomberg.com/news/articles/2020-08-19/epic-games-fortnite-battle-with-apple-and-google-can-be-traced-to-nintendo-tax). *Bloomberg News*. Archived (https://web.archive.org/web/20211106025128/https://www.bloomberg.com/news/articles/2020-08-19/epic-games-fortnite-battle-with-apple-and-google-can-be-traced-to-nintendo-tax) from the original on November 6, 2021. Retrieved August 25, 2020.
65. Plunkett, Luke (July 21, 2012). "Konami's Cheat to Get Around a Silly Nintendo Rule" (https://kotaku.com/konamis-cheat-to-get-around-a-silly-nintendo-rule-5930361). *Kotaku*. Archived (https://web.archive.org/web/20180921225906/https://kotaku.com/5930361/how-konami-cheated-to-get-around-a-silly-nintendo-rule) from the original on September 21, 2018. Retrieved September 21, 2018.
66. O'Donnell, Casey (2011). "The Nintendo Entertainment System and the 10NES Chip: Carving the Video Game Industry in Silicon". *Games and Culture*. **6** (1): 83–100. doi:10.1177/1555412010377319 (https://doi.org/10.1177%2F1555412010377319). S2CID 53358125 (https://api.semanticscholar.org/CorpusID:53358125).
67. Cunningham, Andrew (July 15, 2013). "The NES turns 30: How it began, worked, and saved an industry" (https://arstechnica.com/gaming/2013/07/time-to-feel-old-inside-the-nes-on-its-30th-birthday/). *Ars Technica*. Archived (https://web.archive.org/web/20210722154751/https://arstechnica.com/gaming/2013/07/time-to-feel-old-inside-the-nes-on-its-30th-birthday/) from the original on July 22, 2021. Retrieved September 21, 2018.

68. U.S. Court of Appeals; Federal Circuit (1992). "Atari Games Corp. v. Nintendo of America Inc" (http://digital-law-online.info/cases/24PQ2D1015.htm). *Digital Law Online*. Archived (https://web.archive.org/web/20110808062812/http://digital-law-online.info/cases/24PQ2D1015.htm) from the original on August 8, 2011. Retrieved March 30, 2005.
69. Sanger, David E. (June 5, 1984). "Expected boom in home computer market fizzles" (https://news.google.com/newspapers?nid=1129&dat=19840605&id=W4NIAAAAIBAJ&sjid=HW4DAAAAIBAJ&pg=7089,693646). *Pittsburgh Post-Gazette*. Archived (https://web.archive.org/web/20211202113001/https://news.google.com/newspapers?nid=1129&dat=19840605&id=W4NIAAAAIBAJ&sjid=HW4DAAAAIBAJ&pg=7089,693646) from the original on December 2, 2021. Retrieved December 2, 2021.
70. Oxford, Nadia (January 18, 2012). "Ten Facts about the Great Video Game Crash of '83" (https://www.ign.com/articles/2011/09/21/ten-facts-about-the-great-video-game-crash-of-83). *IGN*. Archived (https://web.archive.org/web/20210128072326/https://www.ign.com/articles/2011/09/21/ten-facts-about-the-great-video-game-crash-of-83) from the original on January 28, 2021. Retrieved September 11, 2020.
71. Extension, Time (August 17, 2022). "Here's How UK Magazines Covered The "Great" Video Game Crash" (https://www.timeextension.com/news/2022/08/heres-how-uk-magazines-covered-the-great-video-game-crash). *Time Extension*. Retrieved September 9, 2025.
72. "Market size and market shares". *Video Games: A Report on the Supply of Video Games in the UK*. United Kingdom: Monopolies and Mergers Commission (MMC), H.M. Stationery Office. April 1995. pp. 66 (https://i.imgur.com/CLYiKIp.jpg) to 68 (https://i.imgur.com/vR9vtPX.jpg). ISBN 978-0-10-127812-6.

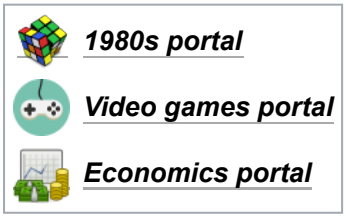
Works cited

- Provenzo, Eugene (1991). *Video Kids: Making Sense of Nintendo*. Harvard University Press. ISBN 0674937090.
- Wolf, Mark, ed. (2012). *Before the Crash: Early Video Game History*. Wayne State University Press. ISBN 9780814337226.

Further reading

- DeMaria, Rusel & Wilson, Johnny L. (2003). *High Score!: The Illustrated History of Electronic Games* (2nd ed.). New York: McGraw-Hill/Osborne. ISBN 0-07-222428-2.
- Gallagher, Scott & Park, Seung Ho (2002). "Innovation and Competition in Standard-Based Industries: A Historical Analysis of the U.S. Home Video Game Market". *IEEE Transactions on Engineering Management*, vol. 49, no. 1, February 2002, pp. 67–82. doi: 10.1109/17.985749

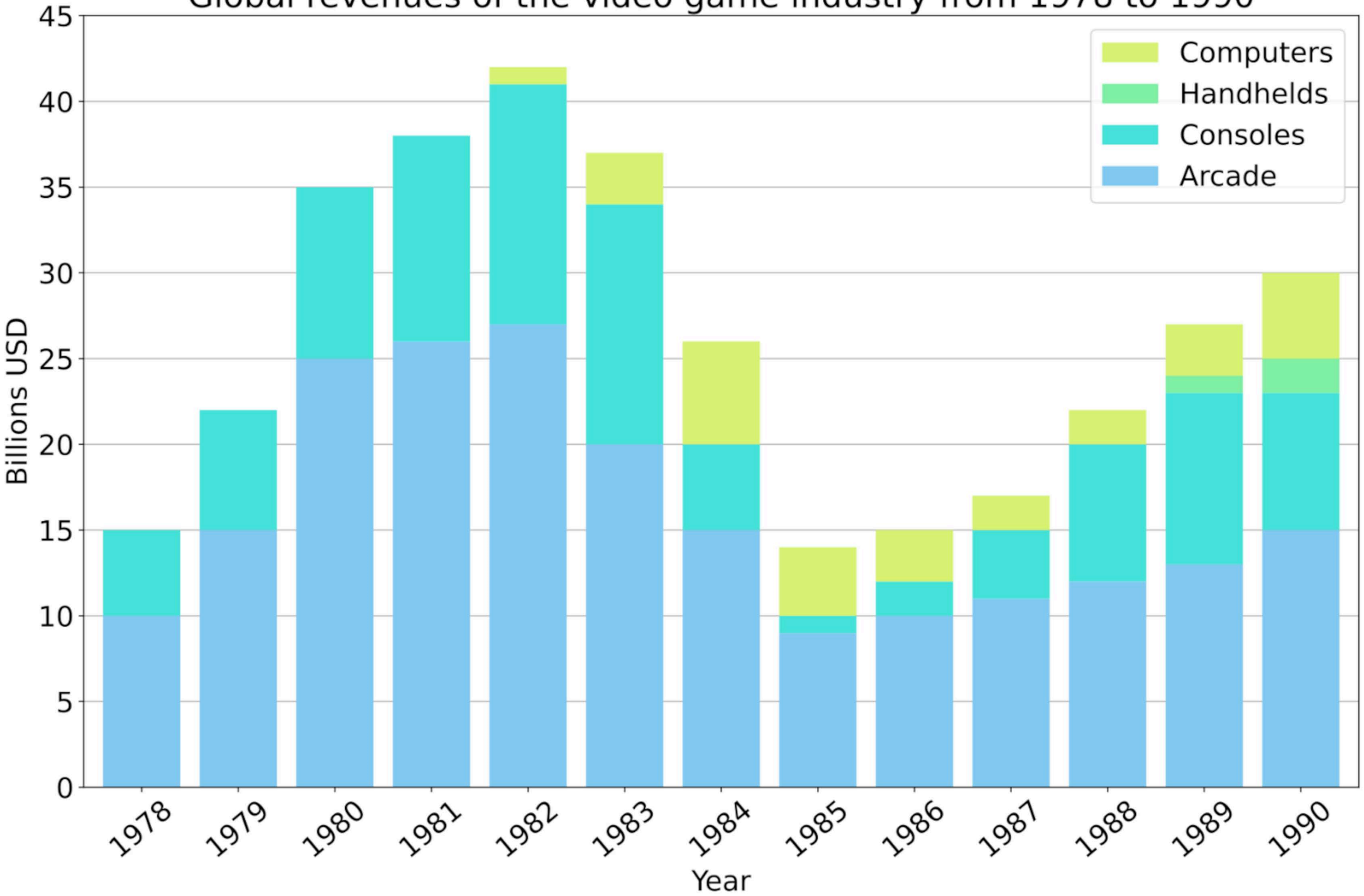
External links



- The Dot Eaters.com: "Chronicle of the Great Videogame Crash" (https://thedoteaters.com/?bitstory=the-great-video-game-crash) Archived (https://web.archive.org/web/20180612183648/http://thedoteaters.com/?bitstory=the-great-video-game-crash) June 12, 2018, at the Wayback Machine
- Twin Galaxies Official Video Game & Pinball Book of World Records: "The Golden Age of Video Game Arcades" (https://web.archive.org/web/20060618195311/http://www.twingalaxies.c

om/index.aspx?c=17) — *story within the 1998 book*.
- Intellivisionlives.com: Official Intellivision History (https://web.archive.org/web/20180116045349/http://www.intellivisionlives.com/history.php) — *by the original programmers*.
- The History of Computer Games: The Atari Years (http://www.erasmatazz.com/library/the-journal-of-computer/jcgd-volume-5/the-atari-years.html) — *by Chris Crawford, a game designer at Atari during the crash*.
- Pctimeline.info: Chronology of the Commodore 64 Computer (http://pctimeline.info/c64/)— *Events & Game release dates (1982–1990)*. Archived (https://web.archive.org/web/20120809090241/http://pctimeline.info/c64/) August 9, 2012, at the Wayback Machine

---


Global revenues of the video game industry from 1978 to 1990
Computers
Handhelds
Consoles
Arcade
Billions USD
0
5
10
15
20
25
30
35
40
45
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
Year
Data from Bloomberg.com

Custer's Revenge

Custer's Revenge (also known as ***Mystique Presents Swedish Erotica: Custer's Revenge***) is an adult action game published by American Multiple Industries for the Atari 2600, first released in November 1982.[1] The game gained notoriety owing to its goal of raping a Native American woman who is tied to a post.[2][3]

The titular player character is based on Lieutenant Colonel and Brevet Major General George Armstrong Custer, a famous American cavalry commander who is most well known for his major defeat and death at the Battle of Little Bighorn.[4]

Following the Christmas season of 1982, the rights to American Multiple Industries' games, including *Custer's Revenge*, were sold off to the adult video game company PlayAround.[1] Under PlayAround's parent company, Castlespring Enterprises, *Custer's Revenge* was re-branded as *Westward Ho* for the European market and given slight modifications to its original gameplay. These alterations included simple aesthetic changes such as the darkening in color of the Native American woman's skin tone. PlayAround also made a gender-reversed version of *Custer's Revenge* named *General Retreat*.

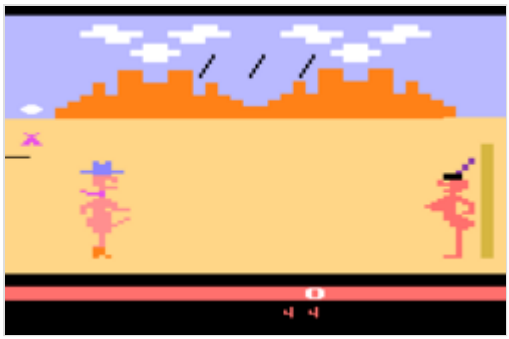
The game was universally panned by critics due to its offensive content and has been described as one of the worst video games ever made.

Custer's Revenge

Developer	JHM Ltd.
Publisher	American Multiple Industries
Designer	Joel Martin
Platform	Atari 2600
Release	NA: November 1982
Genre	Action
Modes	Single-player, multiplayer

Gameplay

Custer's Revenge is an action video game in which the player controls a mostly nude General Custer, who must advance through the playing field and avoid arrows to rape the fully nude Native American woman Revenge, who is tied to a pole on the other side.[5] The game consists of four numbered modes of play; modes 1 and 3 are single-player campaigns, while modes 2 and 4 are hotseat multiplayer modes.[6] In modes 1 and 2, the player(s) must only avoid arrows, while in modes 3 and 4, cacti that appear and disappear at random intervals are added as obstacles.[7] Custer can move left or right if the joystick is moved in those directions, while shifting the joystick up or down will cause Custer to stop.[6]



An example of gameplay in *Custer's Revenge*

Custer begins the game with three lives, which are represented by small cacti on a black stripe at the bottom of the screen.[5] If an arrow touches Custer's hat or if Custer comes into contact with a cactus, he loses a life to the tune of "Taps". It is possible for Custer to stand in between two arrows and not get hit.[7] If Custer successfully reaches Revenge, the player must repeatedly press the fire button for Custer to rape her, which occurs to the "Charge" fanfare. Each penetration awards one point,[5] and the player earns an extra life for every 50 points. The player(s) can accumulate no more than six lives at any given time.[8] For every 50 points scored, Custer returns to his original position on the field, and the speed of the arrows increases. The arrow speed can also be increased by flipping the difficulty switch on the Atari console.[9]

Development and release

The design of *Custer's Revenge* was led by Joel Martin, co-founder of American Multiple Industries (operating as Mystique), who served as the primary creator and designer of the game.[1][10][11] It was developed as part of the "Swedish Erotica" series to capitalize on the lack of pornography available in the medium of video games. The development was deliberately sloppy and rushed because quality did not matter—they only needed a product on store shelves. The overtly racist and sexist themes were chosen to maximize outrage and generate free publicity.[12]

Custer's Revenge quickly gained notoriety upon its release. Sold in a sealed package labeled "NOT FOR SALE TO MINORS"[13] and selling for $49.95 (equivalent to $167 in 2025),[10] it acknowledged that children might nonetheless see the game. The game's literature stated "if the kids catch you and should ask, tell them Custer and the maiden are just dancing."[14] The makers elected to preview the game for women's and Native American groups, an act that many thought was a publicity stunt.[15]

Controversy

Women's rights groups[16] such as the National Organization for Women criticized the game as "degrading, offensive and a blatant statement of racism and sexism [...] NOW cannot ignore any company which seeks to so blatantly portray acts of violence against women as a form of entertainment."[17] Native Americans also protested the game, with the executive director of the Tulsa Native American Coalition saying "It is very degrading to the Indian woman as well as all women in general," and "There's no other way we can take it other than a racial slur."[18] Other groups that opposed the game included the Native American Political Action Committee, United National Indian Youth Inc., the Oklahoma Human Rights Commission, the American Indian Training and Employment Program, the NAACP, the Urban League, and the YWCA.[19][20] American Multiple Industries president Stuart Keston responded to criticism of the game by saying "There is a sexual act, but it is not rape. It never has been."[21]

Los Angeles County voted 3–1 to ban *Custer's Revenge* alongside American Multiple Industries' other adult-only games *Bachelor Party* and *Beat 'Em & Eat 'Em*.[22] Suffolk County, New York voted to ban all "X-rated" games within their jurisdiction.[23] Multiple Industries subsequently pursued an $11 million lawsuit against Suffolk County and legislator Philip Nolan "because of a resolution authorizing the county executive to take action to halt sales and distribution" of the game.[24] Oklahoma City, home to a large Native American population, also unanimously passed a resolution condemning the game as "distasteful" and "not in the best interests of the community".[25] While both Ward 1 Councilman Bob McCoy and city attorney Walter Powell sought to block distribution within the city, and Multiple Industries did briefly halt distribution there, it was never officially banned by the city[25][26] as is sometimes erroneously reported.[2][27]

Nevertheless, the focused media attention generated publicity for the game and it sold approximately 80,000 copies, twice as many as *Bachelor Party* and *Beat 'Em & Eat 'Em*. Atari received numerous complaints about the game however and responded by trying to sue the game's makers.[28] Stuart Kesten, President of American Multiple Industries, stated "our object is not to arouse, our object is to entertain [...] When people play our games, we want them smiling, we want them laughing." The game's designer, Joel Martin, said Custer was "seducing" the maiden and that she was a "willing participant".[10] By April 1983, the game was withdrawn from circulation.[29]

Reception

In 1988, computer gaming magazine *Ahoy!* called *Custer's Revenge* "an [affront] to common decency", in contrast to more modern and 'tasteful' adult games.[30] *Electronic Gaming Monthly*'s Seanbaby placed it as number 9 in his "20 worst games of all time" feature.[31]

In 2008, the University of Calgary professor Tom Keenan cited "the hideous *Custer's Revenge* game", 26 years after its release, in an op-ed piece about current video game violence issues for the *Calgary Herald*.[32] That same year, the game was credited by Australian *PC Magazine* as being one of the worst games ever made,[33] while Games.net ranked Custer's victim as fifth on the list of top ten "disturbingly sexual" game characters.[34] In 2010, Custer placed eighth on machinima.com's list of the top perverts in gaming.[35] UGO.com ranked it as tenth on the list of the most racist video games in history in 2010,[36] also ranking the game's General Custer as the second most unsexy video game character of all time in 2012.[37]

See also

1980s portal

- Cultural depictions of George Armstrong Custer
- *RapeLay*
- *X-Man*
- List of video games notable for negative reception

References

Citations

1. Willaert, Kate (September 6, 2021). "Porno Hustlers Of The Atari Age" (https://kotaku.com/porno-hustlers-of-the-atari-age-1847622176). *Kotaku*. Archived (https://web.archive.org/web/20220101015504/https://kotaku.com/porno-hustlers-of-the-atari-age-1847622176) from the original on January 1, 2022. Retrieved January 1, 2022.
2. Plunkett, Luke (October 7, 2011). "Rape, Racism & Repetition: This is Probably the Worst Game Ever" (https://kotaku.com/rape-racism-repetition-this-is-probably-the-worst-g-5847507). *Kotaku*. Archived (https://web.archive.org/web/20200716205505/https://kotaku.com/rape-racism-repetition-this-is-probably-the-worst-g-5847507) from the original on July 16, 2020. Retrieved May 14, 2023.
3. "Gamespy's Top Ten Shameful Games" (https://web.archive.org/web/20110426012823/http://archive.gamespy.com/top10/december02/shame/index4.shtml). GameSpy. Archived from the original (http://archive.gamespy.com/top10/december02/shame/index4.shtml) on April 26, 2011. Retrieved November 17, 2013.
4. "Custer's Revenge - Classic Gaming" (https://web.archive.org/web/20090416185618/http://classicgaming.gamespy.com/View.php?view=GameMuseum.Detail&id=282). Classicgaming.gamespy.com. Archived from the original (http://classicgaming.gamespy.com/View.php?view=GameMuseum.Detail&id=282) on April 16, 2009. Retrieved November 17, 2013.
5. American Multiple Industries 1982, p. 1.
6. American Multiple Industries 1982, pp. 2–3.
7. American Multiple Industries 1982, p. 3.
8. American Multiple Industries 1982, p. 4.
9. American Multiple Industries 1982, pp. 4–5.
10. "Atari Trying To Halt X-Rated Video Games" (https://news.google.com/newspapers?nid=1356&dat=19821017&id=2OsTAAAAIBAJ&sjid=-wUEAAAAIBAJ&pg=5332,427806). *Ocala Star-Banner*. p. 8B. Archived (https://web.archive.org/web/20210309055235/https://news.google.com/newspapers?nid=1356&dat=19821017&id=2OsTAAAAIBAJ&sjid=-wUEAAAAIBAJ&pg=5332,427806) from the original on March 9, 2021. Retrieved March 1, 2010.
11. Lumenick, Lou (October 15, 1982). "Women, Indians protest video game of violent sex" (https://www.newspapers.com/article/the-record-atari-2600-news-women-india/73264255/). *The Record*. Hackensack, New Jersey. p. A2.
12. Paskin, Willa (December 23, 2021). "*Custer's Revenge* Was Denounced, Protested, and Banned Even Before It Hit Stores" (https://slate.com/podcasts/decoder-ring/2021/12/custers-revenge-racist-sexist-trolling). *Slate*. The Slate Group. Archived (https://web.archive.org/web/20230430043422/https://slate.com/podcasts/decoder-ring/2021/12/custers-revenge-racist-sexist-trolling) from the original on April 30, 2023. Retrieved April 30, 2023.
13. Lane, Frederick S. *Obscene profits: the entrepreneurs of pornography in the cyber age*. pp. 55–56.
14. Jenkins, Sacha (October 15, 2002). *Ego Trip's Big Book of Racism*. Harper Perennial. p. 825. ISBN 978-0060988968.
15. Wise, Deborah (1982). "Video-pornography games cause protest" (https://books.google.com/books?id=EjAEAAAAMBAJ&pg=PA1). *InfoWorld* (November 8): 1,7. Archived (https://web.archive.org/web/20230430003052/https://books.google.com/books?id=EjAEAAAAMBAJ&pg=PA1) from the original on April 30, 2023. Retrieved March 22, 2023.

16. "Stream of video games is endless" (https://web.archive.org/web/20160312093025/https://news.google.com/newspapers?id=nwsdAAAAIBAJ&sjid=QX8EAAAAIBAJ&pg=3635%2C1989311). *Milwaukee Journal*. December 26, 1982. pp. Business 1. Archived from the original (https://news.google.com/newspapers?id=nwsdAAAAIBAJ&sjid=QX8EAAAAIBAJ&pg=3635%2C1989311) on March 12, 2016. Retrieved January 10, 2015.
17. "NOW opposes *Custer's Revenge* video game" (https://www.upi.com/Archives/1982/12/06/NOW-opposes-Custers-Revenge-video-game/9419407998800/). *UPI*. December 6, 1982. Retrieved May 14, 2023.
18. "*Custer's Revenge*, a home video game in which Gen..." (https://www.upi.com/Archives/1982/11/15/Custers-Revenge-a-home-video-game-in-which-Gen/4969406184400/) *UPI*. November 15, 1982. Retrieved May 14, 2023.
19. "Coalition opposes *Custer*" (https://www.oklahoman.com/story/news/1982/10/14/coalition-opposes-custer/62870131007/). *The Oklahoman*. October 14, 1982. Retrieved May 14, 2023.
20. "YWCA Doesn't Want Custer Getting Revenge" (https://www.oklahoman.com/story/news/1982/10/15/ywca-doesnt-want-custer-getting-revenge/62870032007/). *The Oklahoman*. October 15, 1982. Retrieved May 14, 2023.
21. "National News Briefs" (https://www.upi.com/Archives/1982/12/23/National-News-Briefs/3835409467600/). *UPI*. December 23, 1982. Archived (https://web.archive.org/web/20220116105801/https://www.upi.com/Archives/1982/12/23/National-News-Briefs/3835409467600/) from the original on January 16, 2022. Retrieved May 14, 2023.
22. "L.A. Supervisors vote to ban video sex games" (https://archive.org/details/1982-11-15-people/1982-11-17-TimesStandardEurekaCalifornia-AssociatedPress/mode/1up). *Times-Standard*. November 17, 1982. Retrieved August 31, 2022.
23. "X-rate video loses vote" (https://archive.org/details/1982-11-15-people/1982-11-10-HeraldStatesman/page/nundefined/mode/1up). *Herald Statesman*. November 10, 1982. Retrieved August 31, 2022.
24. "*Custer* Game Is Subject of Two Lawsuits" (https://books.google.com/books?id=8iMEAAAAMBAJ&pg=PT7). *Billboard*. December 11, 1982. p. 8. Retrieved March 1, 2010.
25. Paschal, Jan (October 27, 1982). "Council Slaps *Custer's Revenge* Game as "Distasteful' " (https://www.oklahoman.com/story/news/1982/10/27/council-slaps-custers-revenge-game-as-distasteful/62869021007/). *The Oklahoman*. Retrieved August 31, 2022.
26. "*Custer's Revenge* Game Selling Out" (https://www.oklahoman.com/story/news/1983/01/23/custers-revenge-game-selling-out/62859030007/). *The Oklahoman*. January 23, 1983. Retrieved August 30, 2022.
27. Ledray, Linda E. *Recovering From Rape*. p. 254.
28. Herman, Leonard (1997). *Phoenix: The Fall & Rise of Videogames*. p. 88.
29. Talbot, David, ed. (April 1983). "Pac-Man Kills Kids, Self: Video Horrors" (https://books.google.com/books?id=fOYDAAAAMBAJ&pg=PA17). *Mother Jones*. **VIII** (III). San Francisco: Foundation for National Progress: 7. Archived (https://web.archive.org/web/20230511151932/https://books.google.com/books?id=fOYDAAAAMBAJ&pg=PA17) from the original on May 11, 2023. Retrieved March 22, 2023.
30. Katz, Arnie (August 1988). "Centerfold Squares" (https://archive.org/details/ahoy-magazine-56/page/n23/mode/2up). *Ahoy!*. No. 56. Ion International. pp. 24–25.
31. "Seanbaby's EGM's Crapstravaganza - #9: *Custer's Revenge* (Atari 2600)" (https://web.archive.org/web/20060707174905/http://www.seanbaby.com/nes/egm09.htm). *Seanbaby.com*. Archived from the original (http://www.seanbaby.com:80/nes/egm09.htm) on July 7, 2006. Retrieved April 8, 2007.
32. "Teaching kids to kill" (http://www.canada.com/calgaryherald/news/reallife/story.html). Canada.com. Archived (https://web.archive.org/web/20190807014701/http://www.canada.com/calgaryherald/news/reallife/story.html) from the original on August 7, 2019. Retrieved November 17, 2013.

33. "Violent video games - the worst of the worst - News - PC & Tech Authority" (http://www.pcauthority.com.au/News/107909,violent-video-games--the-worst-of-the-worst.aspx). Pcauthority.com.au. April 10, 2008. Archived (https://web.archive.org/web/20080429035755/http://www.pcauthority.com.au/News/107909,violent-video-games--the-worst-of-the-worst.aspx) from the original on April 29, 2008. Retrieved November 17, 2013.
34. GamePro Media (July 16, 2011). "Top Ten Disturbingly Sexual Game Characters | Games.net" (https://web.archive.org/web/20110716022627/http://www.games.net/article/netten/2/116901/top-ten-disturbingly-sexual-game-characters/). Archived from the original (http://www.games.net/article/netten/2/116901/top-ten-disturbingly-sexual-game-characters/) on July 16, 2011. Retrieved November 17, 2013.
35. Top 10 Perverts in Gaming (https://www.youtube.com/watch?v=8y4wPqsZqPQ), machinima, May 29, 2010 Archived (https://web.archive.org/web/20160610023203/https://www.youtube.com/watch?v=8y4wPqsZqPQ) June 10, 2016, at the Wayback Machine
36. The 11 Most Racist Video Games | These eleven games are so seriously un-PC that it's amazing they ever made it to shelves. (http://www.ugo.com/games/the-11-most-racist-video-games.html) Archived (https://web.archive.org/web/20180619122915/http://www.ugo.com/games/the-11-most-racist-video-games.html) June 19, 2018, at the Wayback Machine, UGO.com, November 30, 2010
37. Meli, Marissa (March 27, 2010). "General Custer (*Custer's Revenge*) - 20 Unsexiest Sexy Video Game Characters" (https://web.archive.org/web/20131108131353/http://www.ugo.com/games/20-unsexiest-sexy-video-game-characters-general-custer). UGO.com. Archived from the original (http://www.ugo.com/games/20-unsexiest-sexy-video-game-characters-general-custer) on November 8, 2013. Retrieved November 17, 2013.

Bibliography

- *Custer's Revenge Instructions*. American Multiple Industries. 1982.

External links

- *Custer's Revenge* (https://web.archive.org/web/20171103114356/http://www.atariage.com/software_page.html?SoftwareLabelID=119) at AtariAge

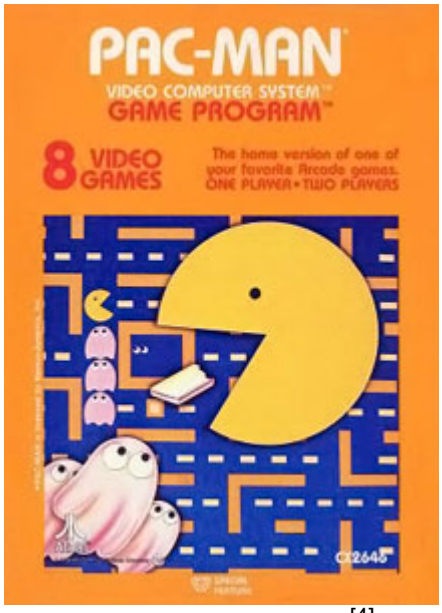
Pac-Man (Atari 2600 video game)

Pac-Man is a 1982 maze video game developed and published by Atari, Inc. for the Atari 2600[a] as a port of Namco's 1980 arcade game of the same name. The player controls the title character, who attempts to eat all of the wafers in a maze while avoiding four ghosts that pursue him. Eating flashing wafers at the corners of the screen causes the ghosts to temporarily turn blue and flee, allowing Pac-Man to eat them for bonus points. Once eaten, a ghost is reduced to a pair of eyes, which return to the center of the maze to be restored.

Pac-Man was programmed by Tod Frye and took six months to complete. Expecting high sales, Atari produced more than a million copies of the highly anticipated game and held a "National Pac-Man Day" on April 3, 1982 to promote its release.[5]

Pac-Man remains the best-selling Atari 2600 game of all time, selling over 8 million copies, and was the all-time best-selling video game for several years. Despite its commercial success, the game was panned by critics for its poor graphics and sound, as well as for bearing little resemblance to the original arcade game. Since its release, it has been considered one of the worst video games ever made and one of the worst arcade ports released on the system.

Pac-Man



Box art by Hiro Kimura[4]

Developer	Atari, Inc.
Publishers	Atari, Inc.
Designer	Tod Frye
Programmer	Tod Frye
Series	*Pac-Man*
Platform	Atari 2600
Release	March 1982[1][2][3]
Genres	Maze
Modes	Single-player, multiplayer

Gameplay

The player uses a joystick to control Pac-Man, navigating him through a maze of consumable dashes called video wafers, opposed by a quartet of multi-colored ghosts.[6][7] The goal of the game is to earn a high score by having Pac-Man eat video wafers, power pills, vitamins and ghosts. Every time Pac-Man eats all the video wafers in the maze, he earns an extra life and a new maze full of wafers.[8] A group of ghosts roam the maze, trying to eat Pac-Man. If one touches Pac-Man, he loses a life.[7] *Pac-Man* can be played as a one-player game or a two-player game with the players alternating turns after Pac-Man is eaten by a ghost.[9]

Near the corners of the maze are four larger, flashing consumables known as Power Pills that turn the ghosts a blue transparent colour and give Pac-Man the temporary ability to eat the ghosts and earn points.[6] When a ghost is eaten, its disembodied eyes return to the big square chamber in the center of the maze to respawn.[7] The blue ghosts turn pink during the last moments of a Power

Pill's effect, signaling that they are about to become dangerous again.[6] The final consumable items are the Vitamins, which appear periodically directly below the nest and award the player with further points.[6]

The game has eight variations, offering two different starting speeds for Pac-Man and four speeds for the ghosts.[10] Setting the console's A–B difficulty switches can also handicap one or both players. If the switch is set to A position, the power pills' effects do not last as long.[11]

Pac-Man for the Atari 2600 has various changes from the original game.[12] Visual changes include the ghosts not having unique colors, and not looking in the direction they are moving in. Pac-Man's sprite now has visible eyes and only faces left or right as he navigates the maze.[12][13][14][15] The game no longer features collectible items such as fruits or the key, which are now replaced by an orange box called the vitamin.[16] The game also lacks the cutscenes and sounds from the arcade version.[17]

The Atari 2600 features switches on the console that could be used to toggle the difficulty levels for players in *Pac-Man*.

The game has a different maze than the arcade game.[12] There are fewer video wafers and they are displayed as thin rectangles instead of the dots of the arcade version.[18] The maze is simplified in structure and appearance, lacking the rounded edges and intricate passages of the arcade, and the escape passages at the sides are moved to the top and bottom.[7][14][19]

Development

After *Pac-Man* proved to be a success in the United States, Atari decided to license the game and port it to its Atari 2600 console (known at the time as the Atari Video Computer System).[20][21] Programming was assigned to Tod Frye, who was not provided with any arcade design specifications to work from and had to figure out how the game worked by playing it. Frye spent 80-hour weeks over six months developing it.[22] The finished game uses a 4 KB ROM cartridge, chosen for its lower manufacturing costs compared to 8 KB bank-switched cartridges, which had recently become available.[20][21] As with any contemporary arcade port, the simple Atari 2600 hardware was a considerable limitation. The arcade Pac-Man system board contained 2 KB of main RAM (random-access memory) in which to run the program, 2 KB of video RAM to store the screen state, and 16 KB of ROM (read-only memory) to store the game code, whereas the Atari 2600 featured only 128 bytes of RAM memory and none dedicated to video, effectively 32 times less RAM.[21] The Zilog Z80 CPU microprocessor used by the Namco Pac-Man arcade system is clocked at three times the speed of the MOS 6507 CPU in the Atari 2600 (however, the Z80 typically does less work per clock cycle).[23]

To deal with these limitations, Frye simplified the maze's intricate pattern of corridors to a more repetitive pattern. The small tan pellets in the arcade original were changed to rectangular "wafers" that shared the color of the wall; this change was necessitated because both the pellets and walls were drawn with the 2600's Playfield graphics, which have a fixed width. To achieve the visual effect of wafers disappearing as Pac-Man eats them, the actual map of the maze was updated as the data was written into the Playfield registers, excluding the pellets that had been eaten. The 2600's Player-Missile graphics system (sprites) was used for the remaining objects; the one-bit-wide

Missiles were used to render the flashing power pills and the center of the vitamin. Pac-Man and ghost characters were implemented using the 2600's two Player objects, with one being used for Pac-Man and the other being used for all four ghosts; as a result, each ghost only appears once out of every four frames. This creates a flickering effect that takes advantage of the slow phosphorescent fade of CRT monitors and the concept of persistence of vision, resulting in the image appearing to linger on screen longer;[21] however, the flickering remains noticeable, and makes each individual ghost's color nearly impossible to discern.[24] Frye chose to abandon plans for a flicker-management system to minimize the flashing in part because Atari didn't seem to care about that issue in its zeal to have the game released. According to Frye, his game also did not conform to the arcade game's color scheme in order to comply with Atari's official home product policy that only space-type games should feature black backgrounds. Another quality impact was his decision that two-player gameplay was important, which meant that the 23 bytes required to store the current difficulty, the state of the dots on the current maze, remaining lives, and the score had to be doubled for a second player,[25] consuming 46 of the 2600's meager 128-byte memory, which precluded its use for additional game data and features.[26]

Oft-repeated stories claim that Atari wanted to or did release a prototype in order to capitalize on the 1981 holiday season;[21] however, the retail release was a final product. Frye has stated that there were no negative comments within Atari about these elements, but after seeing the game, Coin Division marketing manager Frank Ballouz reportedly informed then-Atari president and CEO Ray Kassar that he felt enthusiasts would not want to play it; his opinion, however, was dismissed.[20] The company ran newspaper ads and promoted the product in catalogs, describing it as differing "slightly from the original".[2]

Release

To help sales, Atari promoted and protected its exclusive licensing of *Pac-Man*[2][27] by taking legal action against companies that released similar clones.[27] For example, Atari sued Philips for its 1981 Magnavox Odyssey² game *K.C. Munchkin!* alleging copyright infringement. In the landmark case *Atari, Inc. v. North American Philips Consumer Electronics Corp.*, the Court of Appeals allowed a preliminary injunction against Philips to prevent the sale of *Munchkin* cartridges.[28][29] However, Atari failed to stop other games such as On-Line Systems' *Jawbreaker* and *Gobbler*.[30]

Several retailers assisted Atari with the release of the game, such as JCPenney, who became the first retailer to launch a nationwide advertising campaign on television for a software title.[31] Atari, continuing a long-standing relationship with Sears,[32] also produced *Pac-Man* cartridges under the department store's label.[33]

Atari's *Pac-Man* was re-released as downloadable content for the *Atari 50* (2022) video game compilation in November 2025 and re-released on a physical cartridge as part of a *Pac-Man* double-pack for their Atari 2600+ system.[34][35]

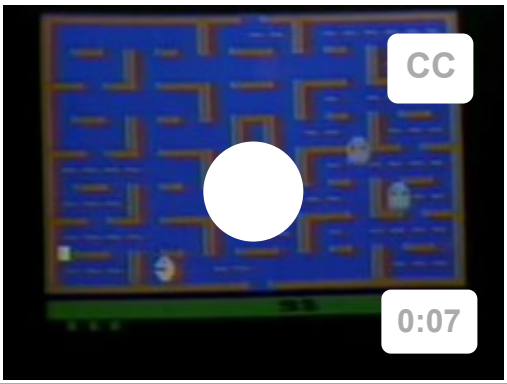
Reception

Sales

Anticipation for the game was high.[2][31] Atari stated in 1981 that it had preorders for "three or four million" copies of the Atari 2600 version.[30] Goldman Sachs analyst Richard Simon predicted the sale of 9 million units during 1982, which would yield a profit of $200 million.[1] *Pac-Man* was an initial commercial success, selling more than a million cartridges in less than a month, helped by Atari's $1.5 million publicity campaign.[36] It was the best-selling home video game of 1982,[37] with over 7.2 million cartridges sold that year[38] and over $200 million ($670 million adjusted for inflation) in gross revenue.[39] It replaced *Space Invaders* as the best-selling Atari 2600 title and also became the overall best-selling video game up until then (a title it held for several years until eventually being surpassed by Nintendo's *Super Mario Bros.*)[38][40] *Pac-Man* also propelled sales of the Atari 2600 to 12 million units by 1982.[41] Frye reportedly received $0.10 in royalties per copy.[42]

Purchases of the game had slowed by the summer of 1982, with unsold copies available in large quantities.[2][20] Atari went on to sell over 684,000 cartridges in 1983.[38] It had sold a cumulative 7,956,413 cartridges by 1983,[38] and a further 139,173 units for $706,967 (equivalent to $2,000,000 in 2025) between 1986 and 1990,[43] for a total of over 8 million cartridges sold by 1990. By 2004, the cartridges were still very common among collectors and enthusiasts—though the Sears versions were rarer—and priced lower.[33]

Critical response



Pac-Man must eat the wafers while avoiding the ghosts. The ghosts take turns appearing on the screen, creating a widely criticized flicker effect.

At release, critics negatively compared the port to its original arcade form, panning the audio, visuals and gameplay. On May 11, 1982, *Electronic Games* magazine published its first ever negative review for an Atari video game, giving the game a rating of four out of ten and saying, "Considering the anticipation and considerable time the Atari designers had to work on it, it's astonishing to see a home version of a classic arcade contest so devoid of what gave the original its charm."[44] *Video Magazine* admitted it was "challenging, and there are a few visual pluses", before lamenting, "Unfortunately those who cannot evaluate *Pac-Man* through lover's eyes are likely to be disappointed." The premiere issue of *Video Games Player* from Fall 1982 called the port "just awful".[45] *Video Games Player* magazine gave the graphics and sound its lowest rating of C, while giving the game an overall B– rating.[46] *Electronic Fun with Computers & Games* gave it an overall B– rating, with a C rating for graphics.[47] *The New York Times* wrote in October that "though word-of-mouth on the game has not been considered great, the cartridge is still selling" because of *Pac-Man*'s fame.[48]

In 1983, *Creative Computing Video & Arcade Games* reviewer Danny Goodman said that the game fails as a replica of its arcade form: "Atari stated clearly in its description of the cartridge that Atari's *Pac-Man* 'differs slightly from the original'. That, perhaps, was an understatement." Conversely, he stated that such criticism was unfair because the hardware of the Atari 2600 could not properly emulate the arcade game. Goodman further said that the port is a challenging maze game in its own right, and it would have been a success if fans had not expected to play a game closer to the original.[2] Phil Wiswell of *Video Games* criticized the game's poor graphics, mockingly referring to it as "Flickerman",[49] while *Softline* questioned why Atari opposed *Pac-Man* clones when the 2600 version was less like the original "than any of the pack of imitators".[50]

The game has remained poorly rated. *Computer and Video Games* magazine rated the game 57% in 1989.[51] *Next Generation* magazine editors in 1998 called it the "worst coin-op conversion of all time", and attributed the mass dissatisfaction to its poor quality.[20] In 2006, *IGN*'s Craig Harris echoed similar statements and listed it as the worst arcade conversion, citing poor audio and visuals that did not resemble the original.[52] Another *IGN* editor, Levi Buchanan, described it as a "disastrous port", citing the color scheme and flickering ghosts.[53] Skyler Miller of *AllGame* said that although the game was only a passing resemblance to the original, it was charming despite its many differences and faults.[14]

Frye did not express regret over his part in *Pac-Man*'s port and felt he made the best decisions he could at the time. However, Frye stated that he would have done things differently with a larger capacity ROM.[20] Video game industry researchers Nick Montfort and Ian Bogost attribute the poor reception to the technical differences between the Atari 2600 console and the arcade hardware used in *Pac-Man* cabinets. They further stated that the conversion is a lesson in maintaining the social and cultural context of the original source. Montfort and Bogost commented that players were disappointed with the flickering visual effect, which made the ghosts difficult to track and tired the players' eyes. The two further said that the effect diminishes the ghosts' personalities present in the arcade version.[21] Chris Kohler of *Wired* commented that the game was poorly received upon its release and in contemporary times because of the poor quality. However, he further described the game as an impressive technical achievement given its console's limitations.[54]

Impact and legacy

Initially, the excitement generated by *Pac-Man*'s home release prompted retail stores to expand their inventory to sell video games. Drugstores began stocking video game cartridges, and toy retailers vied for new releases. Kmart and JCPenney competed against Sears to become the largest vendor of video games.[31] The game's release also led to an increase in sales of the Atari 2600 console.[55]

In retrospect, however, critics often cite Atari's *Pac-Man* as a major factor in the drop of consumer confidence in the company, which contributed to the video game crash of 1983. Bill Loguidice and Matt Barton of Gamasutra stated that the game's poor quality damaged the company's reputation.[27] Buchanan commented that it disappointed millions of fans and diminished confidence in Atari's games.[53][56] Former *Next Generation* editor-in-chief Neil West attributes his longtime skepticism of Atari's quality to the disappointment he had from buying the game as a child.[20] Calling the game the top video game disaster, Buchanan credits *Pac-Man* as a factor to the downfall of Atari and the industry in the 1980s.[56] Author Steven Kent also blames the game,

along with Atari's *E.T. the Extra-Terrestrial*, for severely damaging the company's reputation and profitability.[57] Montfort and Bogost stated that the game's negative reception seeded mistrust in retailers, which was reinforced by later factors that culminated in the crash.[21]

On December 7, 1982, Atari owner Warner Communications announced that revenue forecasts for 1982 were cut from a 50% increase over 1981 to a 15% increase.[20][58] Immediately following the announcement, the company's stock value dropped by around 35%—from $54 to $35—amounting to a loss of $1.3 billion in the company's market valuation.[20][59] Warner admitted that *Pac-Man*'s good sales despite poor quality made Atari overconfident about *E.T.* and *Raiders of the Lost Ark*, which did not sell well.[60] In 1983, the company decreased its workforce by 30% and lost $356 million.[57]

In late 1982, Atari ported *Pac-Man* to its new console, the Atari 5200. This version was a more accurate conversion of the original arcade game and was a launch title for the console, along with eleven other games.[57][61] It was followed by conversions of *Pac-Man*'s arcade sequels, *Ms. Pac-Man* and *Jr. Pac-Man*, for the Atari 2600. These used 8 KB ROM cartridges instead of *Pac-Man*'s 4 KB and dispensed with two-player games. They were better received than Atari's first *Pac-Man* title[27] and addressed many critics' complaints.[21]

See also

- List of video games notable for negative reception

Notes

a. The console was called the Atari Video Computer System (Atari VCS) from its launch in 1977 until it was rebranded as the Atari 2600 in November 1982.

References

1. Staff (1982-04-05). "Pac-Man Fever" (http://content.time.com/time/magazine/article/0,9171,921174,00.html). *Time*. Time Inc. Retrieved 2020-10-18.
2. Goodman, Danny (Spring 1983). "Pac-Mania" (http://www.atarimagazines.com/cva/v1n1/pacmania.php). *Creative Computing Video & Arcade Games*. Vol. 1, no. 1. p. 122. Archived (https://web.archive.org/web/20181212180528/https://www.atarimagazines.com/cva/v1n1/pacmania.php) from the original on December 12, 2018.
3. "Pac-Man gobbled up by video buffs". *The Capital Times*. Madison, Wisconsin. March 18, 1982. "Each of the three local Copps stores received 96 of the cartridges this week. They went on sale Tuesday morning, heralded by ads in the local newspapers."
4. Lapetino, Tim (2016). *Art of Atari*. Dynamite Entertainment. ISBN 978-1524101039.
5. "Only Four More Days Until Atari National Pac-Man Day" (https://news.google.com/newspapers?id=ruYNAAAAIBAJ&sjid=lG0DAAAAIBAJ&pg=4164,6921922&dq=atari+pac-man). March 30, 1982. Retrieved 2009-07-23.
6. *Pac-Man Atari Game Program Instructions*. Atari. 1981. p. 2. C016943-46 REV 1.
7. *Pac-Man Atari Game Program Instructions*. Atari. 1981. pp. 3–4. C016943-46 REV 1.
8. *Pac-Man Atari Game Program Instructions*. Atari. 1981. p. 1. C016943-46 REV 1.
9. *Pac-Man Atari Game Program Instructions*. Atari. 1981. p. 7. C016943-46 REV 1.
10. *Pac-Man Atari Game Program Instructions*. Atari. 1981. p. 8. C016943-46 REV 1.

11. *Pac-Man Atari Game Program Instructions*. Atari. 1981. p. 6. C016943-46 REV 1.
12. Weiss, Brett (2014). *The 100 Greatest Console Video Games 1977-1987*. Schiffer Publishing. p. 157. ISBN 978-0-7643-4618-7.
13. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 71. ISBN 978-0-262-01257-7.
14. Miller, Skyler. "Pac-Man - Overview" (https://web.archive.org/web/20100214104425/http://www.allgame.com/game.php?id=8518). *AllGame*. Archived from the original (http://www.allgame.com/game.php?id=8518) on February 14, 2010. Retrieved July 16, 2009.
15. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 74. ISBN 978-0-262-01257-7.
16. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 75. ISBN 978-0-262-01257-7.
17. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 79. ISBN 978-0-262-01257-7.
18. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 69. ISBN 978-0-262-01257-7.
19. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 68. ISBN 978-0-262-01257-7.
20. Staff (April 1998). "What the hell happened?" (https://archive.org/details/NextGeneration40Apr1998/page/n39). *Next Generation Magazine*. No. 40. Imagine Media. p. 41.
21. Montfort, Nick; Bogost, Ian (2009). "Pac-Man". *Racing the Beam: The Atari Video Computer System*. MIT Press. pp. 66 (https://archive.org/details/racingbeamatariv00mont_656/page/n78)–79. ISBN 978-0-262-01257-7.
22. Lapetino, Tim (2018). "The Story of PAC-MAN on Atari 2600". *Retro Gamer Magazine*. **179**: 18–23.
23. Montfort, Nick; Bogost, Ian (2009). *Racing the beam: the Atari Video computer system* (https://books.google.com/books?id=DqePfdz_x6gC&pg=PA67). MIT Press. p. 67. ISBN 978-0-262-01257-7. Retrieved May 7, 2011.
24. Bogost, Ian; Montfort, Nick (2009). *Racing the Beam: The Atari Video Computer System* (https://archive.org/details/racingbeamatariv00mont_656). The MIT Press. pp. 74 (https://archive.org/details/racingbeamatariv00mont_656/page/n86)–75. ISBN 978-0-262-01257-7.
25. "In defense of Pac-Man... - Page 6 - Atari 2600" (http://atariage.com/forums/topic/270699-in-defense-of-pac-man/page-6#entry3864608). *AtariAge Forums*. Retrieved 2017-11-01.
26. Reutter, Hans (October 27, 2016). *PRGE 2016 - Tod Frye - Portland Retro Gaming Expo* (https://www.youtube.com/watch?v=cuTJpZ99P0c&t=9m25s). Archived (https://ghostarchive.org/varchive/youtube/20211221/cuTJpZ99P0c) from the original on 2021-12-21. Retrieved May 12, 2017 – via YouTube.
27. Barton, Matt; Loguidice, Bill (February 28, 2008). "A History of Gaming Platforms: Atari 2600 Video Computer System/VCS" (https://web.archive.org/web/20181224184727/http://www.gamasutra.com/view/feature/3551/a_history_of_gaming_platforms_.php?page=5). *Gamasutra*. p. 5. Archived from the original (http://www.gamasutra.com/view/feature/3551/a_history_of_gaming_platforms_.php?page=5) on December 24, 2018. Retrieved July 15, 2009.
28. Graham, Lawrence D. (1999). "Video Game Wars". *Legal Battles that Shaped the Computer Industry*. Greenwood Publishing Group. pp. 27–30. ISBN 978-0-585-39311-7.
29. Loguidice, Bill; Barton, Matt (2009). "Pac-Man (1980): Japanese Gumption, American Consumption". *Vintage Games: An Insider Look at the History of Grand Theft Auto, Super Mario, and the Most Influential Games of All Time* (https://archive.org/details/vintagegamesinsi00logu_076). Focal Press. pp. 185 (https://archive.org/details/vintagegamesinsi00logu_076/page/n197)–186. ISBN 978-0-240-81146-8.
30. Tommervik, Allan (January 1982). "The Great Arcade/Computer Controversy / Part 1: The Publishers and the Pirates" (http://www.cgwmuseum.org/galleries/index.php?year=1982&pub=6&id=3). *Softline*. p. 18. Retrieved 13 July 2014.

31. Kent, Steven (2001). "The Fall". *The Ultimate History of Video Games*. Three Rivers Press. pp. 227–228. ISBN 978-0-7615-3643-7.
32. Fulton, Steve (August 21, 2008). "Atari: The Golden Years -- A History, 1978-1981" (https://web.archive.org/web/20181010011309/http://www.gamasutra.com/view/feature/3766/atari_the_golden_years__a_.php?print=1). *Gamasutra*. Archived from the original (http://www.gamasutra.com/view/feature/3766/atari_the_golden_years__a_.php?print=1) on October 10, 2018. Retrieved October 14, 2009.
33. Ellis, David (2004). "The Atari VCS (2000)" (https://archive.org/details/officialpricegui00davi). *Official Price Guide to Classic Video Games* (https://archive.org/details/officialpricegui00davi/page/98). Random House. pp. 98–99 (https://archive.org/details/officialpricegui00davi/page/98). ISBN 978-0-375-72038-3.
34. Holt, Kris (November 5, 2025). "Pac-Man and Other Namco Games are Coming to Atari 50 as Part of a Paid Expansion on November 13" (https://web.archive.org/web/20251106091556/https://www.engadget.com/gaming/pac-man-and-other-namco-games-are-coming-to-atari-50-as-part-of-a-paid-expansion-on-november-13-175131686.html). *Engadget*. Archived from the original (https://www.engadget.com/gaming/pac-man-and-other-namco-games-are-coming-to-atari-50-as-part-of-a-paid-expansion-on-november-13-175131686.html) on November 6, 2025. Retrieved November 6, 2025.
35. McFerran, Damien (November 6, 2025). "Atari 2600+ Pac-Man Edition - An Eye-Catching Respray Bundled With A Stunning New Port" (https://www.timeextension.com/reviews/atari-2600plus-pac-man-edition-an-eye-catching-respray-bundled-with-a-stunning-new-port). *Time Extension*. Gamer Network. Retrieved November 13, 2025.
36. Corderi, Victoria (March 30, 1982). "Local Video-game Freaks Gobble Up Home Pac-Man" (https://news.google.com/newspapers?id=6K8lAAAAIBAJ&sjid=H_QFAAAAIBAJ&pg=1848,2535505). *The Miami News*. Retrieved February 28, 2012.
37. "Apathy crushes video game industry" (https://books.google.com/books?id=KG2uOEFx_VIC&pg=PA6). *Army Host*. **10** (4). Club Management Directorate, The Adjutant General Center: 6. 1983. "Almost 7 million Pac-Man game cartridges were sold last year"
38. *Cartridge Sales Since 1980*. Atari Corp. Via "The Agony & The Ecstasy". *Once Upon Atari*. Episode 4. Scott West Productions. August 10, 2003. 23 minutes in.
39. Green, Mark J.; Berry, John Francis (1985). *The Challenge of Hidden Profits: Reducing Corporate Bureaucracy and Waste* (https://books.google.com/books?id=iYa3AAAAIAAJ). W. Morrow. p. 35. ISBN 978-0-688-03986-8. "By 1981, Atari's sales grew to $1 billion as it controlled about 75 percent of the fast-growing video game market. The dizzying climb continued into 1982, with Pac-Man alone bringing in over $200 million."
40. Katz, Arnie; Kunkel, Bill (May 1982). "The A-Maze-ing World of Gobble Games" (http://www.ataricompendium.com/archives/magazines/electronic_games/electronic_games_may82.pdf#page=62) (PDF). *Electronic Games*. **1** (3): 62–63 [63]. Archived (https://web.archive.org/web/20190130000909/http://www.ataricompendium.com/archives/magazines/electronic_games/electronic_games_may82.pdf) (PDF) from the original on January 30, 2019. Retrieved 3 February 2012.
41. Hubner, John; Kistner, William F. (28 November 1983). "The Industry: What went wrong at Atari?" (https://books.google.com/books?id=sy8EAAAAMBAJ&pg=PA157). *InfoWorld*. Vol. 5, no. 48. InfoWorld Media Group, Inc. pp. 151–158 (157). ISSN 0199-6649 (https://search.worldcat.org/issn/0199-6649).
42. "Designer Profile: Chris Crawford (Part 2)" (http://www.cgwmuseum.org/galleries/issues/cgw_34.pdf#page=56) (PDF). *Computer Gaming World*. Jan–Feb 1987. pp. 56–59. Archived (https://web.archive.org/web/20181114182231/http://www.cgwmuseum.org/galleries/issues/cgw_34.pdf) (PDF) from the original on November 14, 2018. Retrieved November 1, 2013.
43. Vendel, Curt (May 28, 2009). "Site News" (https://web.archive.org/web/20101206090952/http://www.atarimuseum.com/whatsnew/2009-MAY-28.html). *Atari Museum*. Archived from the original (http://www.atarimuseum.com/whatsnew/2009-MAY-28.html) on 2010-12-06. Retrieved 2021-11-27.
44. "Pac-Man: Atari VCS" (https://archive.org/details/1983_Software_Encyclopedia_Number_1_1983_Reese_Communications_US/page/n27). *Electronic Games* (1983 Software Encyclopedia): 28. 1983.

45. "Fall 1982 Complete Home Video Games Buyer's Guide" (https://archive.org/stream/Video_Games_Player_Vol_1_No_1_1982-09_Carnegie_Publications_US#page/n58/mode/1up). *Video Games Player*. Vol. 1, no. 1. Illustrated by Kris Boyd. Carnegie Publications. September 1982. p. 59. Retrieved May 9, 2017.
46. "Software Report Card" (https://archive.org/details/Video_Games_Player_Vol_1_No_1_1982-09_Carnegie_Publications_US/page/n61/mode/2up). *Video Games Player*. Vol. 1, no. 1. United States: Carnegie Publications. September 1982. pp. 62–3.
47. "Video Game Explosion! We rate every game in the world" (https://archive.org/details/Electronic_Fun_with_Computer_Games_Vol_01_No_02_1982-12_Fun_Games_Publishing_US/page/n11/mode/2up). *Electronic Fun with Computers & Games*. Vol. 1, no. 2. December 1982. pp. 12–7.
48. Harmetz, Aljean (October 4, 1982). "Home Video Games Nearing Profitability Of The Film Business" (https://www.nytimes.com/1982/10/04/arts/home-video-games-nearing-profitability-of-the-film-business.html). *The New York Times*. Archived (https://web.archive.org/web/20191231172215/https://www.nytimes.com/1982/10/04/arts/home-video-games-nearing-profitability-of-the-film-business.html) from the original on December 31, 2019. Retrieved April 6, 2021.
49. Wiswell, Phil (March 1983). "New Games From Well-Known Names" (https://archive.org/stream/Video_Games_Volume_1_Number_06_1983-03_Pumpkin_Press_US#page/n67/mode/2up). *Video Games*. **1** (6): 71. Retrieved May 26, 2014.
50. "Strange Games" (http://www.cgwmuseum.org/galleries/issues/softline_2.4.pdf#page=49) (PDF). *Softline*. March 1983. p. 49. Archived (https://web.archive.org/web/20180703043430/http://www.cgwmuseum.org/galleries/issues/softline_2.4.pdf) (PDF) from the original on July 3, 2018. Retrieved July 28, 2014.
51. "Complete Games Guide" (https://retrocdn.net/images/9/98/CompleteGuideToConsoles_UK_01.pdf#page=46) (PDF). *Computer and Video Games* (Complete Guide to Consoles): 46–77. 16 October 1989.
52. Harris, Craig (June 27, 2006). "Top 10 Tuesday: Worst Coin-op Conversions" (https://www.ign.com/articles/2006/06/28/top-10-tuesday-worst-coin-op-conversions). *IGN*. Archived (https://web.archive.org/web/20161114002148/https://www.ign.com/articles/2006/06/28/top-10-tuesday-worst-coin-op-conversions) from the original on November 14, 2016. Retrieved July 15, 2009.
53. Buchanan, Levi (August 26, 2008). "Top 10 Best-Selling Atari 2600 Games" (https://www.ign.com/articles/2008/08/26/top-10-best-selling-atari-2600-games). *IGN*. Archived (https://web.archive.org/web/20161024200907/https://www.ign.com/articles/2008/08/26/top-10-best-selling-atari-2600-games) from the original on October 24, 2016. Retrieved July 15, 2009.
54. Kohler, Chris (March 13, 2009). "Racing the Beam: How Atari 2600's Crazy Hardware Changed Game Design" (https://www.wired.com/gamelife/2009/03/racing-the-beam/). *Wired*. Archived (https://web.archive.org/web/20140910053052/https://www.wired.com/2009/03/racing-the-beam/) from the original on September 10, 2014. Retrieved July 29, 2009.
55. Hubner, John; Kistner, William F. Jr. (November 28, 1983). "What went wrong at Atari?" (https://archive.org/stream/Infoworld-1983-11-28#page/n152/mode/1up). *InfoWorld*. Vol. 5, no. 48. InfoWorld Media Group, Inc. p. 157. ISSN 0199-6649 (https://search.worldcat.org/issn/0199-6649).
56. Buchanan, Levi (November 26, 2008). "Top 10 Videogame Turkeys" (https://www.ign.com/articles/2008/11/26/top-10-videogame-turkeys). *IGN*. Archived (https://web.archive.org/web/20160322110317/https://www.ign.com/articles/2008/11/26/top-10-videogame-turkeys) from the original on March 22, 2016. Retrieved July 15, 2009.
57. Kent, Steven (2001). "The Fall". *The Ultimate History of Video Games*. Three Rivers Press. pp. 237–239. ISBN 978-0-7615-3643-7.
58. Staff (December 2004). "This Month in Gaming History". *Game Informer*. No. 140. GameStop. p. 202.
59. Taylor, Alexander L. (December 20, 1982). "Pac-Man Finally Meets His Match" (https://content.time.com/time/magazine/article/0,9171,923197,00.html). *Time*. Vol. 120, no. 25. Retrieved September 30, 2009.

60. Pollack, Andrew (1982-12-19). "THE GAME TURNS SERIOUS AT ATARI (Published 1982)" (https://www.nytimes.com/1982/12/19/business/the-game-turns-serious-at-atari.html). *The New York Times*. p. Section 3, Page 1. ISSN 0362-4331 (https://search.worldcat.org/issn/0362-4331). Retrieved 2021-02-18.
61. Kent, Steven (2001). "The Fall". *The Ultimate History of Video Games*. Three Rivers Press. p. 229. ISBN 978-0-7615-3643-7.

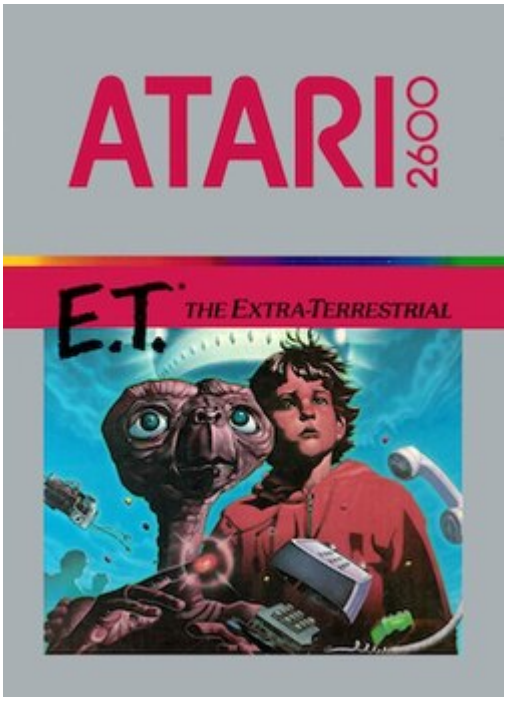
E.T. the Extra-Terrestrial (video game)

E.T. the Extra-Terrestrial is a 1982 adventure video game developed and published by Atari, Inc. for the Atari 2600, based on the film of the same name. The game's objective is to guide the eponymous character through various screens to collect three pieces of an interplanetary telephone that will allow him to contact his home planet.

The game was designed by Howard Scott Warshaw, who intended it to be an innovative adaptation, but Atari held unrealistic expectations for sales based on the international box-office success of the film. Negotiations for the game rights ended in late July 1982, giving Warshaw just over five weeks to develop the game in time to meet the production schedule for the 1982 Christmas season.[3] The final release received negative reviews and is often cited as one of the worst video games of all time, as well as one of the biggest commercial failures in video game history. It is cited as a major contributing factor to the video game crash of 1983, and has been frequently referenced and mocked in popular culture as a cautionary tale about the dangers of rushed game development and studio interference.

In what was once deemed only an urban legend, reports from 1983 stated that as a result of overproduction and returns, unsold cartridges of *E.T.* were secretly buried in a landfill in Alamogordo, New Mexico, and covered with a layer of concrete. In April 2014, diggers hired to investigate the claim confirmed that the landfill contained several *E.T.* cartridges, among other games.[4][5][6] James Heller, the former Atari manager who was in charge of the burial, was at the excavation, and admitted to the Associated Press that 728,000 cartridges of various games (not just *E.T.*) were buried.[7] Marty Goldberg, co-author of the book *Atari Inc.: Business Is Fun*, added that the dump was in fact a clearing out of the Texas Atari manufacturing plant's unused cartridge stock of a number of titles, as well as console and computer parts.[8] According to the 2014 documentary *Atari: Game Over*, only 10% of the approximately 1,300 recovered were *E.T.* cartridges.

E.T. the Extra-Terrestrial



Atari's silver label box art featuring the titular character and his friend Elliot, two of the main characters from the original film

Developer	Atari, Inc.
Publishers	Atari, Inc.
Designer	Howard Scott Warshaw
Programmer	Howard Scott Warshaw
Artists	Howard Scott Warshaw Jerome Domurat
Platform	Atari 2600
Release	NA: December 1982[2] JP: May 1983[1]
Genre	Adventure
Mode	Single-player

Gameplay

E.T. meets Elliott in a field of wells. Reese's Pieces are scattered throughout the world and are represented by black dots.

E.T. is an adventure game in which players control the alien E.T. from a top-down perspective. The objective is to collect three pieces of an interplanetary telephone. The pieces are found scattered randomly throughout various pits (also referred to as wells). There is no overall time limit.[9] The player is provided with an on-screen energy bar, which decreases when E.T. performs any actions (including moving, teleporting, or falling into a pit, as well as levitating back to the top). To prevent this, E.T. can collect Reese's Pieces, which are used to restore his energy or, when nine are collected, E.T. can call Elliott to obtain a piece of the telephone, or the player can save the candy pieces for bonus points at the end. After the three phone pieces have been collected, the player must guide E.T. to an area where he can use the phone, which allows him to call his home planet. Once the call is made, a clock appears at the top right of the screen; E.T. has to arrive at the landing zone before it reaches zero.[10] Once E.T. gets to the forest where his ship abandoned him and stands and waits in the designated area for the ship to come, the ship will appear on-screen and take him back to his home planet. Then the game starts over, with the same difficulty level, while changing the location of the telephone pieces. The score obtained during the round is carried over to the next iteration.[11] E.T. has three lives and if he dies within those three lives Elliott will come in and revive him. E.T. can get a fourth life if the player finds a geranium in one of the wells. According to the manual, a game can end "when E.T. runs out of energy or when you decide to quit playing".[10]

The game is divided into six environments, each representing a different setting from the film. To accomplish the objective, the player must guide E.T. into the wells. Once all items found in a well are collected, the player must levitate E.T. out of them.[12] An icon at the top of each screen represents the current area, each area enabling the player to perform different actions. Antagonists include a scientist who takes E.T. for observation and an FBI agent who chases the alien to confiscate one of the collected telephone pieces or candy.[11] The game offers diverse difficulty settings that affect the number and speed of humans present and the conditions needed to accomplish the objective.

Development

Following the commercial success of *E.T. the Extra-Terrestrial* in June 1982, Steve Ross, CEO of Atari's parent company Warner Communications, began negotiations with the film's director Steven Spielberg and its distributor Universal Pictures to acquire a license to produce a video game based on the film. Later that month, Warner announced its exclusive worldwide rights to market coin-operated and console games based on *E.T.*.[13] Although the exact details of the transaction were not disclosed in the announcement, it was later reported that Atari had paid US$20–25 million ($67–83 million when adjusted for inflation to 2026) for the rights, a high figure for video game licensing at the time.[14][15][16][17] When asked by Ross what he thought

about making an *E.T.*-based video game, Atari CEO Ray Kassar replied: "I think it's a dumb idea. We've never really made an action game out of a movie."[16] An arcade game based on the *E.T.* property had also been planned, but this was deemed to be impossible given the short deadline.[18]

On July 27, 1982, after negotiations were completed, Kassar called Howard Scott Warshaw to commission him as developer of the video game adaptation.[19][20] Kassar informed him that Spielberg asked for Warshaw specifically and that development had to be completed by September 1 to meet a production schedule for the Christmas holiday season. Although Warshaw had spent over a year working on consecutive development schedules for games (seven months working on *Yars' Revenge* and six months on *Raiders of the Lost Ark*), he accepted the offer based on the challenge of completing a game in a short time frame and at Spielberg's request.[18][20] Warshaw considered it an opportunity to develop an innovative Atari 2600 game based on a film he enjoyed, "provided we reach the right arrangement".[20][21]:9:34 Kassar reportedly offered Warshaw US$200,000 and an all-expenses-paid vacation to Hawaii in compensation.[18] Warshaw was flown via private jet to Warner Bros. Studios to meet with Spielberg.[20][22]

Howard Scott Warshaw (shown in 2015) developed the game within less than six weeks.

Warshaw used those days to design the structure and segmented the concept into four ideas: world, objective, the path to achieve the objective, and obstacles. He envisioned a six-sided world that players could "float" around as the setting, and adapted part of the film's plot, E.T. phoning home, as the goal.[20] The player would need to gather parts for a phone to call his ship and arrive at a special landing site to achieve this goal.[23] Warshaw considered obstacles as an element that would determine the success of a game, and experienced difficulties when taking into account the time constraints and technical limitations of the console. Inspired by the film, adults were implemented as antagonists that would chase the alien. Pits were devised as an element to hide the pieces of the phone as well as expand the game world.[20]

Warshaw and other Atari executives presented this design to Spielberg, who was not enthusiastic.[19] According to Warshaw, Spielberg asked him, "Couldn't you do something more like *Pac-Man*?"[24] Believing the concept too derivative of a common game design, Warshaw proceeded with his concept, which he believed would capture the sentimentality he saw in the original film[15][19] (Warshaw later stated that, in retrospect, Spielberg's idea might have had merit).[19] He spent the remaining time programming. Atari graphic designer Jerome Domurat assisted Warshaw with creating graphics for the game.[20] Atari anticipated enormous sales based on the popularity of the film, as well as the stability of the video game industry at the time. Due to time limitations, Atari skipped audience testing.[25] Emanual Gerard, then part of the Office of the President of Warner, later suggested that the company had fallen into a false sense of security by the success of its previous releases, particularly its console version of *Pac-Man*, which was commercially successful despite poor critical reaction.[26]

Reception

Steven Spielberg (shown in 1993), who directed the eponymous film that inspired the game, suggested a *Pac-Man*-style game when he first saw Warshaw's designs.

Anticipation for the *E.T.* video game was high, and Atari hoped it would be a sought-after Christmas gift.[24] In early December 1982, *The New York Times* reported that video games based on successful films, specifically *E.T.*, would become "an increasingly profitable source" for video game development.[27] At first, retailers ordered more supplies than what was expected to be sold, but Atari received an increasing number of order cancellations as new competitors entered the market, which they had not anticipated.[26][28][29] John Hubner and William Kistner of *InfoWorld* have attributed the cancellations to changes Atari initiated in its relationship to distributors. On November 1, 1982, Atari informed them that their contracts were canceled and that exclusive deals would be established with select distributors. Hubner and Kistner believed the action prompted retailers to cancel orders, which Atari had not properly tracked.[30]

E.T. enjoyed initial commercial success, being among the top four on *Billboard* magazine's "Top 15 Video Games" sales list in December 1982 and January 1983.[31] The game sold over 2.6 million copies by the end of 1982. However, at least 669,000 copies were later returned in 1983.[32] One retailer said that "mostly grandmothers" bought the game; because of word-of-mouth, children preferred the best-selling *Pitfall!*[14]

Hubner and Kistner commented that the large number of produced cartridges may have resulted in excess inventory regardless of *E.T.*'s success.[30] Even though the game was a bestseller during the holiday season, retailers still stated that its sales figures did not meet expectations. Warner Communications also expressed disappointment at the number of sales.[17] Lower-than-expected sales figures combined with excess inventory, which produced a negative supply and demand event, prompted retailers to repeatedly discount the price. According to Ray Kassar, about three and a half million of the four million produced were sent back to the company as unsold inventory or customer returns.[33] Despite sales figures, the quantity of unsold merchandise, coupled with the expensive film license and the large number of returns, made *E.T.* a major financial failure for Atari.[34]

Critical response

Upon release, the game was criticized by reviewers, with the gameplay and visuals both areas of concern. *New York* magazine's Nicholas Pileggi described it as a loser compared to other games Atari could have released during the time period, such as *Donkey Kong* and *Frogger*,[29] and *Video Games* called it "really for kids (the littler ones)".[35] In 1984, the game was named by readers of *Softline* as the second-worst Atari program of 1983, after *Congo Bongo*.[36]

Nevertheless, the game received some positive contemporary reviews. An editor for *The Miami Herald* described it as difficult to learn to play, but believed that doing so was worth it.[37] For *Vidiot*'s Kevin Christopher, "about the only flaw with an otherwise A-1 game" was that E.T. repeatedly falls back into holes.[38] *Arcade Express* scored it six out of ten in December 1982.[39] Len Albin of *TV Guide* wrote that "after seeing the motion picture *E.T.* 14 times, there's no more suspense left—unless you bring home this one-player cartridge", adding that "it's certain that your patience won't run out—if you're a kid. (Adults may prefer to wait for a game based on *My Dinner with Andre*.)"[40]

The player must navigate E.T. into wells to search for pieces of the interplanetary telephone. This aspect of the game was negatively received by players and critics.

Later reviews were comparably negative. Kevin Bowen of GameSpy's Classic Gaming called the gameplay "convoluted and inane", also criticizing its story for departing from the serious tone of the film,[11] and author Steven Kent described the game as "infamous" within the industry, citing "primitive" graphics, "dull" gameplay, and a "disappointing story".[16] Children who scavenged the landfill where surplus Atari cartridges were buried gave away the *E.T.* cartridges, with one child noting that the game "sucked", and was impossible to complete.[41][42] Modern critics have also bemoaned the repeated need to fall down pits.[16][43] Emru Townsend of *PC World* discussed the game with a group who described the pits as "monotonous".[43] Sean "Seanbaby" Reiley claimed that the pits are "time-consuming" and "difficult to leave without falling back in".[44] Trent Ward, formerly a reviewer for *Next Generation* described returning the game as a result of the pits.[45] Classic Gaming argued that despite the negative reception, the game can be enjoyable after the player has learned to navigate the pits.[46]

In published materials written more than a decade after its initial release, *E.T.* has frequently been listed among the worst video games ever made. Reiley ranked it number one in a list of the 20 worst games of all time in *Electronic Gaming Monthly*'s 150th issue.[44] Interviewed for the PBS documentary *The Video Game Revolution*, Michael Dolan, deputy editor of *FHM* magazine, gave *E.T.* a similar ranking.[47] Townsend placed *E.T.* at the top of his list of the worst video games, and said that "about a third of the people I quizzed came up with this title almost instantly, and it's not hard to see why."[43] GameTrailers ranked it second worst on their "Top Ten Best and Worst Games of All Time" list.[48]

Critics often attribute the poor quality to the short development time.[49][50] Townsend commented that the rushed development was very apparent.[43] Warshaw's contributions have been met with mixed responses. Classic Gaming called the game poorly designed, while *IGN*'s Levi Buchanan stated the "impossibly tight schedule" given to Warshaw absolves him of blame.[51] Warshaw does not express regret for his part in *E.T.*, and believes he created a good game given the time available to him.[15][20]

> People worry I might be sensitive about the *E.T.* debacle, but the fact is I'm always happy to discuss it. After all, it was the fastest game ever done, it was a million seller, and of the thousands of 2600 games, how many others are still a topic? Another thing I like to think about is having done *E.T.* (consistently rated among the worst games of all time) and *Yars' Revenge* (consistently rated as one

Impact

> of the best) I figure I have the unique distinction of having the greatest range of any game designer in history.
>
> —Howard Scott Warshaw on *E.T.*'s reception[22]

E.T. is often cited as one of the most important video games.[52][53][54] *GamePro*, GameTrailers and Bowen cite the game as the first poor quality-film–video-game tie-in.[11][48][55] Patrick O'Luanaigh of SCi Games called it the most famous disaster story among film-inspired video games as well as within the industry.[56] GamePro publication named it second-worst movie game ever, citing it as an example of how poor gameplay can bring negative reception to strong licenses.[55]

Effect on Atari

> [Y]ou are probably used to hearing the words "worst game ever". Personally I dislike the phrase, because my first response is always: "Really? Did it cause the crash of the entire western games industry? No? Well, then *E.T.* for the Atari 2600 remains the worst game ever."
>
> —*The Escapist*'s Ben "Yahtzee" Croshaw on the game's infamy.[57]

As early as January 1983, after Atari admitted that the game had sold poorly, an industry executive said that "the lesson of *E.T.* has not been lost on the industry".[14] The game is associated as a cause of the video game industry crisis of 1983.[58][59][60] *Billboard* magazine's Earl Paige reported that the large number of unsold *E.T.* games, along with an increase in competition, prompted retailers to demand official return programs from video game manufacturers.[61] However, even before *E.T* was released, the industry was in an overall economic downturn from multiple factors, and *E.T* itself did not contribute greatly to the collapse, outside of Atari, by mid-1983. The release timing led to the game gaining the reputation of being responsible for the 1983 crash.[34]

By the end of 1982, Atari had begun to lose dominance as more competitors entered the market.[17][14] GameSpy's Classic Gaming called *E.T.* Atari's biggest mistake, as well as the largest financial failure in the industry.[46][62] Reiley commented that the game's poor quality was responsible for ending the product life of the Atari 2600.[44] Occurring soon after *Pac-Man*'s negative critical response on the Atari 2600, *E.T.*'s poor reception was attributed by Kent to have had a negative impact on Atari's reputation and profitability.[16] Authors Nick Montfort and Ian Bogost echoed similar comments about *Pac-Man* and *E.T.*'s combined effect on the company's reputation and the industry's reaction.[63] Buchanan also cited the game as a factor in Atari and the industry's crash. He stated that the large amount of unsold merchandise was a financial burden to Atari, which pushed the company into debt.[51]

Legacy

Atari video game burial

In September 1983, the *Alamogordo Daily News* of Alamogordo, New Mexico, reported in a series of articles that between ten and twenty[64] semi-trailer truckloads of Atari boxes, cartridges, and systems from an Atari storehouse in El Paso, Texas, were crushed and buried at the landfill within the city, which was covered with concrete.[65] It was the first time Atari dealt with the landfill,

which was chosen because no scavenging was allowed and its garbage was crushed and buried nightly. Atari officials and others gave differing reports of what was buried,[66][67][68] but it has been speculated that most unsold copies of *E.T.* are buried in this landfill, crushed and encased in cement.[69] The story of the buried cartridges was erroneously regarded by some as an urban legend, with skeptics—including Warshaw—disregarding the official accounts.[15][50][56]

Evidence of *E.T.*, *Centipede* and other Atari materials uncovered during the excavation

On May 28, 2013, the Alamogordo City Commission approved Fuel Industries, an Ottawa-based entertainment company, for six months of landfill access both to create a documentary about the legend and to excavate the burial site.[4] On April 26, 2014, remnants of *E.T.* and other Atari games were discovered in the early hours of the excavation.[6][70] The burial of the *E.T.* cartridges is also the basis for the independent 2014 science fiction comedy *Angry Video Game Nerd: The Movie*, based on the webseries of the same name,[71] and features Warshaw.[72]

In December 2014, the Smithsonian Institution added an excavated cartridge of *E.T.* to their collection.[73][74] In 2015, The Henry Ford museum added to their collection several excavated cartridges and a video touchpad, a sample of landfill dirt taken from the site of the burial, and items of clothing worn by the excavation team. A selection of these items are on permanent display.[75][76] The Centre for Computing History in Cambridge, England, also received some artefacts from the desert, which are on permanent display in the museum gallery.[77]

Attempts to improve the game

In 2006, Dennis Debro disassembled *E.T.*, added comments to the generated source code, and released it to the public.[78] In January 2013, programmer David Richardson released several unofficial fixes for the game.[78][79][80] Patches included the removal of pixel-perfect collision detection, which caused E.T. to fall into a pit every time his sprite touched a pit entry.[79]

See also

Video games portal

1980s portal

- List of Atari 2600 games

References

1. "第2回：TVゲームグラフティー[〜1984年日本編] テレビゲーム・ファーストジェネレーション - コミニー[Cominy] / ブログ" (https://web.archive.org/web/20130126142952/https://www.famitsu.com/guc/blog/tvgame/11475.html). *www.famitsu.com*. Archived from the original (https://www.famitsu.com/guc/blog/tvgame/11475.html) on January 26, 2013. Retrieved December 7, 2025.

2. "E.T. Needs Your Help! (advertisement)" (https://www.atariage.com/magazines/magazine_page.php?MagazineID=4&CurrentPage=3). *Atari Age*. Vol. 1, no. 4. The Atari Club Inc. November–December 1982. p. 3. Archived (https://web.archive.org/web/20200514181420/https://www.atariage.com/magazines/magazine_page.php?MagazineID=4&CurrentPage=3) from the original on May 14, 2020. Retrieved May 14, 2020.
3. Scott, Stilphen. "DP Interviews" (http://www.digitpress.com/library/interviews/interview_howard_scott_warshaw.html). Digitpress.com. Archived (https://web.archive.org/web/20140831054249/http://www.digitpress.com/library/interviews/interview_howard_scott_warshaw.html) from the original on August 31, 2014. Retrieved March 6, 2014.
4. Goldsmith, Alex (May 30, 2013). "Alamogordo approves Atari excavation" (https://web.archive.org/web/20130719024233/http://www.krqe.com/dpp/news/southeast/alamogordo-approves-atari-excavation). ALAMOGORDO, N.M.: KRQE. Archived from the original (http://www.krqe.com/dpp/news/southeast/alamogordo-approves-atari-excavation) on July 19, 2013. Retrieved May 31, 2013.
5. Schreier, Jason (April 26, 2014). "E.T. Found In New Mexico Landfill" (https://kotaku.com/e-t-found-in-new-mexico-landfill-1568100161). *Kotaku*. Archived (https://web.archive.org/web/20150211071907/http://kotaku.com/e-t-found-in-new-mexico-landfill-1568100161) from the original on February 11, 2015. Retrieved February 4, 2015.
6. Llorca, Juan Carlos (September 28, 1983). "Diggers Find Atari's E.T. Games in Landfill" (https://abcnews.go.com/Entertainment/wireStory/diggers-ready-unearth-ataris-games-23477542). *ABC News*. Archived (https://web.archive.org/web/20140426215118/https://abcnews.go.com/Entertainment/wireStory/diggers-ready-unearth-ataris-games-23477542) from the original on April 26, 2014. Retrieved April 26, 2014.
7. "Diggers find Atari's E.T. games in landfill" (https://web.archive.org/web/20140427193706/http://www.usatoday.com/story/tech/2014/04/26/diggers-find-ataris-et-games-in-landfill/8232609/). *USA Today*. April 26, 2014. Archived from the original (https://eu.usatoday.com/story/tech/2014/04/26/diggers-find-ataris-et-games-in-landfill/8232609/) on April 27, 2014. Retrieved April 26, 2014.
8. Poeter, Damon (June 5, 2013). "Debunking the Myth of the Buried Atari E.T. Cartridges" (https://uk.pcmag.com/computer-console-gaming-products/15044/news/debunking-the-myth-of-the-buried-atari-et-cartridges). *PCMag UK*. Archived (https://web.archive.org/web/20180906195942/https://uk.pcmag.com/computer-console-gaming-products/15044/news/debunking-the-myth-of-the-buried-atari-et-cartridges) from the original on September 6, 2018. Retrieved September 6, 2018.
9. Harris, John (November 3, 2017). "Review Roundup: Was E.T. Really the "Worst Game Ever"?" (https://gamehistory.org/et-atari-reviews-worst-game-ever/). *gamehistory.org*. Video Game History Foundation. Archived (https://web.archive.org/web/20210303022809/https://gamehistory.org/et-atari-reviews-worst-game-ever/) from the original on March 3, 2021. Retrieved July 16, 2020.
10. "E.T.* THE EXTRA-TERRESTRIAL manual" (https://atariage.com/manual_html_page.php?SoftwareLabelID=157). *atariage.com*. Atari. Archived (https://web.archive.org/web/20210313171423/https://atariage.com/manual_html_page.php?SoftwareLabelID=157) from the original on March 13, 2021. Retrieved July 16, 2020.
11. Bowen, Kevin. "Game of the Week: E.T. the Extra-Terrestrial" (https://web.archive.org/web/20081010005643/http://classicgaming.gamespy.com/View.php?view=GameMuseum.Detail&id=290). Classic Gaming. Archived from the original (http://classicgaming.gamespy.com/View.php?view=GameMuseum.Detail&id=290) on October 10, 2008. Retrieved August 18, 2014.
12. "Good Game Shocks the 80s" (https://www.abc.net.au/tv/goodgame/video/default.htm?year=2008). *Good Game*. Series 4. Episode 25. Australian Broadcasting Corporation. October 6, 2008. Event occurs at 3:58. Archived (https://web.archive.org/web/20091008041052/http://www.abc.net.au/tv/goodgame/stories/s2380512.htm) from the original on October 8, 2009. Good Game Stories - Game Review: E.T. the Extra-Terrestrial (http://www.abc.net.au/tv/goodgame/stories/s2380512.htm). Retrieved September 21, 2009.

13. "Atari Gets 'E.T.' Rights" (https://www.nytimes.com/1982/08/19/business/atari-gets-et-rights.html). *The New York Times*. August 19, 1982. p. D6. Archived (https://web.archive.org/web/20200514191357/https://www.nytimes.com/1982/08/19/business/atari-gets-et-rights.html) from the original on May 14, 2020.
14. Harmetz, Aljean (January 15, 1983). "New Faces, More Profits For Video Games" (https://news.google.com/newspapers?id=jnhcAAAAIBAJ&pg=4201,2482231). *Times-Union*. p. 16. Archived (https://web.archive.org/web/20190801133617/https://news.google.com/newspapers?id=jnhcAAAAIBAJ&sjid=a1cNAAAAIBAJ&pg=4201,2482231) from the original on August 1, 2019. Retrieved February 28, 2012.
15. Keith, Phipps (February 2, 2005). "Howard Scott Warshaw" (https://www.avclub.com/howard-scott-warshaw-1798208406). *A.V. Club*. Archived (https://web.archive.org/web/20110605060828/http://www.avclub.com/articles/howard-scott-warshaw%2C13912/) from the original on June 5, 2011. Retrieved September 24, 2009.
16. Kent, Steven L. (2001). *The Ultimate History of Video Games* (https://archive.org/details/ultimatehistoryv00kent). Roseville, California: Prima. pp. 237 (https://archive.org/details/ultimatehistoryv00kent/page/n252)–239. ISBN 0-7615-3643-4.
17. "E.T. Starring in Sales of Toys" (https://www.nytimes.com/1982/12/13/business/et-starring-in-sales-of-toys.html). *The New York Times*. December 13, 1982. pp. D1, D8. Archived (https://web.archive.org/web/20200514193440/https://www.nytimes.com/1982/12/13/business/et-starring-in-sales-of-toys.html) from the original on May 14, 2020.
18. From The Washington Post (January 14, 1986). "Many Video Games Designers Travel Rags-to-Riches-to-Rags Journey" (https://www.latimes.com/archives/la-xpm-1986-01-14-fi-28063-story.html). *Los Angeles Times*. Archived (https://web.archive.org/web/20200514193941/https://www.latimes.com/archives/la-xpm-1986-01-14-fi-28063-story.html) from the original on May 14, 2020.
19. Bowen, Kevin. "ClassicGaming Expo 2000: Atari 2600 Keynote" (https://web.archive.org/web/20140109200808/http://classicgaming.gamespy.com/View.php?view=Articles.Detail&id=376). GameSpy. Archived from the original (http://classicgaming.gamespy.com/View.php?view=Articles.Detail&id=376) on January 9, 2014. Retrieved September 28, 2009.
20. Stilphen, Scott. "DP Interviews: Howard Scott Warshaw" (http://www.digitpress.com/library/interviews/interview_howard_scott_warshaw.html). *Digital Press: The Video Game Database*. Archived (https://web.archive.org/web/20170721041715/http://www.digitpress.com/library/interviews/interview_howard_scott_warshaw.html) from the original on July 21, 2017. Retrieved July 16, 2020.
21. "The Crash" (https://www.youtube.com/watch?v=RuHbRPoOEEA). *G4 Icons*. Season 2. Episode 14. G4techTV. Archived (https://web.archive.org/web/20151227090839/https://www.youtube.com/watch?v=RuHbRPoOEEA) from the original on December 27, 2015. Retrieved August 18, 2014.
22. Warshaw, Howard Scott. "Two questions I face constantly are..." (http://www.onceuponatari.com/archives/gamestm/070912.html) *onceuponatari.com*. Archived (https://web.archive.org/web/20181106035140/http://www.onceuponatari.com/archives/gamestm/070912.html) from the original on November 6, 2018. Retrieved July 17, 2020.
23. Brumfiel, Geoff (May 31, 2017). "Total Failure: The World's Worst Video Game" (https://web.archive.org/web/20200514194329/https://www.npr.org/2017/05/31/530235165/total-failure-the-worlds-worst-video-game). NPR. Archived from the original (https://www.npr.org/2017/05/31/530235165/total-failure-the-worlds-worst-video-game) on May 14, 2020. Retrieved May 9, 2020.
24. Hooper, Richard (February 22, 2016). "The man who made 'the worst video game in history' " (https://www.bbc.com/news/magazine-35560458). *BBC*. Archived (https://web.archive.org/web/20160804083251/http://www.bbc.com/news/magazine-35560458) from the original on August 4, 2016. Retrieved July 17, 2020.
25. Cummings, Betsy (December 2003). "How I got here". *Sales and Marketing Management*.
26. Pollack, Andrew (December 19, 1982). "The Game Turns Serious at Atari" (https://www.nytimes.com/1982/12/19/business/the-game-turns-serious-at-atari.html). *The New York Times*. p. F1. Archived (https://web.archive.org/web/20200515045553/https://www.nytimes.com/1982/12/19/business/the-game-turns-serious-at-atari.html) from the original on May 15, 2020.

27. "A Squeeze in Video Games" (https://www.nytimes.com/1982/12/07/business/a-squeeze-in-video-games.html). *The New York Times*. December 7, 1982. pp. D1, D5. Archived (https://web.archive.org/web/20200514194614/https://www.nytimes.com/1982/12/07/business/a-squeeze-in-video-games.html) from the original on May 14, 2020.
28. Cohen, Scott (1984). *Zap! The Rise and Fall of Atari* (https://archive.org/details/zaprisefall00cohe). McGraw Hill Book Company. p. 120. ISBN 0-07-011543-5.
29. Pileggi, Nicholas (January 24, 1983). "The Warner Case: Curiouser and Curioser" (https://books.google.com/books?id=mcoBAAAAMBAJ&pg=PA32). *New York*. Vol. 16, no. 4. New York Media, LLC. pp. 26–32. ISSN 0028-7369 (https://search.worldcat.org/issn/0028-7369).
30. Hubner, John; William F. Kistner Jr. (December 5, 1983). "What went wrong at Atari" (https://books.google.com/books?id=6C8EAAAAMBAJ&pg=PA145). *InfoWorld*. Vol. 5, no. 49. pp. 145–155. ISSN 0199-6649 (https://search.worldcat.org/issn/0199-6649).
31. "Billboard Top 15 Video Games" (https://books.google.com/books?id=PSQEAAAAMBAJ&pg=PT35). *Billboard*. Vol. 95, no. 1. Nielsen Business Media, Inc. January 8, 1983. p. 36. ISSN 0006-2510 (https://search.worldcat.org/issn/0006-2510).
32. *Cartridge Sales Since 1980*. Atari Corp. Via "The Agony & The Ecstasy". *Once Upon Atari*. Episode 4. Scott West Productions. August 10, 2003. 23 minutes in.
33. Bruck, Connie (1995). *Master of the Game: Steve Ross and the Creation of Time Warner* (https://archive.org/details/masterofgamestev00bruc). Penguin Books. pp. 179 (https://archive.org/details/masterofgamestev00bruc/page/179)–180. ISBN 0-14-024454-9.
34. Lien, Tracey (June 3, 2014). "Why E.T. wasn't the worst game in history" (https://www.polygon.com/2014/6/3/5775026/e-t-myth-worst-game-ever). *Polygon*. Archived (https://web.archive.org/web/20140605223544/http://www.polygon.com/2014/6/3/5775026/e-t-myth-worst-game-ever) from the original on June 5, 2014. Retrieved April 1, 2023.
35. Wiswell, Phil (March 1983). "New Games From Well-Known Names" (https://archive.org/stream/Video_Games_Volume_1_Number_06_1983-03_Pumpkin_Press_US#page/n67/mode/2up). *Video Games*. p. 69. Archived (https://web.archive.org/web/20150705010619/https://archive.org/stream/Video_Games_Volume_1_Number_06_1983-03_Pumpkin_Press_US#page/n67/mode/2up) from the original on July 5, 2015. Retrieved May 26, 2014.
36. "The Best and the Rest" (http://www.cgwmuseum.org/galleries/index.php?year=1984&pub=6&id=16). *St.Game (Softline)*. Vol. 3, no. 3. March–April 1984. p. 49. ISSN 0745-4988 (https://search.worldcat.org/issn/0745-4988). Archived (https://web.archive.org/web/20140729222422/http://www.cgwmuseum.org/galleries/index.php?year=1984&pub=6&id=16) from the original on July 29, 2014. Retrieved July 28, 2014.
37. Vogt, Rick (March 5, 1983). "E.T. Game is Extra-Tough But Worth The Effort" (https://www.newspapers.com/clip/118202868/the-miami-herald/). *The Miami Herald*. p. 3C. Archived (https://web.archive.org/web/20230208050609/https://www.newspapers.com/clip/118202868/the-miami-herald/) from the original on February 8, 2023. Retrieved February 8, 2023.
38. Christopher, Kevin (February–March 1983). "ET Phones Home for the Holidays" (https://archive.org/stream/Vidiot_Vol_1_No_2_1983-03_CREEM_Magazine_US#page/n39/mode/2up). *Vidiot*. Vol. 1, no. 2. pp. 41–43. Archived (https://web.archive.org/web/20160316092741/https://archive.org/stream/Vidiot_Vol_1_No_2_1983-03_CREEM_Magazine_US#page/n39/mode/2up) from the original on March 16, 2016. Retrieved May 31, 2015.
39. "E.T./Videogame Cartridge (for Atari VCS)/Atari" (http://www.digitpress.com/library/newsletters/arcadeexpress/arcade_express_v1n10.pdf#page=7) (PDF). *Arcade Express*. Vol. 1, no. 10. December 19, 1982. p. 7. ISSN 0733-6039 (https://search.worldcat.org/issn/0733-6039). Archived (https://web.archive.org/web/20161006014350/http://www.digitpress.com/library/newsletters/arcadeexpress/arcade_express_v1n10.pdf#page=7) (PDF) from the original on October 6, 2016. Retrieved October 18, 2017.
40. Albin, Len (December 4, 1982). "A Holiday Shopping Guide: The Best Video Games of 1982" (https://archive.org/details/tvguidev30n491549dec41982exciter/page/n159/mode/2up). *TV Guide*. Vol. 30, no. 49. p. 54. Retrieved February 7, 2023.

41. Terdiman, Daniel (April 26, 2014). "Success! Atari E.T. games found in New Mexico dump" (https://www.cnet.com/news/success-atari-e-t-games-found-in-new-mexico-dump/). *CNET*. Archived (https://web.archive.org/web/20140427030105/http://www.cnet.com/news/success-atari-e-t-games-found-in-new-mexico-dump/) from the original on April 27, 2014. Retrieved April 27, 2014.
42. Llorca, Juan Carlos (April 26, 2014). "Diggers begin quest to unearth Atari's E.T. games" (https://web.archive.org/web/20140427015354/http://www.state-journal.com/ap%20general%20news/2014/04/26/diggers-begin-quest-to-unearth-atari-s-e-t-games). *The State Journal*. Associated Press. Archived from the original (http://www.state-journal.com/ap%20general%20news/2014/04/26/diggers-begin-quest-to-unearth-atari-s-e-t-games) on April 27, 2014. Retrieved April 27, 2014.
43. Townsend, Emru (October 23, 2006). "The 10 Worst Games of All Time" (http://www.pcworld.com/article/127579-2/the_10_worst_games_of_all_time.html). *PC World*. Archived (https://web.archive.org/web/20110906113825/http://www.pcworld.com/article/127579-2/the_10_worst_games_of_all_time.html) from the original on September 6, 2011. Retrieved January 24, 2007.
44. Reiley, Sean. "Seanbaby's EGM's Crapstravaganza: The 20 Worst Video Games of All Time. - #1: ET, The Extra Terrestrial (2600)" (http://www.seanbaby.com/nes/nes/egm01.htm). *Electronic Gaming Monthly*. Archived (https://web.archive.org/web/20170127084422/http://www.seanbaby.com/nes/nes/egm01.htm) from the original on January 27, 2017. Retrieved March 4, 2017.
45. *Next Generation* Staff (April 1998). "What the hell happened?" (https://archive.org/details/NEXT_Generation_40). *Next Generation*. Vol. 4, no. 40. Imagine Media. p. 47 (https://archive.org/details/NEXT_Generation_40/page/n48). ISSN 1078-9693 (https://search.worldcat.org/issn/1078-9693). "I remember buying E.T., taking it home, and turning it on. I fell into a hole and couldn't get out. I tried again. The same thing happened. I went all the way back to the store and demanded my money back. I think I bought some comics instead."
46. "ClassicGaming.com's Museum: Five Must-See 2600 Games" (https://web.archive.org/web/20081005015015/http://classicgaming.gamespy.com/View.php?view=ConsoleMuseum.Detail&id=10&game=4). GameSpy. Archived from the original (http://classicgaming.gamespy.com/View.php?view=ConsoleMuseum.Detail&id=10&game=4) on October 5, 2008. Retrieved September 25, 2009.
47. "History of Gaming: The Best and Worst Video Games of All Time" (https://www.pbs.org/kcts/videogamerevolution/history/best-n-worst.html). Public Broadcasting Service. Archived (https://web.archive.org/web/20111103220450/http://www.pbs.org/kcts/videogamerevolution/history/best-n-worst.html) from the original on November 3, 2011. Retrieved September 25, 2009.
48. "GT Countdown: Top Ten Best and Worst Games of All Time" (http://www.gametrailers.com/video/top-ten-gt-countdown/15147). GameTrailers. November 17, 2006. Archived (https://web.archive.org/web/20110606050950/http://www.gametrailers.com/video/top-ten-gt-countdown/15147) from the original on June 6, 2011. Retrieved September 25, 2009.
49. Elektro, Dan (August 8, 2003). "Secrets & Lies" (https://web.archive.org/web/20110607150749/http://www.gamepro.com/article/features/30666/secrets-lies/). *GamePro*. Archived from the original (http://www.gamepro.com/article/features/30666/secrets-lies/) on June 7, 2011. Retrieved September 29, 2009.
50. Montfort, Nick; Bogost, Ian (2009). *Racing the Beam: The Atari Video Computer System* (https://archive.org/details/racingbeamatariv00mont_656). MIT Press. p. 127 (https://archive.org/details/racingbeamatariv00mont_656/page/n139). ISBN 978-0-262-01257-7.
51. Buchanan, Levi (August 26, 2008). "IGN: Top 10 Best-Selling Atari 2600 Games" (http://retro.ign.com/articles/903/903024p1.html). *IGN*. Archived (https://web.archive.org/web/20110726161836/http://retro.ign.com/articles/903/903024p1.html) from the original on July 26, 2011. Retrieved September 21, 2009.
52. Montfort, Nick; Bogost, Ian (2009). *Racing the Beam: The Atari Video Computer System* (https://archive.org/details/racingbeamatariv00mont_656). MIT Press. p. 94 (https://archive.org/details/racingbeamatariv00mont_656/page/n106). ISBN 978-0-262-01257-7.

53. "The 52 Most Important Video Games of All Time" (https://web.archive.org/web/20080912054936/http://www.gamepro.com/article/features/110028/the-52-most-important-video-games-of-all-time/). *GamePro*. April 25, 2007. Archived from the original (http://www.gamepro.com/article/features/110028/the-52-most-important-video-games-of-all-time/) on September 12, 2008. Retrieved September 27, 2009.
54. Parish, Jeremy. "The Most Important Games Ever Made: #13: E.T." (http://www.1up.com/do/feature?cId=3124081&did=1) *1UP.com*. Retrieved July 1, 2006.
55. Smithee, Alan (July 1, 2004). "10 to 1: The Worst Movie Games Ever" (https://web.archive.org/web/20100525230638/http://www.gamepro.com/article/features/36530/10-to-1-the-worst-movie-games-ever/). *GamePro*. Archived from the original (http://www.gamepro.com/article/features/36530/10-to-1-the-worst-movie-games-ever/) on May 25, 2010. Retrieved September 28, 2009.
56. Morris, Dave (2004). *The Art of Game Worlds*. HarperCollins. p. 126. ISBN 0-06-072430-7.
57. Croshaw, Ben "Yahtzee" (August 6, 2014). "E.T. "The Worst Game Ever" " (https://www.youtube.com/watch?v=F8APwHQUHwY). *YouTube*. The Escapist. Archived (https://web.archive.org/web/20230810225804/https://www.youtube.com/watch?v=F8APwHQUHwY) from the original on August 10, 2023. Retrieved August 9, 2023.
58. Dvorak, John C (August 12, 1985). "Is the PCJr Doomed To Be Landfill?" (https://books.google.com/books?id=Ai8EAAAAMBAJ&q=atari+landfill&pg=RA1-PA64). *InfoWorld*. Vol. 7, no. 32. p. 64. ISSN 0199-6649 (https://search.worldcat.org/issn/0199-6649). Archived (https://web.archive.org/web/20190801133617/https://books.google.com/books?id=Ai8EAAAAMBAJ&pg=RA1-PA64&dq=atari+landfill#v=onepage&q=atari%20landfill&f=false) from the original on August 1, 2019. Retrieved September 10, 2011.
59. Jary, Simon (August 19, 2011). "HP TouchPads to be dumped in landfill?" (http://www.pcadvisor.co.uk/news/tablets/3298074/hp-touchpads-to-be-dumped-in-landfill/). *PC Advisor*. Archived (https://web.archive.org/web/20111108045640/http://www.pcadvisor.co.uk/news/tablets/3298074/hp-touchpads-to-be-dumped-in-landfill/) from the original on November 8, 2011. Retrieved September 10, 2011.
60. Kennedy, James (August 20, 2011). "Book Review: Super Mario" (https://www.wsj.com/articles/SB10001424053111904006104576502744235853146?mod=googlenews_wsj). *The Wall Street Journal*. Archived (https://web.archive.org/web/20170906225910/https://www.wsj.com/articles/SB10001424053111904006104576502744235853146?mod=googlenews_wsj) from the original on September 6, 2017. Retrieved September 10, 2011.
61. Paige, Earl (January 8, 1983). "Video Game Firms Ready Formal Returns Policies" (https://books.google.com/books?id=PSQEAAAAMBAJ&pg=PT20). *Billboard*. Vol. 95, no. 1. Nielsen Business Media, Inc. pp. 1, 21. ISSN 0006-2510 (https://search.worldcat.org/issn/0006-2510).
62. "ClassicGaming.com's Museum: Atari 2600 - 1977-1984" (https://web.archive.org/web/20090611220419/http://classicgaming.gamespy.com/View.php?view=ConsoleMuseum.Detail&id=8). GameSpy. Archived from the original (http://classicgaming.gamespy.com/View.php?view=ConsoleMuseum.Detail&id=8) on June 11, 2009. Retrieved September 25, 2009.
63. Montfort, Nick; Bogost, Ian (2009). *Racing the Beam: The Atari Video Computer System* (https://archive.org/details/racingbeamatariv00mont_656). MIT Press. p. 76 (https://archive.org/details/racingbeamatariv00mont_656/page/n88). ISBN 978-0-262-01257-7.
64. **Quote:** "The number of actual trucks which have dumped locally was not known. Local BFI officials put it at 10. However, corporate spokesmen in Houston say it was closer to 20; and city officials say it is actually 14."
McQuiddy, "City cementing ban on dumping."
65. "Atari Parts Are Dumped" (https://www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html). *The New York Times*. September 28, 1983. p. D4. Archived (https://web.archive.org/web/20200515044525/https://www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html) from the original on May 15, 2020.
66. McQuiddy, "Dump here utilized."
67. McQuiddy, "City cementing ban on dumping."
68. McQuiddy, "City to Atari."
69. Smith, "Raising Alamogordo's legendary Atari 'Titanic'"

70. Hilliard, Kyle (April 26, 2014). "E.T. Atari Cartridge Landfill Excavation Uncovers Fabled Cache" (https://www.gameinformer.com/b/news/archive/2014/04/26/e-t-atari-cartridge-landfill-excavation-uncovers-fabled-cache.aspx). *Game Informer*. Archived (https://web.archive.org/web/20140427011107/http://www.gameinformer.com/b/news/archive/2014/04/26/e-t-atari-cartridge-landfill-excavation-uncovers-fabled-cache.aspx) from the original on April 27, 2014. Retrieved April 26, 2014.
71. Truitt, Brian. (September 2, 2014). " 'Angry Video Game Nerd' tackles Atari cartridge legend" (https://eu.usatoday.com/story/life/movies/2014/09/02/angry-video-game-nerd-the-movie-exclusive-clip/14986761/). Archived (https://web.archive.org/web/20201112033440/https://eu.usatoday.com/story/life/movies/2014/09/02/angry-video-game-nerd-the-movie-exclusive-clip/14986761/) from the original on November 12, 2020. Retrieved November 24, 2020. USA Today. *USA Today*
72. Lowe, Justin. (5:11 PM PDT July 25, 2014). " 'Angry Video Game Nerd': Fantasia Review" (https://www.hollywoodreporter.com/review/angry-video-game-nerd-fantasia-721357). *The Hollywood Reporter*. July 25, 2014. Archived (https://web.archive.org/web/20210225090136/https://www.hollywoodreporter.com/review/angry-video-game-nerd-fantasia-721357) from the original on February 25, 2021. Retrieved November 24, 2020. *The Hollywood Reporter*
73. Robarge, Drew (December 15, 2014). "From landfill to Smithsonian collections: "E.T. the Extra-Terrestrial" Atari 2600 game" (https://americanhistory.si.edu/blog/landfill-smithsonian-collections-et-extra-terrestrial-atari-2600-game). Smithsonian Institution. Archived (https://web.archive.org/web/20141218111854/http://americanhistory.si.edu/blog/landfill-smithsonian-collections-et-extra-terrestrial-atari-2600-game) from the original on December 18, 2014. Retrieved December 17, 2014.
74. "The Worst Video Game Ever?" (https://www.si.edu/sidedoor/ep-2-worst-video-game-ever). *Sidedoor* (Podcast). Season 4. Episode 2. Smithsonian Institution. June 26, 2019. 23 minutes in. Archived (https://web.archive.org/web/20200515042048/https://www.si.edu/sidedoor/ep-2-worst-video-game-ever) from the original on May 15, 2020. PDF transcript (https://www.si.edu/sites/default/files/sidedoor/sidedoor-et-script-final-transcription.pdf) (PDF).
75. "Unearthing the Atari Tomb: How E.T. Found a Home at The Henry Ford" (http://blog.thehenryford.org/2015/07/atari-tomb/). *The Henry Ford Blog*. Archived (https://web.archive.org/web/20160224202746/http://blog.thehenryford.org/2015/07/atari-tomb/) from the original on February 24, 2016. Retrieved January 14, 2016.
76. "Digital Collections - Atari Video Game Burial, 1983" (https://www.thehenryford.org/collections-and-research/digital-collections/search-results#advancedSearch=1&tab=artifact-results&s.0.in=keywords&s.0.for=Atari+Video+Game+Burial%2c+1983&years=0-0&perPage=10&pageNum=1&sortBy=relevance). *The Henry Ford*. Archived (https://web.archive.org/web/20190516090803/https://www.thehenryford.org/collections-and-research/digital-collections/search-results#advancedSearch=1&tab=artifact-results&s.0.in=keywords&s.0.for=Atari+Video+Game+Burial%2c+1983&years=0-0&perPage=10&pageNum=1&sortBy=relevance) from the original on May 16, 2019. Retrieved May 14, 2020.
77. "E.T. - The Extra-Terrestrial (Alamogordo Atari Dig)" (http://www.computinghistory.org.uk/det/42478/E.T.-The-Extra-Terrestrial-(Alamogordo-Atari-Dig)/). *computinghistory.org.uk*. Archived (https://web.archive.org/web/20210303024538/http://www.computinghistory.org.uk/det/42478/E.T.-The-Extra-Terrestrial-(Alamogordo-Atari-Dig)/) from the original on March 3, 2021. Retrieved February 3, 2021.
78. Johnson, Phil (May 6, 2014). "Digging up E.T.'s source code" (https://www.itworld.com/article/2698883/disaster-recovery/digging-up-e-t--s-source-code.html). *ITworld*. Archived (https://web.archive.org/web/20180902220628/https://www.itworld.com/article/2698883/disaster-recovery/digging-up-e-t--s-source-code.html) from the original on September 2, 2018. Retrieved September 6, 2018.
79. Cocilova, Alex (April 16, 2013). "How hacking fixed the worst video game of all time" (https://www.pcworld.com/article/2032869/how-hacking-fixed-the-worst-video-game-of-all-time.html). *PCWorld*. Archived (https://web.archive.org/web/20190508201629/https://www.pcworld.com/article/2032869/how-hacking-fixed-the-worst-video-game-of-all-time.html) from the original on May 8, 2019. Retrieved September 11, 2018.

80. Richardson, David. "Fixing E.T. The Extra-Terrestrial for the Atari 2600" (http://www.neocomputer.org/projects/et/). Archived (https://web.archive.org/web/20180902174712/http://www.neocomputer.org/projects/et/) from the original on September 2, 2018.

Bibliography

Periodicals

- McQuiddy, Marian E. (September 25, 1983). "Tons of Atari Games Buried; Dump here utilized" (http://www.atariage.com/forums/topic/66637-ataris-landfill-adventures-i-now-have-the-proof-its-true/page__st__150#entry829066). *Alamogordo Daily News*. p. 1. Archived (https://web.archive.org/web/20130815072429/http://atariage.com/forums/topic/66637-ataris-landfill-adventures-i-now-have-the-proof-its-true/page__st__150#entry829066) from the original on August 15, 2013. Retrieved July 26, 2012. Archived 2005-04-01.
- McQuiddy, Marian E. (September 27, 1983). "City to Atari: 'E.T.' trash go home" (http://www.atariage.com/forums/topic/66637-ataris-landfill-adventures-i-now-have-the-proof-its-true/page__st__150#entry829066). *Alamogordo Daily News*. Archived (https://web.archive.org/web/20130815072429/http://atariage.com/forums/topic/66637-ataris-landfill-adventures-i-now-have-the-proof-its-true/page__st__150#entry829066) from the original on August 15, 2013. Retrieved July 26, 2012. Archived 2005-04-01.
- McQuiddy, Marian E. (September 28, 1983). "City cementing ban on dumping: Landfill won't house any more 'Atari rejects' ". *Alamogordo Daily News*.
- Smith, Shelley (April 12, 2005). "Raising Alamogordo's legendary Atari 'Titanic' ". *Alamogordo Daily News*.
- Warshaw, Howard Scott (November 2007). "Core Memory" (http://www.onceuponatari.com/archives/gamestm/070912.html). *GamesTM* (63): 140–141. Archived (https://web.archive.org/web/20181106035140/http://www.onceuponatari.com/archives/gamestm/070912.html) from the original on November 6, 2018. Retrieved September 26, 2009.

External links

- Media related to E.T. the Extra-Terrestrial (video game) at Wikimedia Commons
- *E.T. the Extra-Terrestrial* (https://archive.org/details/E.T._The_Extra-Terrestrial_1982_Atari) manual at archive.org
- *E.T. the Extra-Terrestrial* (https://archive.org/details/E.T._The_Extra-Terrestrial_1982_Atari_NTSC) can be played for free in the browser at the Internet Archive

Atari video game burial

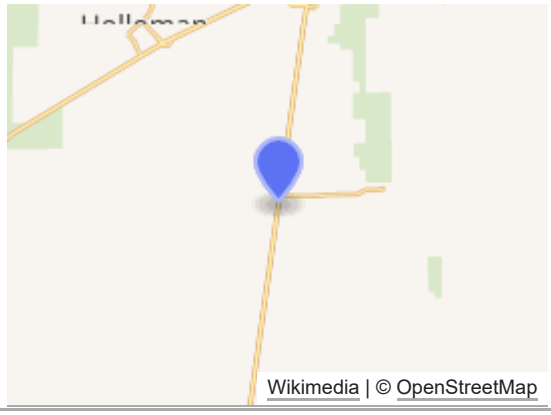
The **Atari video game burial** was a mass burial of unsold video game cartridges, consoles, and computers in a landfill site in Alamogordo, New Mexico, undertaken by the American video game and home computer company Atari, Inc. in 1983. Before 2014, the goods buried were rumored to be unsold copies of *E.T. the Extra-Terrestrial* (1982), one of the largest commercial video game failures and often cited as one of the worst video games ever released,[1][2] and the 1982 Atari 2600 port of *Pac-Man*, which was commercially successful but critically maligned.[3]

Since the burial was first reported, there had been doubts as to its veracity and scope, and it was frequently dismissed as an urban legend. The event became a cultural icon and a reminder of the video game crash of 1983;[4][5][6] it was the end result of a disastrous fiscal year which saw Atari, Inc. sold off by its parent company Warner Communications. Though it was believed that millions of copies of *E.T.* were buried,[7] Atari officials later verified the numbers to be around 700,000 cartridges of various games, including *E.T.*

In 2014, Fuel Industries, Microsoft, and others worked with the New Mexico government to excavate the site as part of a documentary, *Atari: Game Over*. On April 26, 2014, the excavation revealed discarded games and hardware. Only a small fraction, about 1,300 cartridges, were recovered, with a portion given for curation and the rest auctioned to raise money for a museum to commemorate the burial.

Atari video game burial

E.T. and *Centipede* games packaging from the excavation of the landfill site



Date	September 26, 1983
Location	Otero County, New Mexico, US
Coordinates	32°44′21.4″N 105°59′21.7″W
Participants	Atari, Inc., City of Alamogordo, New Mexico, US

Circumstances

Financial difficulty

Atari, Inc. had been purchased by Warner Communications in 1976 for $28 million, and had seen its net worth grow to $2 billion by 1982.[3][9][10][11] By this time, the company accounted for 80% of the video gaming market[3] and was responsible for over half of its parent company's revenues,[12] earning some 65–70% of their operating profits.[3][12] By the last quarter of 1982, its growth in the following year was expected to be in the region of 50%.[3] However, on December 7,

1982, the company reported that its earnings had only increased by 10–15%, rather than the predicted figure.[3] The next day saw Warner Communications' share prices fall by a third, and the quarter ended with Warner's profits falling by 56%.[3] In addition, Atari's CEO, Ray Kassar, was later investigated for possible insider trading charges as a result of selling some five thousand shares in Warner less than half an hour before reporting Atari's lower-than-expected earnings. Kassar was later cleared of any wrongdoing, although he was forced to resign his position the following July.[13] Atari, Inc. went on to lose $536 million in 1983, and it was sold off by Warner Communications the following year.[3]

Atari 2600 consoles and cartridges were amongst the material reportedly disposed of as a result of the burial.[8]

Failed games

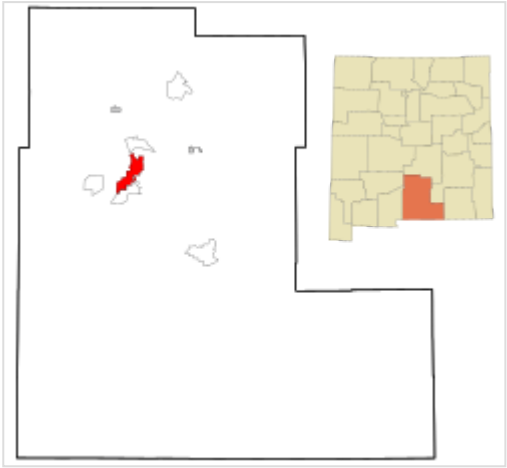
Atari's tendency to port arcade games for its home console had led to some of its most commercially successful games, including the port of its own coin-op *Asteroids*, as well as the licensed versions of Taito's *Space Invaders* and Namco's *Pac-Man*. When the latter game received its official port to the Atari 2600, Atari was confident that sales figures would be high, and manufactured 12 million cartridges—despite having sold only around 10 million Atari 2600 consoles.[3] It was believed that the game would be successful enough not only to earn an estimated $500 million, but also to boost sales of the console itself by several million as gamers sought to play the home conversion.[14][15] However, the finished product, released in March 1982, was critically panned for its poor gameplay,[3] and although it became the console's best-selling game after shipping 7 million units, it left Atari with over 5 million unsold cartridges—a problem compounded by the high rate of customers returning the game for refunds.[14][16]

Further to the problems caused by *Pac-Man*'s underwhelming sales, Atari also faced great difficulty as a result of its video game adaptation of the film *E.T. the Extra-Terrestrial*. The game was a result of a deal between Warner Communications and the film's director Steven Spielberg, and was an attempt to follow the success of Atari's *Raiders of the Lost Ark*, another film-based game. It was later reported that Warner had paid $20–25 million for the rights, which was at the time a high figure for video game licensing.[14] The task of developing the game fell on Howard Scott Warshaw, the programmer for *Raiders*, but due to lengthy delays in the licensing rights, Warshaw had only five weeks to make a full game to make sure Atari could sell it during the upcoming holiday period.[17] The rushed development resulted in lackluster gameplay; the game was critically panned, and is now seen as one of the worst ever made.[1][2] Atari manufactured 5 million cartridges for the game;[3] however, upon its release in December 1982, only 1.5 million copies were sold, leaving Atari with half of the cartridges.[18] *Billboard* writer Earl Paige reported that the large number of unsold *E.T* games, along with an increase in competition, prompted retailers to demand official return programs from video game manufacturers.[19]

The failures of these games were further compounded by Atari's business dealings from 1981. Confident in strong sales, the company had told its distributors to place their 1982 orders all at once. However, video game sales in 1982 had slowed, and distributors who had ordered en masse in expectation of high turnover were left to simply return large quantities of unsold stock to Atari. As a result, the company soon found itself in possession of several million essentially useless video game cartridges, which it was entirely unable to sell.[3]

Burial

In September 1983, the *Alamogordo Daily News* of Alamogordo, New Mexico, reported in a series of articles that between 10 and 20[20] semi-trailer truckloads of Atari boxes, cartridges, and systems from an Atari storehouse in El Paso, Texas, were crushed and buried at the landfill to the south of city. It was Atari's first dealings with the landfill, which was chosen because no scavenging was allowed and its garbage was crushed and buried nightly. Atari's stated reason for the burial was that it was changing from Atari 2600 to Atari 5200 games,[21] but this was later contradicted by a worker who claimed that this was not the case.[22] Atari official Bruce Enten stated that Atari was mostly sending broken and returned material to the Alamogordo dump and that it was "by-and-large inoperable stuff."[20]



The burial is located to the south of Alamogordo, New Mexico.

On September 27, 1983, the news service *Tribune Wires* reported that "people watching the operation said it included cassettes [*sic*] of the popular video games *E.T.*, *Pac-Man*, *Ms. Pac-Man*, the consoles used to convey the games to television screens, and high-priced personal computers."[23] The news service Knight Ridder further reported on the looting of the dump on September 28 by local kids, stating "kids in this town of 25,000 began robbing the Atari grave, coming up with cartridges of such games as *E.T.*, *Raiders of the Lost Ark*, *Defender*, and *Berzerk*."[24]

On September 28, 1983, *The New York Times* reported on the story of Atari's dumping in New Mexico. An Atari representative confirmed the story for the newspaper, stating that the discarded inventory came from Atari's plant in El Paso, which was being closed and converted to a recycling facility.[25] The reports noted that the site was guarded to prevent reporters and the public from affirming the contents. The *Times* article did not specify the games being destroyed, but subsequent reports generally linked the story of the dumping to the well-known failure of *E.T.*[3] Additionally, the headline "City to Atari: 'E.T.' trash go home" in one edition of the *Alamogordo News* seems to imply some of the cartridges were *E.T.*, but then follows with a humorous interpretation of E.T. meaning "Extra-territorial" and never specifically mentions the game.[20]

Starting on September 29, 1983, a layer of concrete was poured on top of the crushed materials, a rare occurrence in waste disposal. An anonymous workman's stated reason for the concrete was: "There are dead animals down there. We wouldn't want any children to get hurt digging in the dump."[22] Eventually, the city began to protest the large amount of dumping Atari was doing, with one commissioner stating that the area did not want to become "an industrial waste dump for El Paso."[20] The local manager ordered an end to the dumping shortly afterwards. Due to Atari's unpopular dumping, Alamogordo later passed an Emergency Management Act and created the Emergency Management Task Force to limit the future flexibility of the garbage contractor to secure outside business for the landfill for monetary purposes. Alamogordo's then-mayor, Henry Pacelli, commented that, "We do not want to see something like this happen again."[22]

Cultural symbolism and speculation

All of these factors led to wide speculation that most of the 3.5 million unsold copies of *E.T. the Extra-Terrestrial* ultimately wound up in this landfill, crushed and encased in concrete.[7] It had also been reported that prototypes for the proposed Atari Mindlink controller system were disposed of at the site,[26] which only further fueled speculation, since Atari Museum owner Curt Vendel owns and possesses the Mindlink prototypes.[27] Writing for the *Pacific Historical Review*, John Wills speculated that location's place in the public psyche—its proximity to the sites of both the Trinity nuclear test and Roswell UFO incident—aided the popularity of the story.[28]

The conflicting information surrounding the burial led to the claim of it being an "E.T. Dump" being referred to as an urban legend;[29] in turn, this led to a degree of skepticism and doubt over the veracity of the dumping story itself, and the relevance of conflating the event with the later industry downturn.[30][31] In October 2004, Howard Scott Warshaw, the programmer responsible for the *E.T. the Extra-Terrestrial* game, expressed doubts at the time that the destruction of millions of copies of the game ever took place. Warshaw also believes that Atari's downfall was more a result of their business practices—including alleged block booking of poorly selling games with successful ones when dealing with distributors—than any specific failed games.[32] This latter view has been echoed by Travis Fahs of IGN, who believes that Atari's problems, including their huge surplus of unsold stock, arose from the company's overestimation of the sustainability of Atari 2600 sales, rather than being due to the individual quality of games being released.[33]

The incident has become a cultural symbol representative of the video game crash of 1983. It is often cited as a cautionary tale about the hubris of poor business practices,[4][5][6] despite suggestions that the burial allowed the company to write off the disposed-of material for tax relief purposes.[5]

In popular culture

The legacy of the burial has led it to be referenced in popular culture. The music video for the song "When I Wake Up" by Wintergreen depicts the band traveling to the landfill site and proceeding to dig up the abandoned cartridges;[34] the video's director Keith Schofield had worked with video game-based music videos before.[35] The novel *Lucky Wander Boy* by D.B. Weiss features a scene which takes place outside of Alamogordo, in which two of the characters discuss a parking lot which has been built over the site of the burial.[36] The 2014 film *Angry Video Game Nerd: The Movie* features a plot centered on the burial.[37] The episode "The Games Underfoot" of the procedural drama *Elementary* featured a fictional version of the Atari (renamed "Emeryvision") video game burial.[38]

Excavation

On May 28, 2013, the Alamogordo City Commission granted Fuel Industries, a Canadian entertainment company, six months of access to the landfill to film a documentary, *Atari: Game Over,* about the burial and to excavate the dump site.[39][40][41] Xbox Entertainment Studios planned to air this documentary series as an exclusive to the Xbox One and Xbox 360 in 2014 as part of a multi-part documentary series being produced by Lightbox, a US/UK production company.[42] Though the excavation was momentarily stalled due to a complaint by the New Mexico Environmental Protection Division Solid Waste Bureau citing potential hazards, the issues were resolved in early April 2014 to allow the excavation to proceed.[43]

Excavation started on April 26, 2014 as an open event to the public.[44] *E.T. the Extra-Terrestrial* designer Howard Scott Warshaw, *Ready Player One* author Ernest Cline, and film director Zak Penn attended the event as part of a documentary about the burial,[45] as did local residents such as Armando Ortega, a city official who was reportedly one of the original children to raid the dump in 1983. Ortega stated that although he and his friends found dozens of quality games, they gave the *E.T.* cartridges away because the "game sucked ... you couldn't finish it".[46][47] James Heller, the former Atari manager in charge of the original burial, was also on hand at the excavation. Heller revealed that he had originally ordered the site to be covered in concrete. Contrary to the urban legend that claims millions of cartridges were buried there, Heller stated that only 728,000 cartridges were buried.[48][49]

Excavating the landfill. Boxes of *Yars' Revenge*, *Star Raiders*, *Pac-Man*, *Space Invaders*, *Defender* and *Warlords* can be seen.

Remnants of *E.T.* and other Atari games were discovered in the early hours of the excavation, as reported by Microsoft's Larry Hryb.[50][51] A team of archaeologists was present to examine and document the Atari material unearthed by excavation machinery: Andrew Reinhard (American School of Classical Studies at Athens), Richard Rothaus (Trefoil Cultural and Environmental), Bill Caraher (University of North Dakota), with support from video game historian Raiford Guins (Stony Brook University) and historian Bret Weber (University of North Dakota).[52]

Only about 1,300 cartridges of the estimated 700,000 were removed from the burial, as the remaining materials were deeper than expected; this made them more difficult to access, according to Alamogordo mayor Susie Galea.[53] The cartridges found were from 59 different games, the majority of which were for the Atari 2600; six were Atari 5200 titles. Atari hardware was also excavated.[54] The burial was refilled following this event.[53] Joseph Lewandowski, who had worked to arrange the unearthing with the city, said that this was a one-time shot to recover materials from the site, as they do not expect the city to agree to a similar event again.[55]

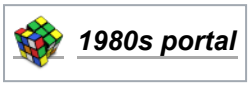
Curation and auction

Of the recovered materials, a fraction was given to the New Mexico Museum of Space History to be displayed and curated for sale.[56] Another 100 artefacts were given to the documentary producers Lightbox and Fuel Entertainment. The Centre for Computing History in Cambridge, England also received some artifacts from the desert, which are on permanent display in the museum gallery.[57] Galea believed the remaining cartridges can be sold by the city of Alamogordo through the Museum of Space History. She hopes that the sale of these games can help fund recognition of the burial site as a tourist attraction in the future.[53] The City of Alamogordo approved the auction of the games in September 2014, sold through eBay and the Alamogordo Council website. As of April 2025, over $107,000 has been raised through the sales of about 880 unearthed cartridges, with one *E.T.* copy selling for more than $1,500. These funds were used to support the city's public works and the Tularosa Basin Museum of History.[58]

One of the *E.T.* cartridges that had been dug up was taken by the Smithsonian Institution for its records, calling the cartridge both representative of the burial site but also in terms of video games, how the cartridge represents "the ongoing challenge of making a good film to a video game

adaptation, the decline of Atari, the end of an era for video game manufacturing, and the video game cartridge life cycle".[59]

See also



- List of commercial failures in video games
- Second generation of video game consoles

References

1. Pileggi, Nicholas (January 24, 1983). "The Warner Case: Curiouser and Curiouser" (https://books.google.com/books?id=mcoBAAAAMBAJ). *New York*. Vol. 16, no. 4. p. 26 – via Google Books.
2. Townsend, Emru (October 23, 2006). "The 10 Worst Games of All Time" (http://www.pcworld.com/article/127579-2/the_10_worst_games_of_all_time.html). *PC World*. Archived (https://web.archive.org/web/20110906113825/http://www.pcworld.com/article/127579-2/the_10_worst_games_of_all_time.html) from the original on September 6, 2011. Retrieved September 19, 2011.
3. Mikkelson, Barbara; Mikkelson, David P. (May 10, 2011). "Buried Atari Cartridges" (http://www.snopes.com/business/market/atari.asp). *Snopes.com*. Retrieved September 10, 2011.
4. Dvorak, John C (August 12, 1985). "Is the PCJr Doomed To Be Landfill?" (https://books.google.com/books?id=Ai8EAAAAMBAJ&q=atari+landfill&pg=RA1-PA64). *InfoWorld*. Vol. 7, no. 32. p. 64. Retrieved September 10, 2011 – via Google Books.
5. Jary, Simon (August 19, 2011). "HP TouchPads to be dumped in landfill?" (https://www.techadvisor.com/article/725485/hp-touchpads-to-be-dumped-in-landfill.html). *techadvisor.com*. PC Advisor. Archived (https://web.archive.org/web/20111108045640/http://www.pcadvisor.co.uk/news/tablets/3298074/hp-touchpads-to-be-dumped-in-landfill/) from the original on November 8, 2011. Retrieved September 10, 2011.
6. Kennedy, James (August 20, 2011). "Book Review: Super Mario" (https://www.wsj.com/articles/SB10001424053111904006104576502744235853146). *The Wall Street Journal*. Retrieved September 10, 2011.
7. Smith, Shelley (April 12, 2005). "Search on to raise the 1983 Atari Titanic" (https://www.newspapers.com/article/alamogordo-daily-news/177220964/). *Alamogordo Daily News*. pp. 1A, 8A (https://www.newspapers.com/article/alamogordo-daily-news/177221035/) – via Newspapers.com.
8. Hubner, John; Kistner, William F. Jr. (December 5, 1983). "What went wrong at Atari?" (https://books.google.com/books?id=6C8EAAAAMBAJ&pg=PA145). *InfoWorld*. Vol. 5, no. 49. pp. 145–155. Archived (https://web.archive.org/web/20140103082122/http://books.google.com/books?id=6C8EAAAAMBAJ&pg=PA145) from the original on January 3, 2014. Retrieved September 10, 2011 – via Google Books.
9. Hooper, Richard (February 22, 2016). "The man who made 'the worst video game in history' " (https://www.bbc.com/news/magazine-35560458). *BBC.com*. Archived (https://web.archive.org/web/20160804083251/http://www.bbc.com/news/magazine-35560458) from the original on August 4, 2016. Retrieved July 16, 2016. "In 1982 sales had reached a peak of $2bn"
10. "Video Games are Suddenly a $2 billion industry". *Business Week*. May 24, 1982. pp. 78–83.
11. Mace, Scott; Besson, Giselle (August 6, 1984). "A New Atari Corp". *Infoworld*. pp. 50–53.
12. Staff (August 2011). "From the Archives: Atari Inc" (https://archive.org/stream/retro_gamer/RetroGamer_093#page/n87/mode/2up). *Retro Gamer*. No. 93. p. 88.

13. Hubner, John; Kistner, William F. Jr. (November 28, 1983). "What went wrong at Atari?" (https://books.google.com/books?id=sy8EAAAAMBAJ&pg=PA151). *InfoWorld*. Vol. 5, no. 48. pp. 151–158. Archived (https://web.archive.org/web/20131202225827/http://books.google.co.uk/books?id=sy8EAAAAMBAJ&pg=PA151) from the original on December 2, 2013. Retrieved September 10, 2011 – via Google Books.
14. Staff (April 1998). "What the hell happened?" (https://archive.org/details/NEXT_Generation_40). *Next Generation Magazine*. No. 40. p. 41 (https://archive.org/details/NEXT_Generation_40/page/n42).
15. Kent, Steven (2001). "The Fall". *The Ultimate History of Video Games* (https://retrocdn.net/images/9/9c/UltimateHistoryofVideoGames_Book_US.pdf) (PDF). Three Rivers Press. pp. 227–228. ISBN 0-7615-3643-4 – via retrocdn.net.
16. Goodman, Danny (Spring 1983). "Pac-Mania" (https://archive.org/details/Creative_Computing_Video_Arcade_Games_01_spring83). *Creative Computing Video & Arcade Games*. **1** (1): 122 (https://archive.org/details/Creative_Computing_Video_Arcade_Games_01_spring83/page/n123).
17. Warshaw, Howard Scott (May 31, 2017). "Total Failure: The World's Worst Video Game" (https://www.npr.org/2017/05/31/530235165/total-failure-the-worlds-worst-video-game). NPR. Retrieved March 10, 2018.
18. Buchanan, Levi (August 26, 2008). "IGN: Top 10 Best-Selling Atari 2600 Games" (http://retro.ign.com/articles/903/903024p1.html). *IGN.com*. Archived (https://web.archive.org/web/20110726161836/http://retro.ign.com/articles/903/903024p1.html) from the original on July 26, 2011. Retrieved September 10, 2011.
19. Paige, Earl (January 8, 1983). "Video Game Firms Ready Formal Returns Policies" (https://books.google.com/books?id=PSQEAAAAMBAJ). *Billboard*. Vol. 95, no. 1. pp. 1, 21 – via Google Books.
20. McQuiddy, Marian (September 27, 1983). "City to Atari: 'E.T.' trash go home" (https://www.newspapers.com/article/alamogordo-daily-news/177220200/). *Alamogordo Daily News*. "The number of actual trucks which have dumped locally was not known. Local BFI officials put it at 10. However, corporate spokesmen in Houston say it was closer to 20; and city officials say it is actually 14."
21. McQuiddy, Marian (September 25, 1983). "Dump here utilized" (https://www.newspapers.com/article/alamogordo-daily-news/177220108/). *Alamogordo Daily News* – via Newspapers.com. "Moore said the truck drivers told him the reason they were dumping the games is that they are changing from series 2600 to 5200 games, due to excessive amount of black-marketing."
22. McQuiddy, Marian (September 28, 1983). "City cementing ban on dumping: Landfill won't house anymore 'Atari rejects' ". *Alamogordo Daily News*. "He identified himself as being from Atari but would not give his name. He also said the burial of the items did not mean a move away from the 2600 series of Atari games towards just offering the Atari 5200, and said the items buried were just cartridges."
23. "Computer goods get burial at N.M. site" (https://www.newspapers.com/article/the-albuquerque-tribune/177220593/). *Albuquerque Tribune*. September 27, 1983 – via Newspapers.com.
24. "Atari buries video games" (https://www.newspapers.com/article/the-evening-sun/177220785/). *Baltimore Sun*. Knight-Ridder. September 28, 1983 – via Newspapers.com.
25. "Atari Parts Are Dumped" (https://www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html). *The New York Times*. September 28, 1983. Archived (https://web.archive.org/web/20170209222223/http://www.nytimes.com/1983/09/28/business/atari-parts-are-dumped.html) from the original on February 9, 2017.
26. Carr, Debora L (2010). *Home on the Strange: More Tales from My Albu-Quirky Journals*. Dog Ear Publishing. p. 62. ISBN 978-1-60844-458-8.
27. Vendel, Curt (2008). "Cartridge Consoles: The Atari Mindlink" (https://web.archive.org/web/20031015165438/http://www.atarimuseum.com/videogames/consoles/2600/mindlink.html). *atarimuseum.com*. The Atari Museum. Archived from the original (http://www.atarimuseum.com/videogames/consoles/2600/mindlink.html) on October 15, 2003. Retrieved November 24, 2013.

28. Wills, John (2008). "Pixel Cowboys and Silicon Gold Mines: Videogames of the American West". *Pacific Historical Review*. **77** (2). University of California Press: 273–75. doi:10.1525/phr.2008.77.2.273 (https://doi.org/10.1525%2Fphr.2008.77.2.273). JSTOR 10.1525/phr.2008.77.2.273 (https://www.jstor.org/stable/10.1525/phr.2008.77.2.273).
29. Montfort, Nick; Bogost, Ian (2009). *Racing the Beam: The Atari Video Computer System*. MIT Press. p. 127. ISBN 978-0-262-01257-7.
30. Heim, Michael (2004). *Exploring America's Highways: Minnesota Trip Trivia*. Travel Organization Network Exchange, Inc. p. 171. ISBN 0-9744358-1-3.
31. Berens, Kate; Howard, Geoff (September 16, 2008). *The Rough Guide to Videogames*. Rough Guides. p. 7. ISBN 978-1-84353-995-7.
32. Phipps, Keith (February 2, 2005). "Howard Scott Warshaw" (https://www.avclub.com/howard-scott-warshaw-1798208406). *The A.V. Club*. Archived (https://web.archive.org/web/20110605060828/http://www.avclub.com/articles/howard-scott-warshaw%2C13912/) from the original on June 5, 2011. Retrieved September 10, 2011.
33. Fahs, Travis (December 18, 2008). "Revising History: The Crash of '83" (http://uk.retro.ign.com/articles/939/939668p1.html). *IGN.com*. Archived (https://web.archive.org/web/20120329184327/http://uk.retro.ign.com/articles/939/939668p1.html) from the original on March 29, 2012. Retrieved September 12, 2011.
34. "Keith Schofield / Wintergreen" (http://keithschofield.com/et/). *keithschofield.com*. Keith Schofield. Archived (https://web.archive.org/web/20110930165357/http://keithschofield.com/et/) from the original on September 30, 2011. Retrieved September 11, 2011.
35. Brown, Damon (May 2006). "Reset for Life" (https://books.google.com/books?id=BvUVT5TnUCwC&q=atari+new+mexico&pg=PT36). *Spin*. p. 99. Retrieved September 22, 2011 – via Google Books.
36. Weiss, D.B. (2003). *Lucky Wander Boy*. Plume. pp. 177, 193–195. ISBN 0-452-28394-9.
37. Rushe, Dominic (April 25, 2014). "New Mexico landfill to be dug up in search of 'buried' Atari ET video games" (https://www.theguardian.com/technology/2014/apr/25/atari-et-new-mexico-landfill-dig-video-game). *The Guardian*. Retrieved April 25, 2019.
38. McKinnon, Mika (December 15, 2015). "Alfredo Returns with Pink Frosted Donuts in Elementary" (https://web.archive.org/web/20180407120103/https://io9.gizmodo.com/alfredo-returns-with-pink-frosted-donuts-in-elementary-1748042329). *io9*. Archived from the original (https://io9.gizmodo.com/alfredo-returns-with-pink-frosted-donuts-in-elementary-1748042329) on April 7, 2018. Retrieved April 6, 2018.
39. Goldsmith, Alex (May 30, 2013). "Alamogordo approves Atari excavation" (https://web.archive.org/web/20130530151127/http://www.krqe.com/dpp/news/southeast/alamogordo-approves-atari-excavation). KRQE. Archived from the original (http://www.krqe.com/dpp/news/southeast/alamogordo-approves-atari-excavation) on May 30, 2013. Retrieved May 31, 2013.
40. Crossley, Rob (July 27, 2014). "ET burial trailer unearths lost stories of industry crash" (http://www.computerandvideogames.com/472600/et-burial-trailer-unearths-lost-stories-of-industry-crash/). *Computer and Video Games*. Archived (https://web.archive.org/web/20140728170849/http://www.computerandvideogames.com/472600/et-burial-trailer-unearths-lost-stories-of-industry-crash/) from the original on July 28, 2014. Retrieved July 27, 2014.
41. Gasser, Marc (November 20, 2014). "Xbox Documentary on Atari's Lost 'E.T.' Games Debuts for Free" (https://variety.com/2014/digital/news/xbox-documentary-on-ataris-lost-e-t-games-debuts-for-free-1201361397/). *Variety*. Retrieved November 20, 2014.
42. Chieng, Kevin (December 13, 2013). "Documentary Debut on Xbox Will Explore E.T. Atari Landfill" (http://www.gametrailers.com/side-mission/67807/documentary-debut-on-xbox-will-explore-e-t-atari-landfill). GameTrailers. Archived (https://web.archive.org/web/20140228020019/http://www.gametrailers.com/side-mission/67807/documentary-debut-on-xbox-will-explore-e-t-atari-landfill) from the original on February 28, 2014. Retrieved April 27, 2014.

43. Campbell, Colin (April 4, 2014). "Historic Atari E.T. New Mexico dig set to proceed" (http://www.polygon.com/2014/4/3/5579684/historic-atari-e-t-new-mexico-dig-set-to-proceed). *Polygon*. Archived (https://web.archive.org/web/20140404154704/http://www.polygon.com/2014/4/3/5579684/historic-atari-e-t-new-mexico-dig-set-to-proceed) from the original on April 4, 2014. Retrieved April 4, 2014.
44. Nunneley, Stephanny (April 10, 2014). "Microsoft invites you to attend the Atari Landfill excavation on April 26" (https://web.archive.org/web/20200607022534/https://www.vg247.com/2014/04/10/microsoft-invites-you-to-attend-the-atari-landfill-excavation-on-april-26/). *VG247*. Archived from the original (http://www.vg247.com/2014/04/10/microsoft-invite-you-to-attend-the-atari-landfill-excavation-on-april-26/) on June 7, 2020. Retrieved April 10, 2014.
45. "Witness Video Game History: Attend Atari Landfill Excavation on April 26" (http://news.xbox.com/2014/04/ent-attend-atari-landfill-excavation). *Xbox.com*. Microsoft. April 10, 2014. Archived (https://web.archive.org/web/20140411010914/http://news.xbox.com/2014/04/ent-attend-atari-landfill-excavation) from the original on April 11, 2014. Retrieved April 11, 2014.
46. Terdiman, Daniel (April 26, 2014). "Success! Atari E.T. games found in New Mexico dump" (https://www.cnet.com/news/success-atari-e-t-games-found-in-new-mexico-dump/). *CNET*. Archived (https://web.archive.org/web/20140427030105/http://www.cnet.com/news/success-atari-e-t-games-found-in-new-mexico-dump/) from the original on April 27, 2014. Retrieved April 27, 2014.
47. Llorca, Juan Carlos (April 26, 2014). "Diggers begin quest to unearth Atari's E.T. games" (https://web.archive.org/web/20140427015354/http://www.state-journal.com/ap%20general%20news/2014/04/26/diggers-begin-quest-to-unearth-atari-s-e-t-games). *The State Journal*. Frankfort, Kentucky. Associated Press. Archived from the original (http://www.state-journal.com/ap%20general%20news/2014/04/26/diggers-begin-quest-to-unearth-atari-s-e-t-games) on April 27, 2014. Retrieved April 27, 2014.
48. "Diggers Find Atari's E.T. Games in Landfill" (https://web.archive.org/web/20140426232656/http://www.npr.org/templates/story/story.php?storyId=307031037). Associated Press. April 26, 2014. Archived from the original (https://www.npr.org/templates/story/story.php?storyId=307031037) on April 26, 2014. Retrieved April 26, 2014.
49. "Diggers find Atari's E.T. games in landfill" (https://www.usatoday.com/story/tech/2014/04/26/diggers-find-ataris-et-games-in-landfill/8232609/). *USA Today*. Associated Press. April 26, 2014. Retrieved April 26, 2014.
50. Hilliard, Kyle (April 26, 2014). "E.T. Atari Cartridge Landfill Excavation Uncovers Fabled Cache" (https://www.gameinformer.com/b/news/archive/2014/04/26/e-t-atari-cartridge-landfill-excavation-uncovers-fabled-cache.aspx). *Game Informer*. Archived (https://web.archive.org/web/20140427011107/http://www.gameinformer.com/b/news/archive/2014/04/26/e-t-atari-cartridge-landfill-excavation-uncovers-fabled-cache.aspx) from the original on April 27, 2014. Retrieved April 26, 2014.
51. Caliborn, Samual (April 26, 2014). "The Dig: Uncovering the Atari E.T. Games Buried in New Mexico Desert" (https://www.ign.com/articles/2014/04/26/the-dig-uncovering-the-atari-et-games-buried-in-new-mexico-desert). *IGN.com*. Archived (https://web.archive.org/web/20140427012030/http://www.ign.com/articles/2014/04/26/the-dig-uncovering-the-atari-et-games-buried-in-new-mexico-desert) from the original on April 27, 2014. Retrieved April 26, 2014.
52. "The Video Game Graveyard" (http://www.archaeology.org/issues/139-1407/trenches/2189-new-mexico-atari-dump-site-excavation). *Archaeology Magazine*. June 9, 2014. Archived (https://web.archive.org/web/20140703020400/http://archaeology.org/issues/139-1407/trenches/2189-new-mexico-atari-dump-site-excavation) from the original on July 3, 2014. Retrieved June 30, 2014.
53. Crecente, Brian (May 30, 2014). "Unearthed E.T. Atari games will be sold at New Mexico space museum" (http://www.polygon.com/2014/5/30/5764984/et-atari-buy-landfill-museum). *Polygon*. Archived (https://web.archive.org/web/20140530181929/http://www.polygon.com/2014/5/30/5764984/et-atari-buy-landfill-museum) from the original on May 30, 2014. Retrieved May 30, 2014.
54. Reinhard, Andrew (2024). *Practical Archeogaming*. pp. 159–161.

55. Smith, Aaron (September 3, 2015). "New Mexico city finds buried treasure of Atari games" (https://money.cnn.com/2015/09/01/technology/atari-et/). CNN. Archived (https://web.archive.org/web/20150905054353/https://money.cnn.com/2015/09/01/technology/atari-et) from the original on September 5, 2015. Retrieved September 3, 2015.
56. Crecente, Brian (May 30, 2014). "Unearthed E.T. Atari games will be curated by New Mexico space museum and then sold" (https://www.polygon.com/2014/5/30/5764984/et-atari-buy-landfill-museum/). *Polygon*. Retrieved November 10, 2025.
57. "E.T. - The Extra-Terrestrial (Alamogordo Atari Dig)" (http://www.computinghistory.org.uk/det/42478/E.T.-The-Extra-Terrestrial-(Alamogordo-Atari-Dig)/). *computinghistory.org.uk*. Centre for Computing History.
58. "Uncover Atari's Buried Gaming History in Alamogordo" (https://www.newmexicomagazine.org/blog/post/alamogordo-atari-tomb/). *newmexicomagazine.org*. April 23, 2025. Retrieved June 23, 2025.
59. Robarge, Drew (December 15, 2014). "From landfill to Smithsonian collections: "E.T. the Extra-Terrestrial" Atari 2600 game" (http://americanhistory.si.edu/blog/landfill-smithsonian-collections-et-extra-terrestrial-atari-2600-game). *si.edu*. Smithsonian Institution. Archived (https://web.archive.org/web/20141218111854/http://americanhistory.si.edu/blog/landfill-smithsonian-collections-et-extra-terrestrial-atari-2600-game) from the original on December 18, 2014. Retrieved December 15, 2014.

External links

- Media related to Atari video game burial at Wikimedia Commons

Atari 7800

The **Atari 7800 ProSystem**, or simply the **Atari 7800**, is a home video game console released by Atari Corporation in May 1986 as the successor to both the Atari 2600 and Atari 5200.[4] It can run almost all Atari 2600 cartridges, making it the first console with backward compatibility. It shipped with a two button controller, instead of the 2600-standard Atari CX40 joystick, and with *Pole Position II* as the pack-in game. The European model has a gamepad instead of a joystick. Most of the early releases for the system are ports of 1981–1983 arcade video games. The final wave of 7800 cartridges is closer in style to what was available on other late 1980s consoles, such as *Scrapyard Dog* and *Midnight Mutants*.

Designed by General Computer Corporation, the 7800 has custom graphics hardware similar to early 1980s arcade video games and is a significant improvement over Atari's previous consoles. The same Television Interface Adaptor chip that launched with the Atari VCS in 1977, included for compatibility with cartridges for that system, is used to generate two-channel audio for 7800 games. In an effort to prevent the flood of poor quality games that contributed to the video game crash of 1983, cartridges had to be digitally signed by Atari.

The Atari 7800 and an initial batch of games were first announced by Atari, Inc. on May 21, 1984,[5][6] but general release was shelved after the purchase of Atari by Jack Tramiel who re-established the company as Atari Corporation.[7] Support for the 7800, along with the 2600 and Atari 8-bit computers, was dropped on January 1, 1992.[2]

History

The Atari 7800 ProSystem was the first console from Atari, Inc. designed by an outside company: General Computer Corporation.[8] It was developed in 1983–84 with an intended mass market rollout in June

Atari 7800 ProSystem

Top: North American 7800
Bottom: European 7800

Developer	General Computer Corporation
Manufacturer	Atari, Inc. Atari Corporation
Type	Home video game console
Generation	Third
Released	NA: May 1986[1] PAL: 1987
Introductory price	US$140 (equivalent to $410 in 2025)
Discontinued	January 1, 1992[2]
Media	ROM cartridge
CPU	Atari SALLY @ 1.19-1.79 MHz
Memory	4 KB RAM on board 4 KB BIOS ROM (NTSC), 16 KB BIOS + Game ROM (PAL) 48 KB General Purpose Space (ROM, RAM, etc.) accessible at once

1984, but was canceled after the sale of the company to Tramel Technology Ltd on July 2, 1984. The project was originally called the Atari 3600.[9]

With a background in creating arcade games such as *Food Fight*, GCC designed the new system with a graphics architecture similar to arcade machines of the time. The CPU is a slightly customized 6502 processor, the Atari SALLY,[10] running at 1.79 MHz. By some measures the 7800 is more powerful, and by others less, than the 1983 Nintendo Entertainment System.[11] It uses the 2600's Television Interface Adaptor chip, with the same restrictions, for generating two channels of audio. Audio capability can be expanded via the cartridge port's audio line—with a sound chip in the cartridge—but this was only done in a few games.

Display	160×240, 320×240 (288 vertical for PAL) 7, 9, or 25 colors out of 256 (Depending on the mode)
Graphics	MARIA custom chip @ 7.16 MHz
Best-selling game	*Pole Position II* (pack-in)[3]
Backward compatibility	Atari 2600
Predecessor	Atari 5200
Successor	Atari Panther (canceled) Atari XEGS

Launch

The 7800 was announced on May 21, 1984.[5] Thirteen games were announced for the system's launch: *Ms. Pac-Man*, *Pole Position II*, *Centipede*, *Joust*, *Dig Dug*, *Nile Flyer*[12] (eventually released as *Desert Falcon*), *Robotron: 2084*, *Galaga*, *Food Fight*, *Ballblazer*, *Rescue on Fractalus!* (later canceled),[13] *Track & Field*, and *Xevious*. It was a significant technological leap over the Atari 2600 and Atari 5200.

On July 2, 1984, Warner Communications sold Atari's Consumer Division to Jack Tramiel.[14] All projects were halted during an initial evaluation period. GCC had not been paid for their development of the 7800, and Warner and Tramiel fought over who was accountable. In May 1985, Tramiel relented and paid GCC. This led to additional negotiations regarding the launch titles GCC had developed, then an effort to find someone to lead their new video game division, which was completed in November 1985.[15] The original production run of the Atari 7800 languished in warehouses until it was introduced in January 1986.

The console was released nationwide in May 1986 for $79.95[1][16] with games intended for the 7800's debut in 1984.[17] It was aided by a marketing campaign with a budget in the "low millions" according to Atari Corporation officials. This was substantially less than the $9 million spent by Sega and the $16 million spent by Nintendo.[18] The keyboard and high score cartridge planned by Warner were cancelled. The 7800 addressed many of the most common complaints with the preceding 5200, including a smaller size, built-in backward compatibility, and an improved controller design.

In February 1987, *Computer Entertainer* reported that 100,000 Atari 7800 consoles had been sold in the United States, including those which had been warehoused since 1984.[1][19] This was less than the Master System's 125,000 and the NES's 1.1 million.[1] Games were slowly released: *Galaga* in August, followed by *Xevious* in November.[19] By the end of 1986, the 7800 had 10 games, compared to Sega's 20 and Nintendo's 36.[1] Atari would sell over 1 million 7800 consoles by June 1988.[20]

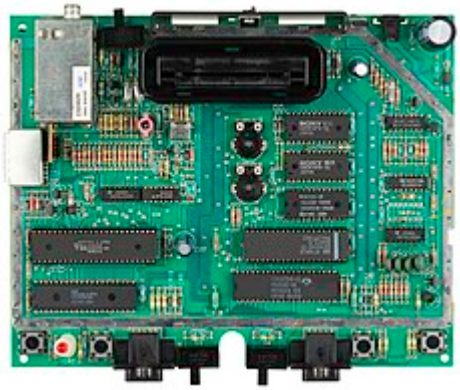
The Atari 7800 was released in the UK in September 1989 at the price of £69.95. It was supplied with two joypad controllers.[21]

Discontinuation

On January 1, 1992, Atari Corporation announced the end of production and support for the 7800, 2600, and the 8-bit computer family including the Atari XEGS. At least one game, an unreleased port of *Toki*, was worked on past this date.[22] In Europe, last stocks of the 7800 were sold until summer/fall of 1995.[23]

Retro Gamer magazine issue 132 reported that according to Atari UK Marketing Manager Darryl Still, "it was very well stocked by European retail; although it never got the consumer traction that the 2600 did, I remember we used to sell a lot of units through mail order catalogues and in the less affluent areas".[24]

Technical specifications



Motherboard of an American 7800 with the RF shielding removed

European motherboard modified by Atari to output RGB through a SCART connector

- CPU: Atari SALLY (custom variant of the 6502)
  - 1.79 (NTSC)/1.77 (PAL) MHz, which drops to 1.19 (NTSC)/1.18 (PAL) MHz when the Television Interface Adaptor or 6532 RAM-I/O-Timer chips are accessed
  - Unlike a standard 6502, *SALLY* can be halted in a known state with a single pin to let other devices control the bus.
  - Sometimes referred to by Atari as "6502C", but not the same as the official MOS Technology 6502C.[25]
- RAM: 4 KB[10] (2 6116 2Kx8 RAM ICs)
- ROM: built in 4 KB BIOS ROM (NTSC), built in 16 KB BIOS + Asteroids ROM (PAL), 48 KB General Purpose space (ROM, RAM, etc.) without bank switching
- Graphics: MARIA custom chip
  - Resolution: 160×240 (160×288 PAL) or 320×240 (320×288 PAL)
  - Color palette: 256[10] (16 hues * 16 luma), different graphics modes restricted the number of usable colors and the number of colors per sprite
  - Direct Memory Access (DMA, can be disabled)
    - Note: DMA Modes 0 and 1 shouldn't be used, as this can break the console.
    - Programmers should instead use DMA Mode 2, or DMA Mode 3 to disable DMA.
  - Graphics clock: 7.16 MHz (NTSC), 7.09 MHz (PAL)[26][27]
  - Line buffer: 200 bytes (double buffering), 160 sprite pixels per scanline,[27] up to 30 sprites per scanline (without background),[11] up to 100 sprites on screen[28][29]
  - Sprite/zone sizes: Up to 32 bytes in width (amount of pixels changes depending on sprite video mode), height of 1 to 16 pixels[30]
  - Colors per sprite: 1 to 12 (1 to 12 visible colors per sprite, 1 to 4 transparent/background colors)[31]

- Video Modes:
  - 160A - 160-pixel mode, 2bpp Sprites (Read Mode 0, Write Mode 0), up to 128-pixel wide sprites, all 25 colors available[30]
  - 160B - 160-pixel mode, 4bpp Sprites (Read Mode 0, Write Mode 1), up to 64-pixel wide sprites, all 25 colors available[30]
  - Read Mode 1 doesn't exist
  - 320D - 320-pixel mode, 1bpp Sprites (Read Mode 2, Write Mode 0), up to 256-pixel wide sprites, 7 colors available[30]
  - 320B - 320-pixel mode, 2bpp Sprites (Read Mode 2, Write Mode 1), up to 128-pixel wide sprites, 7 colors available[30]
  - 320A - 320-pixel mode, 1bpp Sprites (Read Mode 3, Write Mode 0), up to 256-pixel wide sprites, 9 colors available[30]
  - 320C - 320-pixel mode, 2bpp Sprites (Read Mode 3, Write Mode 1), up to 128-pixel wide sprites, 9 colors available[30]
- I/O: Joystick and console switch IO handled by 6532 RIOT and TIA
- Ports
  - 2 joystick ports
  - cartridge port
  - expansion connector (Only on rev 1 boards)
  - power in
  - RF output
- Sound: TIA as used in the 2600 for video and sound. In 7800 mode it is only used for sound.
  - At least three games include a POKEY sound chip for improved audio.[32][33][34]

Graphics

Graphics are generated by the custom MARIA chip, which uses an approach common in contemporary arcade system boards[31] and is different from other second and third generation consoles. Instead of a limited number of hardware sprites, MARIA treats everything as a sprite described in a series of display lists. Each display list contains pointers to graphics data and color and positioning information.

MARIA supports a palette of 256 colors and graphics modes which are either 160 pixels wide or 320 pixels wide. While the 320 pixel modes theoretically enable the 7800 to create games at higher resolution than the 256 pixel wide graphics found in the Nintendo Entertainment System and Master System, the processing demands of MARIA result in most games using the 160 pixel mode.

Each sprite can have from 1 to 12 colors, with 3 colors plus transparency being the most common. In this format, the sprite references one of 8 palettes, where each palette holds 3 colors. The background (visible when not covered by other objects) can also be assigned a color. In total, 25 colors can appear on a scan line.[35]

The graphics resolution, color palettes, and background color can be adjusted between scan lines.[35]

Sound

The 7800 uses the TIA chip for two channel audio, the same chip used in the 1977 Atari VCS, and the sound is of the same quality as that system. To compensate, GCC's engineers allowed games to include a POKEY audio chip in the cartridge. Only two official releases from Atari do this: *Ballblazer* and *Commando*.

GCC planned to develop a more advanced sound chip, Minnie (Based on GUMBY), which could also be used in 7800 cartridges.[36] This project was cancelled when Atari was sold to Jack Tramiel.

Digitally signed cartridges

In response to the large number of low quality, third party games released for the Atari 2600—a contributing factor to the video game crash of 1983—Atari required that cartridges for the 7800 be digitally signed. When a cartridge is inserted into the system, the BIOS generates a signature of the cartridge ROM and compares it to the one stored on the cartridge. If they match, the console operates in 7800 mode, granting the game access to MARIA and other features, otherwise the console operates as a 2600. This digital signature code is not present in PAL 7800s, which use various heuristics to detect 2600 cartridges, due to export restrictions.

Backward compatibility

The 7800's compatibility with the Atari 2600 is made possible by including many of the same chips used in the 2600. When playing an Atari 2600 game, the 7800 uses a Television Interface Adaptor chip to generate graphics and sound. The processor is slowed to 1.19 MHz, to mirror the performance of the 2600's 6507 chip. RAM is limited to 128 bytes and cartridge data is accessed in 4K blocks.

When in 7800 mode (signified by the appearance of the full-screen Atari logo), the graphics are generated entirely by the MARIA graphics processing unit. All system RAM is available and cartridge data is accessed in larger 48K blocks. The system's SALLY 6502 runs at its normal 1.79 MHz. The 2600 chips are used to generate sound and to provide the interfaces to the controllers and console switches.

System revisions

- Initial version: two joystick ports on lower front panel. Side expansion port for upgrades and add-ons. Bundled with two CX24 Pro-Line joysticks, AC adapter, switchbox, RCA connecting cable, and *Pole Position II* cartridge.
- Second revision: Slightly revised motherboard. Expansion port connector removed[37] from motherboard but is still etched. Shell has indentation of where expansion port was to be.
- Third revision: Same as above but with only a small blemish on the shell where the expansion port was.[38]

Peripherals

The Atari 7800 came bundled with the Atari Pro-Line Joystick, a two-button controller with a joystick for movement. The Pro-Line was developed for the 2600 and advertised in 1983,[39] but delayed until Atari proceeded with the 7800. The right fire button only works as a separate fire

button for certain 7800 games; otherwise, it duplicates the left fire button, allowing either button to be used for 2600 games. While physically compatible, the 7800's controllers do not work with the Master System, and Sega's controllers are unable to use the 7800's two-button mode.

The gamepad of later European Atari 7800s with the thumbstick screwed in

In response to ergonomic issues with the Pro-Line controllers, Atari released a joypad controller, similar in style to those on Nintendo and Sega systems, with the European 7800.[40] It was not available in the United States.

The XG-1 light gun, bundled with the Atari XEGS and also sold separately, is compatible with the 7800. Atari released five 7800 light gun games: *Alien Brigade*, *Barnyard Blaster*, *Crossbow*, *Meltdown*, and *Sentinel*.

Cancelled peripherals

After the acquisition of the Atari Consumer Division by Jack Tramiel in 1984, several expansion options for the system were cancelled:

- The High Score Cartridge was designed to save high scores for up to 65 separate games.[41] It was intended as a pass-through device, similar to the later Game Genie. Nine games were programmed to support the cartridge.
- A computer keyboard, which included an SIO port and audio input/output ports for a standard cassette storage device. The keyboard plugged into a controller port and allowed standard Atari 8-bit computer hardware to be used. It did not make the 7800 compatible with Atari computer software.[42][43]
- The expansion port for connection to laserdisc players and other peripherals was removed in the second and third revisions of the 7800.[44]
- A dual joystick holder was designed for *Robotron: 2084* and future games like *Battlezone*, but not produced.[45]
- A 7800 cartridge adaptor that would bring 7800 compatibility to the Atari 5200. It was essentially a 7800 PCB designed to be plugged into the 5200's cartridge slot just like the similar VCS Cartridge Adaptor.[46][47]

Games

While the system can play the over 400 games for the Atari 2600, there were only 59 official releases for the 7800. The lineup emphasized high-quality versions of games from the golden age of arcade video games.[48] *Pole Position II*, *Dig Dug*, and *Galaga*, by the time of the 1986 launch, were three, four, and five years old, respectively. A raster graphics version of 1979's *Asteroids* was released in 1987. In 1988, Atari published a conversion of Nintendo's *Donkey Kong*, seven years after the original arcade game and five years after the Atari 8-bit computer cartridge. Atari also marketed a line of games called "Super Games"

Atari 7800 with *Donkey Kong Junior* cartridge

which were arcade and computer games previously not playable on a home console such as *One-On-One Basketball* and *Impossible Mission*.[49]

Eleven games were developed and sold by three third-party companies under their own labels (Absolute Entertainment, Activision, and Froggo) with the rest published by Atari Corporation. Most of the games from Atari were developed by outside companies under contract.[50]

Some NES games were developed by companies who had licensed their title from a different arcade manufacturer. While the creator of the NES version would be restricted from making a competitive version of an NES game, the original arcade copyright holder was not precluded from licensing out rights for a home version of an arcade game to multiple systems. Through this loophole, Atari 7800 conversions of *Mario Bros.*, *Double Dragon*, *Commando*, *Rampage*, *Xenophobe*, *Ikari Warriors*, and *Kung-Fu Master* were licensed and developed.[51]

A final batch of games was released by Atari in 1990: *Alien Brigade*, *Basketbrawl*, *Fatal Run*, *Meltdown*, *Midnight Mutants*, *Motor Psycho*, *Ninja Golf*, *Planet Smashers*, and *Scrapyard Dog*. *Scrapyard Dog* was later released for the Atari Lynx.

Reception

Legacy

Retro systems

In 2004, the Infogrames-owned version of Atari released the Atari Flashback console. It resembles a miniature Atari 7800 and has five 7800 and fifteen 2600 games built in. Built using famiclone hardware instead of recreating the Atari 7800 hardware, it was criticized for failing to properly replicate the actual gaming experience. A subsequent 7800 project was cancelled after prototypes were made.[52]

On November 29, 2024, Atari and Plaion released the Atari 7800+, a microconsole designed as a smaller-scale replica of the 7800, specifically the European model.[53] It includes support for physical cartridges of both the Atari 2600 and 7800 via emulation.[54][55] It is effectively a variant of the Atari 2600+, which was introduced in 2023.[56]

Game development

The digital signature long prevented aftermarket games from being developed. The signing software was eventually found and released at Classic Gaming Expo in 2001.[57] Several new Atari 7800 games such as *Beef Drop*, *B*nQ*, *Combat 1990*, *CrazyBrix*, *Failsafe*, and *Santa Simon* have been released..

In July 2009, the source code to 13 games, the operating system, and Atari ST-hosted development tools, were released.[58] Commented assembly language source code was made available for *Centipede*, *Commando*, *Crossbow*, *Desert Falcon*, *Dig Dug*, *Food Fight*, *Galaga*, *Hat Trick*, *Joust*, *Ms. Pac-Man*, *Super Stunt Cycle*, *Robotron: 2084*, and *Xevious*.[59]

See also

- History of Atari
- List of Atari 7800 games
- List of Atari 2600 games

References

1. *Computer Entertainer*, February 1987, page 13 (http://i.imgur.com/eUXac6M.jpg)
2. Patterson, Shane; Brett Elston. "Consoles of the '80s" (https://web.archive.org/web/20201031161620/https://www.gamesradar.com/consoles-of-the-80s/). GamesRadar. Archived from the original (http://www.gamesradar.com/f/consoles-of-the-80s/a-20080618942052063/p-4) on 31 October 2020. Retrieved 1 April 2011.
3. "Pole Position II for Arcade (1983) - MobyGames" (http://www.mobygames.com/game/pole-position-ii). *MobyGames* (in German). Archived (https://web.archive.org/web/20190522000952/https://www.mobygames.com/game/pole-position-ii) from the original on May 22, 2019. Retrieved March 29, 2016.
4. Top 25 Videogame Consoles of All Time: Atari 7800 is Number 17 (http://www.ign.com/top-25-consoles/17.html), IGN.
5. "Atari unveils advanced video game that is expandable to introductory computer" (http://www.atari7800.org/museum/PressDoc1s.htm) (Press release). Atari, Inc. 1984-05-21. Retrieved 2010-04-30.
6. "Atari Video Game Unit Introduced" (https://query.nytimes.com/gst/fullpage.html?sec=technology&res=9F06E5D7163BF931A15756C0A962948260). *New York Times*. 22 May 1984.
7. AtariAge: Atari 7800 History (http://atariage.com/7800/history.html), AtariAge.
8. "The History of the Atari 7800 ProSystem with Steve Golson" (https://www.youtube.com/watch?v=ack4jr09qw0). *YouTube*. 7 November 2016. Archived (https://ghostarchive.org/varchive/youtube/20211123/ack4jr09qw0) from the original on 2021-11-23.
9. "The Atari 7800 ProSystem" (http://www.atarimuseum.com/videogames/consoles/7800/7800menu/).
10. "When Pac Ruled the Earth". *Electronic Gaming Monthly*. No. 62. EGM Media, LLC. September 1994. p. 18.
11. "7800 compared to the NES" (https://sites.google.com/site/atari7800wiki/7800-compared-to-the-nes). *Atari 7800 Programming*.
12. Davidson, Steve (September 1984). "Introducing the Atari 7800" (https://archive.org/details/Electronic_Games_Volume_02_Number_14_1984-09_Reese_Communications_US/page/n27/mode/2up). *Electronic Games*. **2** (14): 28–29.
13. Reichert, Matt. "Rescue on Fractalus" (http://www.atariprotos.com/7800/software/rof/rof.htm). *AtariProtos.com*. Retrieved 2023-10-12.
14. [Retrogamer Magazine, Issue #78, pp 53.]
15. [Retrogamer Magazine, Issue #78, pp 57]
16. Semrad, Edward (1986-06-26). "Atari's "Jr Pac-Man" scores for looks, sound". *The Milwaukee Journal*.
17. *Atari 7800 - History of Video Game Consoles Wiki Guide - IGN* (https://www.ign.com/wikis/history-of-video-game-consoles/Atari_7800), 27 March 2014, retrieved 2019-01-23
18. [blob:https://imgur.com/5e89e610-0413-45b3-90cc-a9c05e8e21b5], Detroit Press, August 15th, 1986
19. *Computer Entertainer*, December 1986, page 8 (http://i.imgur.com/fyarkYE.jpg)
20. "Axlon to develop new video games for Atari; Bushnell returns" (https://atariage.com/forums/uploads/monthly_01_2008/post-9346-1201143700.jpg).

21. Glancey, Paul (Aug 1989). "Son of VCS" (https://archive.org/details/ComputerAndVideoGames060Oct86/ComputerAndVideoGames/ComputerAndVideoGames094-Aug89/page/n7/mode/2up). *Computer and Video Games*. No. 94. pp. 8–9. Retrieved 11 Aug 2025.
22. "TOKI FOR 7800: DISCOVERY ANNOUNCEMENT" (https://web.archive.org/web/20180418231623/http://betaphasegames.com/7800_Toki_Screens.html). *Beta Phase Games*. Archived from the original (http://betaphasegames.com/7800_Toki_Screens.html) on 2018-04-18.
23. "Atari Benelux Timeline – Atarimuseum.nl" (https://atarimuseum.nl/history-of-atari-benelux/).
24. "Atari 7800 Prosystem 30th Anniversary" (https://web.archive.org/web/20190428140546/https://issuu.com/michelfranca/docs/retro_gamer____132). Retro Gamer. 10 September 2016. Archived from the original (https://issuu.com/michelfranca/docs/retro_gamer____132) on 28 April 2019. Retrieved 18 August 2018.
25. "FAQ 400 800 XL XE : What are SALLY, ANTIC, CTIA/GTIA/FGTIA, POKEY, and FREDDIE?" (https://web.archive.org/web/20200719024918/http://www.atarimania.com/faq-atari-400-800-xl-xe-what-are-sally-antic-ctia-gtia-fgtia-pokey-and-freddie_14.html). Archived from the original (http://www.atarimania.com/faq-atari-400-800-xl-xe-what-are-sally-antic-ctia-gtia-fgtia-pokey-and-freddie_14.html) on 19 July 2020. "named SALLY by Atari engineers, but [support documents call it] "6502 (Modified)", "6502 Modified", "Custom 6502", or "6502C". [..] SALLY 6502 chips are never marked "6502C" but, other than the UMC UM6502I, always [marked] C014806. [..] [Other] chips marked "6502C" [..] are NOT the Atari "6502C" but [standard 6502] certified for 4MHz"
26. "Atari 7800 - Game Console - Computing History" (http://www.computinghistory.org.uk/det/15473/Atari-7800/). *www.computinghistory.org.uk*. Retrieved 2020-02-19.
27. "GCC1702B "Maria" Chip" (https://web.archive.org/web/20101207034523/http://www.atarimuseum.com/ahs_archives/archives/pdf/videogames/7800/gcc1702b_maria_specs.pdf) (PDF). Archived from the original (http://www.atarimuseum.com/ahs_archives/archives/pdf/videogames/7800/gcc1702b_maria_specs.pdf) (PDF) on 7 December 2010.
28. "Atari 7800 vs. Nintendo NES" (https://web.archive.org/web/20140628043258/http://ataritimes.com/index.php?ArticleIDX=632). Archived from the original (http://www.ataritimes.com/index.php?ArticleIDX%3D632) on 2014-06-28. Retrieved 2014-09-29.
29. "The Atari 7800 ProSystem" (https://web.archive.org/web/20030624192139/http://www.atarimuseum.com/videogames/consoles/7800/7800.html). Archived from the original (http://www.atarimuseum.com/videogames/consoles/7800/7800.html) on 2003-06-24.
30. "7800 Software Guide - 8BitDev.org - Atari 7800 Development Wiki" (https://7800.8bitdev.org/index.php/7800_Software_Guide). *7800.8bitdev.org*. Retrieved 2025-12-31.
31. "7800 Software Guide" (http://atarihq.com/danb/files/7800%20Software%20Guide.pdf) (PDF). Archived (https://ghostarchive.org/archive/20221009/http://atarihq.com/danb/files/7800%20Software%20Guide.pdf) (PDF) from the original on 2022-10-09.
32. Grand, Joe; Mitnick, Kevin D.; Russell, Ryan (2004-01-29). *Hardware Hacking: Have Fun while Voiding your Warranty* (https://books.google.com/books?id=bGEbLt1C168C&pg=PA201). Elsevier. p. 201. ISBN 978-0-08-047825-8.
33. "Atari C012294 POKEY" (http://visual6502.org/images/pages/Atari_C012294_POKEY_die_shots.html). *visual6502.org*. Retrieved 2019-12-05.
34. Freeman, Will (July 31, 2025). "The Making of: Tiger-Heli". *Retro Gamer*. No. 275. Future plc. pp. 42–47.
35. "Atari 3600 Software Guide" (https://web.archive.org/web/20101207033819/http://www.atarimuseum.com/ahs_archives/archives/pdf/videogames/7800/3600_software_guide.pdf) (PDF). Archived from the original (http://www.atarimuseum.com/ahs_archives/archives/pdf/videogames/7800/3600_software_guide.pdf) (PDF) on 2010-12-07.
36. "The 7800 Minnie sound chip - 8BitDev.org - Atari 7800 Development Wiki" (https://7800.8bitdev.org/index.php/The_7800_Minnie_sound_chip). *7800.8bitdev.org*. Retrieved 2024-03-02.
37. "Console Living Room: Atari 7800 : Free Software : Free Download, Borrow and Streaming : Internet Archive" (https://archive.org/details/atari_7800_library?tab=about).
38. "Atari 7800 Pro System" (https://www.ataricompendium.com/game_library/easter_eggs/7800/78prosystem.html). *www.ataricompendium.com*. Retrieved 2023-04-14.

39. "Catalog - Atari (CO21776-Rev. A)" (https://atariage.com/catalog_thumbs.php?CatalogID=38). *AtariAge*.
40. *The Game Machines*. p. 138.
41. *The Games Machine* (https://books.google.com/books?id=-8YlaRclj2gC&dq=The+High+Score+Cartridge+was+designed+to+save+high+scores+for+up+to+65+separate+games&pg=PA139). December 2019. p. 139.
42. Vendel, Curt. "The Atari 7800 PRO System Computer Keyboard" (https://atarimuseum.ctrl-alt-rees.com/videogames/consoles/7800/7800keyboard.html). *The Atari Museum*. Archived (https://web.archive.org/web/20250815080956/https://atarimuseum.ctrl-alt-rees.com/videogames/consoles/7800/7800keyboard.html) from the original on 15 August 2025. Retrieved 2 February 2026.
43. "7800 Computer Keyboard" (https://www.ataricompendium.com/game_library/prototypes/7800/7800_computer_keyboard.html). *Atari Compendium*. Archived (https://web.archive.org/web/20250815081045/https://www.ataricompendium.com/game_library/prototypes/7800/7800_computer_keyboard.html) from the original on 15 August 2025. Retrieved 2 February 2026.
44. "Atari Compendium" (https://www.ataricompendium.com/game_library/easter_eggs/7800/78prosystem.html). *www.ataricompendium.com*. Retrieved 16 February 2024.
45. "Cartridge Consoles" (https://web.archive.org/web/20210724013905/https://www.atarimuseum.com/videogames/consoles/). *Atari Museum*. Archived from the original (http://www.atarimuseum.com/videogames/consoles/) on 24 July 2021.
46. "Atari "Slam-Pam" 7800 Compatibility Module" (https://atarimuseum.ctrl-alt-rees.com/videogames/consoles/7800/slampam.html). *The Atari Museum*. Archived (https://web.archive.org/web/20260202211100/https://atarimuseum.ctrl-alt-rees.com/videogames/consoles/7800/slampam.html) from the original on 2 February 2026. Retrieved 2 February 2026.
47. "Atari 7800 to 5200 Prototype adapter" (https://www.atari7800.org/console/7800adapter5200.htm). *The Atari 7800 Page*. Archived (https://web.archive.org/web/20251206214728/https://atari7800.org/console/7800adapter5200.htm) from the original on 6 December 2025. Retrieved 2 February 2026.
48. Katz, Arnie; Kunkel, Bill; Worley, Joyce (August 1988). "Video Gaming World" (http://www.cgwmuseum.org/galleries/issues/cgw_50.pdf) (PDF). *Computer Gaming World*. No. 50. p. 47. Archived (https://ghostarchive.org/archive/20221009/http://www.cgwmuseum.org/galleries/issues/cgw_50.pdf) (PDF) from the original on 2022-10-09. Retrieved 17 April 2016.
49. Image (http://www.tankgirl.info/8bit/images/atari/7800/boxBottom.jpg) tankgirl.info
50. Jung, Robert A. "The Atari Timeline" (https://www.landley.net/history/mirror/atari/museum/Atari-Timeline.html). *Landley*. Retrieved 13 February 2017.
51. "Atari 7800/Atari 7800 (a7800)" (https://history-games.com/navigation/a7800/). *History-games.com*. Retrieved 3 April 2026.
52. "Remake of the Atari 7800 console" (https://web.archive.org/web/20110311035331/http://www.legacyengineer.com/portfolio-7800.html). Archived from the original (http://www.legacyengineer.com/portfolio-7800.html) on 2011-03-11. Retrieved 2010-12-22. Legacy 7800 remade
53. "Forget the PS5 Pro. The Atari 7800+ is this holiday's hottest console" (https://www.digitaltrends.com/gaming/atari-7800-plus-hands-on-impressions/). *Digital Trends*. 2024-11-25. Retrieved 2025-02-10.
54. "Atari's new 7800 console remake can also play your old Atari 2600 cartridges" (https://www.theverge.com/2024/8/20/24224292/atari-7800-plus-compatible-with-2600-cartridges-price-release-date). 20 August 2024.
55. Barr, Kyle (2024-11-25). "Atari 7800+ Review" (https://gizmodo.com/atari-7800-review-2000528650). *Gizmodo*. Retrieved 2025-02-10.
56. Gardner, Matt. "Atari 7800+ Remakes Classic Console With 2600 Game Compatibility" (https://www.forbes.com/sites/mattgardner1/2024/08/20/atari-7800-remakes-classic-console-with-2600-game-compatibility/). *Forbes*. Retrieved 2024-09-16.
57. Boris, Dan. "The Encryption Issue" (http://atarihq.com/danb/a7800.shtml#encryption). *Atari 7800 Tech Page*. Retrieved 2 October 2013.

58. "AtariMuseum - Site News: June 11, 2009" (https://web.archive.org/web/20190709161300/http://www.atarimuseum.com/whatsnew/2009-JUN-11.html). *The Atari History Museum*. Archived from the original (http://www.atarimuseum.com/whatsnew/2009-JUN-11.html) on 9 July 2019. Retrieved 3 July 2009.
59. "7800 Games & Development" (https://web.archive.org/web/20210601062500/http://www.atarimuseum.com/videogames/consoles/7800/games/). *The Atari History Museum*. Archived from the original (http://www.atarimuseum.com/videogames/consoles/7800/games/) on 1 June 2021. Retrieved 3 July 2009.

External links

- AtariAge – Comprehensive Atari 7800 database and information (http://www.atariage.com/software_search.html?SystemID=7800) Archived (https://web.archive.org/web/20190428093544/http://www.atariage.com/software_search.html?SystemID=7800) 2019-04-28 at the Wayback Machine
- Atari 7800 Information & Resources (http://www.atari7800.org)
- Atari Museum – History of the Atari 7800 ProSystem (http://www.atarimuseum.com/videogames/consoles/7800/7800menu/) Deprecated link archived 2013-01-17 at archive.today
- Atari 7800 Development Wiki (http://7800.8bitdev.org/)
- ProSystem emulator (https://gstanton.github.io/ProSystem1_3/) for Microsoft Windows

Atari XEGS

The **Atari XE Video Game System** (**Atari XEGS**) is an industrial redesign of the Atari 65XE home computer and the final model in the Atari 8-bit computer series. It was released by Atari Corporation in 1987 and marketed as a home video game console alongside the Nintendo Entertainment System, Sega's Master System, and Atari's own Atari 7800. The XEGS is compatible with existing Atari 8-bit computer hardware and software. Without keyboard, the system operates as a stand-alone game console. With the keyboard, it boots identically to the Atari XE computers. Atari packaged the XEGS as a basic set consisting of only the console and joystick, and as a deluxe set consisting of the console, keyboard, CX40 joystick, and XG-1 light gun.

The XEGS release was backed by new games, including *Barnyard Blaster* and *Bug Hunt*, plus cartridge ports of older games, such as *Fight Night* (Accolade, 1985), *Lode Runner* (Broderbund, 1983), *Necromancer* (Synapse Software, 1982), and *Ballblazer* (Lucasfilm Games, 1985). Support for the system was dropped in 1992 along with the rest of the 8-bit computer line, the Atari 2600, and the Atari 7800.

Atari XEGS

Manufacturer	Atari Corporation
Type	Home video game console Home computer
Generation	Third (8-bit era)
Released	late 1987
Introductory price	US$159 (equivalent to $450 in 2025)[1]
Discontinued	December 1991[2]
Units sold	100,000[3]
Media	ROM cartridge
CPU	MOS Technology 6502C @ 1.79 MHz
Memory	64KB RAM
Display	RF and composite out, 384 × 240 (overscan), 16 colors from a 256 color palette
Graphics	ANTIC (graphics) GTIA (video)
Sound	POKEY
Backward compatibility	Atari 8-bit computers
Predecessor	Atari 7800

Development

In 1984, following the video game crash of 1983 when Atari, Inc. had great financial difficulties as a division of Warner Communications, John J. Anderson of *Creative Computing* stated that Atari should have released a video game console in 1981 based on its Atari 8-bit computers and compatible with that software library. The company instead released the Atari 5200, which is based on the 8-bit computers but is incompatible with their software.[4]

After Jack Tramiel purchased the company, Atari Corporation re-released two game consoles in 1986: the Atari 7800, which had previously been released in a brief test run in 1984; and a lower cost redesign of the Atari 2600.

Successor	Panther (canceled) Jaguar

Atari conceived the console in a plan to increase the company's console market share while improving sales of its 8-bit home computer family which had started with the Atari 400 and 800.[5] Providing a "beginning computer" and "sophisticated game console" in one device, was thought to convince more retailers and software developers to support the platform. Matthew Ratcliff, who had been contributing editor for *Antic* magazine, recalled that "Atari executives asked the heads of several major toy store chains which product they'd rather sell—the powerful 65XE home computer for about $80, or a fancy new game system for about $150. The answer was, 'You can keep the computer, give us that game machine!"[6] In May 1987, Atari's Director of Communications, Neil Harris, updated the online Atari community by outlining this plan, noting that the XEGS was intended to further the 8-bit line by providing mass-merchants with a device that was more appealing to their markets.[7]

Atari XEGS with keyboard


Atari XEGS

The XEGS is a repackaged Atari 65XE home computer,[6] compatible with the existing range of Atari 8-bit computer software and peripherals, and thus can function as a home computer.[8][9][10][11] At a more premium US$159 (equivalent to about $450 in 2025),[1] it co-existed with the Atari 7800 and remodeled Atari 2600,[1] and was occasionally featured alongside those systems in Atari print ads and television commercials.[12]


Joystick ports

Atari Corporation discontinued their 8-bit product line, including the XEGS, in December 1991.[2]

Games


Rear input and output ports

The XEGS shipped with the Atari 8-bit version of *Missile Command* built in,[8] *Flight Simulator II* bundled with the keyboard component, and *Bug Hunt* which is compatible with the light gun. As the XEGS is compatible with the earlier 8-bit software, many games released under the XEGS banner are simply older games rebadged. This was done to the extent that some games were shipped in the old Atari 400/800 packaging, bearing only a new sticker to indicate that they are also compatible with the XEGS.[5]

Peripherals

The XEGS was released in a basic set and a deluxe set. The basic set includes only the console, and a standard CX40 joystick with a grey base to match the XEGS rather than its original black. The deluxe set consists of the console, the CX40 joystick, a keyboard which enables home computer functionality, and the XG-1 light gun. The keyboard and light gun were also released separately outside North America.[13] This is the first light gun produced by Atari, and it is also compatible with the Atari 7800 and Atari 2600.[8][14]

The system can use Atari 8-bit computer peripherals, such as disk drives, modems, and printers.[8]

XEGS keyboard

CX40 joystick in XEGS color scheme

XG-1 light gun

Reception

Atari sold 100,000 XE Game Systems during the Christmas season in 1987, every unit that was produced during its launch window.[15] Matthew Ratcliff called the game and computer combination "a brilliant idea", which "has been selling out almost as fast as toy stores can get them in".[6] He said, "The XEGS may not seem like such a hot idea to serious Atari computer users. But just think about it. If you were afraid of computers or don't have the foggiest idea what to do with one, you'd have absolutely no interest in an Atari 65XE—even if it could play great games. However, you'd probably have no compunction about buying a great video game system, the XEGS, as a new addition to the family entertainment center." In 1988, he wrote in *Antic* magazine that, to switch between light gun and joystick games, active XEGS gamers are frustrated by the need to continually re-plug their devices and power cycle the system, due to the system's lack of autodetection, which is complicated by its awkwardly downward slanting ports. He said "*Barnyard Blaster* and *Bug Hunt* could have been just a bit smarter" by including the simple routine that he was forced to write and publish as a workaround.[16]

See also

- History of Atari
- Atari 8-bit peripherals
- Commodore 64 Games System

References

1. "Kaybee Toy Store Ad". *Hutchinson News*. Hutchinson, Kansas. October 8, 1987. p. 64.
2. Duarte, Tim (July 1992). "The Game's the Thing" (https://archive.org/details/atari-user-1992-07/page/n21). Feature. *AtariUser*. Quill Publishing Co. p. 22. Retrieved February 5, 2025.
3. "Editorial: Ever-Changing Atari Marketplace" (https://www.atarimagazines.com/v7n1/marketplace.html).
4. Anderson, John J. (March 1984). "Atari" (https://archive.org/stream/creativecomputing-1984-03/Creative_Computing_v10_n03_1984_Mar#page/n51/mode/2up). *Creative Computing*. p. 51. Retrieved February 6, 2015. "The games division [..] saw the home computer division as a threat [..] If any of their new machines could expand into true computers, the reins would automatically be handed over [..] To the games division, this was a fate worse than death [so] they chose death. [..] If, in 1981, the next-generation game machine *had* been designed to be compatible with the Atari 400 and 800 microcomputers, Atari would not be in the state it is today. Instead, the 5200 game unit was launched. Internally, it was very nearly an Atari 800, and as such was a fabulous game machine. The notable exceptions were that all compatibility and expandability had been designed out [..] with an external keyboard and 800 compatibility, could have been transformed into a product superior to the famed Coleco Adam, way back in 1982."
5. Wolf, Mark J. P. (2008). *The video game explosion: a history from PONG to PlayStation and beyond*. Greenwood Publishing Group. p. 60. ISBN 978-0-313-33868-7.
6. Ratcliff, Matthew. "Atari XEGS Information" (https://www.atarihq.com/atcomp/xegs.html). *AtariHQ*. Retrieved February 28, 2021.
7. Harris, Neil (May 12, 1987). "Re: Is Atari killing the 8 bit?" (https://groups.google.com/group/comp.sys.atari.8bit/msg/98a62e383f31d6cc?dmode=source). Retrieved December 12, 2025.
8. "Atari 8 Bit Computers – 1979–1987" (https://web.archive.org/web/20120211095903/http://classicgaming.gamespy.com/View.php?view=ConsoleMuseum.Detail&id=52). *Classic Gaming*. Archived from the original (http://classicgaming.gamespy.com/View.php?view=ConsoleMuseum.Detail&id=52) on February 11, 2012. Retrieved July 21, 2010.
9. "The Toy Store: Shootout of the games systems" (https://archive.org/details/paleotronic0418-150dpi/page/n97/mode/2up?q=%22XG-1+light+gun). *Paleotronic*. No. 2. April–June 2018. p. 96. Retrieved March 1, 2021.
10. "Peripheral Power" (https://archive.org/details/Retro_Gamer_UK_124/page/78/mode/2up?q=%22light+gun%22). *Retro Gamer UK*. No. 124. p. 76. Retrieved March 1, 2021.
11. Loguidice, Bill; Barton, Matt (2014). *Vintage Game Consoles* (https://books.google.com/books?id=wZnpAgAAQBAJ&pg=PA66). Focal Press. p. 66. ISBN 9780415856003. Retrieved March 1, 2021.
12. "Atari Retailer Rebate Ad". *Syracuse Herald Journal*. Syracuse, New York. December 11, 1988. p. 187.
13. "Rhod's Collection" (http://rhod.fr/cons-atari-xe.html). Retrieved August 24, 2010.
14. Herman, Leonard; Horwitz, Jer; Kent, Steve; Miller, Skyler. "Video Games Are Back 1985–1988" (https://web.archive.org/web/20121118001239/http://au.gamespot.com/gamespot/features/video/hov/p6_01.html). *The History of Video Games*. GameSpot. Archived from the original (http://au.gamespot.com/gamespot/features/video/hov/p6_01.html) on November 18, 2012. Retrieved March 16, 2014.
15. Friedland, Nat. "Editorial: Ever-Changing Atari Marketplace" (https://www.atarimagazines.com/v7n1/marketplace.html). *Antic*. Retrieved March 1, 2021 – via atarimagazines.com.
16. Ratcliff, Matthew (December 1988). "XG-1 Light Gun Finder" (https://www.atarimagazines.com/v7n8/xg1light.html). *Antic*. Vol. 7, no. 8. Retrieved February 28, 2021.

Atari XG-1 light gun

The **Atari XG-1** is an electronic light gun accessory manufactured by Atari Corporation. Released in 1987, it is compatible with the Atari 8-bit computers, Atari 7800, and Atari 2600. It was bundled with the Atari XEGS Deluxe home computer and video game console combination system,[1] and with the light gun game *Bug Hunt* for the 7800 as model XES2001 for US$34.95 (equivalent to about $100 in 2025).[2] Atari eventually released five light gun games on the 7800 (*Alien Brigade*, *Barnyard Blaster*, *Crossbow*, *Meltdown*, and *Sentinel*) and one on the 2600 (*Sentinel*).

Atari XG-1

Developer	Atari Corporation
Manufacturer	Atari Corporation
Type	Light gun
Generation	Second and third (8-bit era)
Released	1987
Introductory price	$34.95
Input	Light pen
Best-selling game	*Bug Hunt*
Backward compatibility	Atari 8-bit, Atari 7800, Atari 2600

Hardware

The XG-1 is a specialized light pen. Generic light pen support was built into the Atari 8-bit home computers since its 1979 launch. The *Atari 400/800 Hardware Technical Reference* recommends a calibration procedure each time a light pen is used, so that the software can compensate for this offset for maximal accuracy. *Bug Hunt* and *Barnyard Blaster* for the XEGS each have unique hard-coded values.[3][4] A reddish-orange version of the gun was planned for the 2600 and 7800 but was never released.[1]

Games

Sentinel is the only game released for the gun on the 2600 console, and *Shooting Arcade* was planned but never released.[5]

XG-1 light gun games		
Year	**Title**	**Platforms**
1987	*Bug Hunt*	XEGS
1987	*Crossbow*	7800 and XEGS
1988	*Barnyard Blaster*	7800 and XEGS
1990	*Alien Brigade*	7800
1988	*Crime Buster*	XEGS
1990	*Meltdown*	7800
1992	*Operation Blood*	XEGS
1993	*Operation Blood II – Special Forces*	XEGS
1987	*Gangsterville*	XEGS
1990	*Sentinel*	2600 and 7800
Unreleased	*Shooting Gallery*	2600

Reception

For *Antic* magazine in August 1988, Matthew Ratcliff criticized the poor horizontal accuracy of the XG-1 light gun compared to Nintendo's NES Zapper or Sega's Light Phaser.[6] In December 1988, he said that, to switch between light gun and joystick games, active XEGS gamers are frustrated by the need to continually re-plug their devices and power cycle the system, due to the system's lack of autodetection, which is complicated by its awkwardly downward slanting ports. He said "*Barnyard Blaster* and *Bug Hunt* could have been just a bit smarter" by including the simple routine that the magazine was forced to write and publish as a workaround.[7]

In the August 1989 issue of *A.N.A.L.O.G. Computing* magazine, Matthew Ratcliff wrote a front page feature on programming the XG-1 in users' custom software, including his program allowing the light gun to be used to make menu selections. He gave the XG-1 a positive review, calling it an "exciting alternative to joysticks". He said it "has much more 'noise' in the horizontal direction than vertical" due to hardware limitations.[2]

The 2014 book *Vintage Game Consoles* also criticized its accuracy compared to its competition, but noted its rarity as Atari's only light gun.[4]

See also

- Atari 8-bit computer peripherals

References

1. "Peripheral Power" (https://archive.org/details/Retro_Gamer_UK_124/page/78/mode/2up?q=%22light+gun%22). *Retro Gamer UK*. No. 124. p. 76. Retrieved March 1, 2021.
2. Ratcliff, Matthew (August 1989). "Gun Assist" (https://www.atarimania.com/mags/pdf/analog_no_75.pdf) (PDF). *A.N.A.L.O.G. Computing*. No. 75. LFP Inc. p. 58. ISSN 0744-9917 (https://search.worldcat.org/issn/0744-9917). Retrieved March 1, 2021.

3. "The Toy Store: Shootout of the games systems" (https://archive.org/details/paleotronic0418-150dpi/page/n97/mode/2up?q=%22XG-1+light+gun). *Paleotronic*. No. 2. April–June 2018. p. 96. Retrieved March 1, 2021.
4. Loguidice, Bill; Barton, Matt (2014). *Vintage Game Consoles* (https://books.google.com/books?id=wZnpAgAAQBAJ&pg=PA66). Focal Press. p. 66. ISBN 9780415856003. Retrieved March 1, 2021.
5. Weiss, Brett (2007). *Classic Home Video Games, 1972–1984 A Complete Reference Guide* (https://books.google.com/books?id=BzxTtml8Jq4C&pg=PA103). McFarland. p. 103. ISBN 9780786432264. Retrieved February 26, 2021.
6. Ratcliff, Matthew (August 1988). "First look inside the Atari XE Game system" (https://archive.org/details/1988-08-anticmagazine/page/n43/mode/2up?q=%22XG-1%22). *Antic*. Vol. 7, no. 4. pp. 43–45. Retrieved March 1, 2021.
7. Ratcliff, Matthew (December 1988). "XG-1 Light Gun Finder" (https://www.atarimagazines.com/v7n8/xg1light.html). *Antic*. Vol. 7, no. 8. Retrieved February 28, 2021.

External links

- Atari XEGS Information (https://www.atarihq.com/atcomp/xegs.html) by *Antic* contributing editor Matthew Ratcliff
- The Atari 8-Bit FAQ (http://www.faqs.org/faqs/atari-8-bit/faq/)

Atari Panther

Atari Panther was the codename for a cancelled video game console from Atari Corporation planned as the successor to the Atari 7800 and the Atari XEGS. It was developed by Flare Technology, the same ex-Sinclair team who worked on the cancelled Flare One and Konix Multisystem consoles.[1] It was planned to be a 16-bit console and was slated at one point to be 32-bit.[2]

Work started in 1988 with a planned 1991 release to compete with the Super Nintendo Entertainment System and the Sega Genesis.[3] The Panther was never commercially released as the design was abandoned for the Atari Jaguar.

Atari Panther

Unofficial 3D model

Developer	Atari Corporation
Type	Home video game console
Generation	Fourth
Released	Canceled
Media	Cartridge
CPU	68000
Graphics	Panther
Predecessor	Atari 7800, XEGS
Successor	Jaguar

Hardware

The system has three primary chips:

1. A Motorola 68000 running at 16 MHz
2. An object processor called the "Panther"
3. An Ensoniq sound processor, nicknamed "Otis", with 32 channels (presumably an ES5505)

References

1. "Slipstream: The Konix Multi-system Archive" (https://www.konixmultisystem.co.uk/index.php?id=interviews&content=martin).
2. *Atari: From Boom to Bust and Back Again*. Imagine Publishing. 2012.
3. "Video Game Systems :: Jaguar :: Atari Panther" (https://web.archive.org/web/20031202031226/http://www.atari-explorer.com/jaguar-panther.html). *www.atari-explorer.com*. Archived from the original (http://www.atari-explorer.com/jaguar-panther.html) on December 2, 2003. Retrieved March 27, 2019.

External links

- Atari Panther history & information (https://web.archive.org/web/20200831200801/http://www.atarimuseum.com/videogames/consoles/jaguar/Panther/index.htm)

Atari Jaguar

The **Atari Jaguar** is a home video game console developed by Atari Corporation and released in North America in November 1993. It has a Motorola 68000 CPU and two custom 32-bit coprocessors named Tom and Jerry. Atari marketed it as the world's first 64-bit game system, drawing controversy as some argued that this configuration did not meet the definition of a 64-bit system.[1] The Jaguar launched with *Cybermorph* as the pack-in game.[7] A total of 63 licensed games (50 on cartridge, 13 on CD-ROM) were released for the system prior to its discontinuation in 1996.

Development started in the early 1990s by Flare Technology, which focused on the system after cancellation of the Panther console. The Jaguar became a more important system for Atari after discontinuing Atari ST computers in favor of video games.[8] However, game development was complicated by the complex multi-chip architecture, hardware bugs, and poor programming tools. Underwhelming sales further eroded third-party support.[7]

The Jaguar launched as part of the fifth generation of video game consoles, but like other early fifth generation consoles, it struggled to capture major market share from the dominant last generation consoles, the Genesis and Super NES.[9] Atari attempted to extend the system's lifespan by releasing the Jaguar CD add-on, and emphasizing the Jaguar's price, which was more than US$100 less than that of its fifth generation competitors, among them the Sega Saturn and Sony PlayStation,[10] which both launched in 1995. However, the Jaguar failed to find its niche. Atari internally abandoned the system by the end of that year, liquidating its inventory by 1996.[11] The commercial failure of the Jaguar prompted Atari to leave the console market and restructure itself as a third-party developer. After Hasbro Interactive acquired all of Atari Corporation's properties,[12] it released the Jaguar patents into the public domain in 1999 and declared

Atari Jaguar

Jaguar with original PowerPad controller

Developer	Atari Corporation
Manufacturer	IBM
Type	Home video game console
Generation	Fifth
Released	NA: November 23, 1993[1] EU: June 27, 1994 DE: September 1994[2] JP: December 8, 1994[3] ESP: April 1995[4]
Discontinued	1996
Units sold	< 150,000[5]
Media	ROM cartridge
CPU	Motorola 68000 @ 13.295 MHz, 2 custom RISC processors @ 26.591 MHz each
Memory	2 MB RAM
Storage	Internal RAM, cartridge
Display	Composite, S-Video, RGB, or RF TV out
Graphics	Tom chip @ 26.591 MHz (32-bit RISC architecture, 4 KB internal RAM)
Sound	Jerry chip @ 26.591 MHz (16-bit CD-quality stereo sound,

it an open platform.[13][14] Since its discontinuation, the Jaguar has gained a cult following, with new games being released for the system by a large homebrew community.[15]

	two DACs, wavetable and AM synthesis)
Controller input	PowerPad, Pro Controller
Best-selling game	*Alien vs Predator* (52,223)[6]
Predecessor	7800 XEGS Panther (canceled)

History

Development

Atari Corporation's previous home video game console, the Atari 7800, was released in 1986. It was considered an "also-ran" and far behind rival Nintendo.[16] Around 1989, development began on a new console leveraging technology from Atari ST computers. It was originally named the Super XE, following the XE Game System, and eventually became the Panther using either 16 or 32-bit architecture. Development also began on a more advanced system, codenamed Jaguar.[16]

Both the Jaguar and Panther were developed by the members of Flare Technology, a company formed by Martin Brennan and John Mathieson. The team had claimed that they could not only make a console superior to the Genesis or the Super NES, but they could also be cost-effective.[17] Atari was impressed by Flare's work on the Konix Multisystem, and persuaded them to close Flare and form a new company called Flare II, to be funded by Atari.

Work on the Jaguar design progressed faster than expected, so Atari canceled the Panther project in 1991[16] to focus on the more promising Jaguar. Rumors were already circulating of a 1992 launch[18] and its 32-bit or even 64-bit architecture.[19] By this time, the Atari ST had long been surpassed in popularity by the Amiga, and Atari and Commodore became victims of Wintel, which became the dominant computer platform.[16] Atari's support for its legacy 8-bit products was canceled to fully focus on developing the Jaguar, and ST computers were canceled during the Jaguar's release in 1993.[16]

The Jaguar was unveiled in August 1993 at the Chicago Consumer Electronics Show (CES), and was later showcased during CES 1994 and 1995.[20][21][22]

Launch

The Jaguar was launched on November 23, 1993, at US$249.95 (equivalent to $600 in 2025),[1] under a $500 million manufacturing deal with IBM.[23] The system was initially available only in the test markets of New York City and San Francisco, with the slogan "Get bit by Jaguar", claiming superiority over competing 16-bit and 32-bit systems.[24] During this test launch, Atari sold all units hoping it would rally support for the system.[25] A nationwide release followed six months later, in early 1994.[26] The Jaguar struggled to attain a substantial user base. Atari reported shipping 17,000 units as part of the test market in 1993.[27] By the end of 1994, it reported that it had sold approximately 100,000 units.[28]

Computer Gaming World wrote in January 1994 that the Jaguar was "a great machine in search of a developer/customer base", as Atari had to "overcome the stigma of its name (lack of marketing and customer support, as well as poor developer relations in the past)". Atari had "ventured late into third-party software support" for the Jaguar, but competing console 3DO's "18 month public

relations blitz" resulted in "an avalanche of software support".[29] The small size and poor quality of the Jaguar's game library became the most commonly cited reason for tepid adoption, because early releases like *Trevor McFur in the Crescent Galaxy*, *Raiden*, and *Evolution: Dino Dudes* also received poor reviews, the latter two for failing to take full advantage of the Jaguar's hardware. Jaguar eventually earned praise with games such as *Tempest 2000*, *Doom*, and *Wolfenstein 3D*.[30] The most successful game during the Jaguar's first year was *Alien vs. Predator*.[31] However, these occasional successes were seen as insufficient while the Jaguar's competitors were receiving a continual stream of critically acclaimed software; *GamePro* concluded its rave review of *Alien vs. Predator* by remarking "If Atari can turn out a dozen more games like *AvP*, Jaguar owners could truly rest easy and enjoy their purchase."[32] *Next Generation* commented that "thus far, Atari has spectacularly failed to deliver on the software side, leaving many to question the actual quality and capability of the hardware. With only one or two exceptions – *Tempest 2000* is cited most frequently – there have just been no truly great games for the Jaguar up to now." It further noted that though Atari is well known by older gamers, the company had much less overall brand recognition than Sega, Sony, Nintendo, or even The 3DO Company. However, they argued that with its low price point, the Jaguar might still compete if Atari could improve the software situation.[33]

In Japan, Mumin Corporation distributed the console rather than Atari Japan. Starting in December 1994, Mumin sold the Jaguar at 25 Toys "R" Us locations bundled with *Alien vs Predator*. Sales were poor against the Sega Saturn and PlayStation.[34]

Bit-count controversy

Atari tried to downplay competing consoles by proclaiming the Jaguar was the only "64-bit" system; in its marketing in the American market the company used the tagline "*Do the math!*", in reference to the 64 number. This claim was widely derided as misleading, because the Motorola 68000 CPU and the Tom and Jerry coprocessors execute 32-bit instruction sets. Atari's reasoning that the 32-bit Tom and Jerry chips work in tandem to add up to a 64-bit system was ridiculed in a mini-editorial by *Electronic Gaming Monthly*, which commented that "If Sega did the math for the Sega Saturn the way Atari did the math for their 64-bit Jaguar system, the Sega Saturn would be a 112-bit monster of a machine."[35] *Next Generation*, in a mostly negative review of the Jaguar, maintained that it is a true 64-bit system, because the data path from the DRAM to the CPU and Tom and Jerry chips is 64 bits wide.[33]

Arrival of Saturn and PlayStation

In early 1995, Atari announced that it had dropped the price of the Jaguar to US$149.99 (equivalent to $300 in 2025), to be more competitive. Atari ran infomercials with enthusiastic salesmen touting the game system for most of 1995, but did not sell the remaining stock.[36] The major shortcoming of presenting the Jaguar as the low-cost next-generation system was that the Jaguar did not measure up to the other next-generation systems in other respects, and consumers who were simply looking for an inexpensive video game console favored the Super NES and Genesis, since in addition to having a massive selection of games, they were priced at less than $100.[9]

In a 1995 interview with *Next Generation*, CEO Sam Tramiel declared the Jaguar at least as powerful than the newly launched Saturn, and slightly weaker than the upcoming PlayStation.[37] *Next Generation* received a deluge of letters in response to Tramiel's comments, particularly his

threat to bring Sony to court for price dumping if the PlayStation entered the U.S. market at a retail price below $300. Many readers found this threat hollow and hypocritical, since Tramiel noted in the same interview that Atari was selling the Jaguar at a loss. The editor responded that price dumping does not have to do with a product being priced below cost, but its being priced much lower in one country than another—which, as Tramiel said, is illegal. Tramiel and *Next Generation* agreed that the PlayStation's Japanese price converts to approximately $500. His remark, that the small number of third party Jaguar games was good for Atari's profitability, angered Jaguar owners already frustrated at the small library.[38]

Atari's 1995 annual report noted:

> Jaguar sales were substantially below Atari's expectations, and Atari's business and financial results were materially adversely affected in 1995 as Atari continued to invest heavily in Jaguar game development, entered into arrangements to publish certain licensed titles and reduced the retail price for its Jaguar console unit. Atari attributes the poor performance of Jaguar to a number of factors including (i) extensive delays in development of software for the Jaguar which resulted in reduced orders due to consumer concern as to when titles for the platform would be released and how many titles would ultimately be available, and (ii) the introduction of competing products by Sega and Sony in May 1995 and September 1995, respectively.[39]

In addition, Atari had severely limited financial resources, and so could not create the level of marketing which has historically backed successful gaming consoles.[36]

Decline

Figures from the NPD Group showed that at the end of year 1995, the Jaguar had statistically a share of zero percent of the "sold through" units (which are systems purchased by consumers) in the 32-bit market, which was also lower than the one percent held by its struggling rival 3DO.[40]

By November 1995, mass layoffs and insider statements were fueling journalistic speculation that Atari had ceased both development and manufacturing for the Jaguar and was simply trying to sell off existing stock before exiting the video game industry.[41][42] Although Atari continued to deny these theories going into 1996, core Jaguar developers such as High Voltage Software and Beyond Games stated that they were no longer receiving communications from Atari regarding future Jaguar projects.[43]

In its 10-K405 SEC Filing, filed April 12, 1996,[5] Atari informed stockholders that its revenues had declined by more than half, from $38.7 million in 1994 to $14.6 million in 1995, then gave them the news on the truly dire nature of the Jaguar:

> From the introduction of Jaguar in late 1993 through the end of 1995, Atari sold approximately 125,000 units of Jaguar. As of December 31, 1995, Atari had approximately 100,000 units of Jaguar in inventory.

The filing confirmed that Atari had abandoned the Jaguar in November 1995 and in the subsequent months was concerned chiefly with liquidating its inventory of Jaguar products.[11] On April 8, 1996, Atari Corporation agreed to merge with JTS, Inc. in a reverse takeover,[44] thus

forming JTS Corporation. The merger was finalized on July 30.[45]

After the merger, the bulk of Jaguar inventory remained unsold[36] and was finally moved out to Tiger Software, a private liquidator, on December 23, 1996.[46] On March 13, 1998, JTS sold the Atari name and properties to Hasbro Interactive.[12] Telegames continued to publish games for the Jaguar after it was discontinued, and for a time was the only company to do so.[47]

After Hasbro Interactive acquired all of Atari Corporation's properties,[12] on May 14, 1999, Hasbro Interactive announced that it had released all Jaguar patents to the public domain, declaring it an open platform,[13] and enabling extensive homebrew development without licensing or fees.[15][14] Following the announcement, Songbird Productions joined Telegames in releasing unfinished Jaguar games alongside new games to satisfy the cult following. Hasbro Interactive, along with all the Atari properties, was sold to Infogrames on January 29, 2001.[48][49]

In the United Kingdom in 2001, Telegames and retailer Game made a deal to bring the Jaguar to Game's retail outlets. It was initially sold for £29.99 new and software ranged between £9.99 for more common games such as *Doom* and *Ruiner Pinball* and £39.99 for rarer releases such as *Defender 2000* and *Checkered Flag*.[50][51][52] The machine had a presence in the stores until 2007, when remaining consoles were sold off for £9.99 and games were sold for as low as 97p.

In 2022, the compilation *Atari 50* was released with a collection of Jaguar games, as one of the first instances of Jaguar software being officially re-released by Atari.[53] Due to the unique design of the original Jaguar controller, the games feature reworked control layouts to allow them to work with modern hardware.

Technical specifications

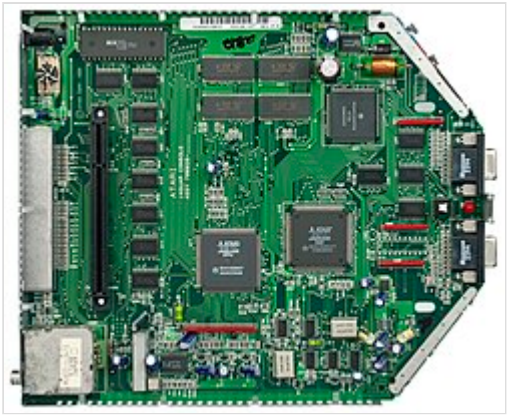
From the Jaguar Software Reference manual, page 1:[54]

> Jaguar is a custom chip set primarily intended to be the heart of a very high-performance games/leisure computer. It may also be used as a graphics accelerator in more complex systems, and applied to workstation and business uses. As well as a general purpose CPU, Jaguar contains four processing units. These are the Object Processor, Graphics Processor, Blitter, and Digital Sound Processor. Jaguar provides these blocks with a 64-bit data path to external memory devices, and is capable of a very high data transfer rate into external dynamic RAM.

Design specs for the console allude to the GPU or DSP being capable of acting as a CPU, leaving the Motorola 68000 to read controller inputs. Atari's Leonard Tramiel also specifically suggested that the 68000 not be used by developers. In practice, however, many developers use the Motorola 68000 to drive gameplay logic due to the greater developer familiarity of the 68000 and the adequacy of the 68000 for certain types of games. Most critically, a flaw in the memory controller means that certain obscure conventions must be followed for the RISC chips to be able to execute code from RAM.[55]

The system is notoriously difficult to program for, because its multi-processor design is complex, development tools were released in an unfinished state, and the hardware has crippling bugs.[56] The Tom and Jerry chips operate independently, and hardware bugs are triggered when software

attempts to synchronize those chips. This conflict forced developers to rely on the slower Motorola 68000 CPU to manage data flow, creating a bottleneck that limited the console's performance.[57]



The Jaguar's multi-chip architecture was difficult to use for most contemporary developers.

The Jaguar has two distinct versions that are discernable by the first letter of the serial number on the bottom of the system. Most Jaguars have a "K" serial (manufactured by IBM), while others have an "M" serial (manufactured by JVC). Early "K" serial systems have an ADC chip, which supports analog control. Later "K" serial (shown right) and "M" serial systems fixed the crippling hardware bugs found in earlier models but lack the ADC chip as a result of cost-cutting.[58]

Processors

- Tom chip @ 26.591 MHz
  - Graphics processing unit (GPU) – 32-bit RISC architecture, 4 KB internal RAM, all graphical effects are software-based, with additional instructions intended for 3D operations
  - Object Processor – 64-bit fixed-function video processor with 64-bit internal registers, converts display lists to video output at scan time.
  - Blitter – 64-bit high speed logic operations, z-buffering and Gouraud shading, with 64-bit internal registers.
  - DRAM controller, 8-, 16-, 32- and 64-bit memory management
- Jerry chip @ 26.591 MHz
  - Digital Signal Processor – 32-bit RISC architecture, 8 KB internal RAM
    - Similar RISC core as the GPU, additional instructions intended for audio operations
  - CD-quality sound (16-bit stereo)
    - Number of sound channels limited by software
    - Two DACs (stereo) convert digital data to analog sound signals
    - Full stereo capabilities
  - Wavetable synthesis and AM synthesis
  - A clock control block, incorporating timers, and a UART
  - Joystick control
- Motorola 68000 @ 13.295 MHz
  - General purpose 16-bit control processor with 32-bit wide registers, "used as a manager"[59]

Other features

- RAM: 2 MB on a 64-bit bus using 4 16-bit fast-page-mode DRAMs (80 ns)[60]
- Storage: ROM cartridges – up to 6 MB
- ADC chip - allows for analog control, only found in early "K" models
- DSP-port (JagLink)
- Monitor-port (composite/S-Video/RGB) - proprietary connector

- Antenna-port (UHF/VHF) - fixed at 591 MHz in Europe; not present on French model
- Support for ComLynx I/O
- NTSC/PAL machines can be identified by their power LED colour, Red: NTSC; Green: PAL.

The inputs and outputs of an NTSC Jaguar

CoJag arcade

Atari Games licensed the Jaguar's chipset for use in its arcade games. The system, named CoJag (for "Coin-Op Jaguar"), replaced the 68000 with a 68020 or MIPS R3000-based CPU (depending on the board version), added more RAM, a full 64-bit wide ROM bus (Jaguar ROM bus is 32-bit), and optionally a hard drive (some games such as *Freeze* are ROM only). It runs the lightgun games *Area 51* and *Maximum Force*, which were released as dedicated cabinets or as the *Area 51* and *Maximum Force* combo machine. Other games were developed but never released: *3 On 3 Basketball*, *Fishin' Frenzy*, *Freeze*, and *Vicious Circle*.

Peripherals

Prior to the launch of the console in November 1993, Atari had announced a variety of peripherals to be released over the console's lifespan. This included a CD-ROM-based console, dial-up Internet access with support for online games, a virtual reality headset, and an MPEG-2 video card.[61][62] However, due to the poor sales and eventual commercial failure of the Jaguar, most of the peripherals in development were canceled. The only peripherals and add-ons released by Atari for the Jaguar are a redesigned controller, an adapter for four players, a CD console add-on, and a link cable for local area network (LAN) gaming.

Original PowerPad Controller | Revised PowerPad Controller | Redesigned Pro Controller

Controllers

The Jaguar was bundled with one controller, the PowerPad. It is a 17-button controller with three face buttons, a 12-button keypad, pause and option buttons, and a directional pad. Many games released for the system utilize the keypad to add extra functionality and gameplay elements, such as quickly selecting weapons in *Doom*, and quicksaving in *Wolfenstein 3D*. Plastic overlays can be slotted over the keypad in order to better label what each button does in specific games.

To cut costs later on in the Jaguar's life, Atari released a slightly revised version of the PowerPad controller. Notable differences between this version and the original are a thinner cord, black buttons instead of gray, and a cheapened, internally-simplified directional pad. The connector that plugs into the console also has fewer pins that connect compared to the original.

Later on in the system's life, Atari released a second controller, the Pro Controller, which added three more face buttons and two triggers, and lengthened the wire that connects to the console.[63] It was created in response to the criticism of the original controller, said to lack enough buttons for

fighting games in particular. It was never bundled with the system and was only sold separately.

Multiplayer

The Team Tap multitap adds 4-controller support, compatible only with the optionally bundled *White Men Can't Jump*[64] and *NBA Jam Tournament Edition*.[65] Eight player gameplay with two Team Taps is possible[64] but not supported by either of the compatible games.[63] For LAN multiplayer support, the Jaglink Interface links two Jaguar consoles[63] through a modular extension and a UTP phone cable. It is compatible with three games: *Doom*, *AirCars*,[66][67] and *BattleSphere*.[68][69]

Modem

At CES 1994, Atari announced that it had partnered with Phylon to create the Jaguar Voice/Data Communicator. The unit was delayed. An estimated 100 units were produced, but in 1995, it was canceled. The Jaguar Voice Modem or JVM utilizes a 19.9 kbit/s dial up modem to answer incoming phone calls and store up to 18 phone numbers. Players directly dial each other for online play, only compatible with *Ultra Vortek*.[70]

Jaguar CD

The Jaguar CD and Memory Track cartridge

The Jaguar CD is a CD-ROM peripheral for games. It was released in September 1995, two years after the Jaguar's launch. Eleven CD games were released for the Jaguar CD during its manufacturing lifetime, with more being made later by homebrew developers. Each Jaguar CD unit has a Virtual Light Machine, which displays light patterns corresponding to music, if the user inserts an audio CD into the console. It was developed by Jeff Minter, after experimenting with graphics during the development of *Tempest 2000*.[71] The program was deemed a spiritual successor to the Atari Video Music, a visualizer released in 1976.[72]

The Memory Track is a cartridge accessory for the Jaguar CD, providing Jaguar CD games with 128 K EEPROM for persistent storage of data such as preferences and saved games.[63][73][74] The Jaguar Duo (codenamed Jaguar III) was a proposal to integrate the Jaguar CD to make a new console, a concept similar to the TurboDuo and Genesis CDX.[75] A prototype, described by journalists as resembling a bathroom scale, was unveiled at the 1995 Winter Consumer Electronics Show,[76] but the console was canceled before production.[77]

Jaguar VR

A virtual reality headset compatible with the console, tentatively titled the Jaguar VR, was unveiled by Atari at the 1995 Winter Consumer Electronics Show.[78] The development of the peripheral was a response to Nintendo's tabletop portable console, the Virtual Boy, which had been announced the previous year.[79] The headset was developed in cooperation with Virtuality, which

had previously created many virtual reality arcade systems, and was already developing a similar headset for practical purposes, named Project Elysium, for IBM.[80] The peripheral was targeted for a commercial release before Christmas 1995.[81] However, the deal with Virtuality was abandoned in October 1995.[82][83] After Atari's merger with JTS in 1996, all prototypes of the headset were allegedly destroyed. However, two working units, one low-resolution prototype with red and grey-colored graphics and one high-resolution prototype with blue and grey-colored graphics, have since been recovered, and are regularly showcased at retrogaming-themed conventions and festivals.[84][85] Only one game was developed for the Jaguar VR prototype: a 3D-rendered version of the 1980 arcade game *Missile Command*, titled *Missile Command 3D*.[85][86][87] A demo of Virtuality's *Zone Hunter* was created.[83]

In 2022, developer Rich Whitehouse released BigPEmu, the first emulator to run the Jaguar's entire library,[57] and in 2023 updated it to run Jaguar VR games on modern headsets after he reverse-engineered the communication protocols from *Missile Command 3D*.[88]

Unlicensed peripherals

An unofficial expansion peripheral for the Jaguar dubbed the "Catbox" was released by the Rockford, Illinois company ICD. It was originally slated to be released early in the Jaguar's life, in the second quarter of 1994,[89] but was not actually released until mid-1995.[90] The ICD CatBox plugs directly into the AV/DSP connectors located in the rear of the Jaguar console and provides three main functions. These are audio, video, and communications. It features six output formats, three for audio (Line level stereo, RGB monitor, headphone jack with volume control) and three for video (composite, S-Video, and RGB analog component video) making the Jaguar compatible with multiple high quality monitor systems and multiple monitors at the same time. It is capable of communications methods known as CatNet and RS-232 and DSP pass through, allowing the user to connect two or more Jaguars together for multiplayer games either directly or with modems. The ICD CatBox features a polished stainless steel casing[90] and red LEDs in the jaguar's eyes on the logo that indicate communications activity. An IBM AT-type null modem cable may be used to connect two Jaguars together.[91] The CatBox is also compatible with Atari's Jaglink Interface peripheral.

Game library

Reception

Reviewing the Jaguar just a few weeks prior to its launch, *GamePro* gave it a "thumbs sideways". They praised the power of the hardware but criticized the controller, and were dubious of how the software lineup would turn out, commenting that Atari's failure to secure support from key third party publishers such as Capcom was a bad sign. They concluded: "Like the 3DO, the Jaguar is a risky investment – just not quite as expensive."[92]

The Jaguar won *GameFan*'s "Best New System" award for 1993.[93]

The small size and poor quality of the Jaguar's game library became the most commonly cited reason for its failure in the marketplace. The pack-in game *Cybermorph* was one of the first polygon-based games for consoles, but was criticized for design flaws and a weak color palette, and

compared unfavorably with the SNES's *Star Fox*. Other early releases like *Trevor McFur in the Crescent Galaxy*, *Raiden*, and *Evolution: Dino Dudes* also received poor reviews, the latter two for failing to take full advantage of the Jaguar's hardware. The Jaguar did eventually earn praise with games such as *Tempest 2000*, *Doom* and *Wolfenstein 3D*.[30] The most successful title during the Jaguar's first year was *Alien vs. Predator*.[31] However, these occasional successes were seen as insufficient, while the Jaguar's competitors were receiving a continual stream of critically acclaimed software; *GamePro* concluded its rave review of *Alien vs. Predator* by remarking: "If Atari can turn out a dozen more games like *AvP*, Jaguar owners could truly rest easy and enjoy their purchase."[32] In a late 1995 review of the Jaguar, *Game Players* remarked: "The Jaguar suffers from several problems, most importantly the lack of good software."[94] *Next Generation* likewise commented that "thus far, Atari has spectacularly failed to deliver on the software side, leaving many to question the actual quality and capability of the hardware. With only one or two exceptions – *Tempest 2000* is cited most frequently – there have just been no truly great games for the Jaguar up to now." They further noted that though Atari is well known by older gamers, the company had much less overall brand recognition than Sega, Sony, Nintendo, or even The 3DO Company. However, they argued that with its low price point, the Jaguar might still compete if Atari could improve the software situation. They gave the system two out of five stars.[33] *Game Players* also stated though it is 64-bit, the Jaguar is much less powerful than the 3DO, Saturn, and PlayStation, even when supplemented with the Jaguar CD.[94] With such a small library of games[95] to challenge the incumbent 16-bit game consoles, the Jaguar's appeal never grew beyond a small gaming audience. *Digital Spy* commented: "Like many failed hardware ventures, it still maintains something of a cult following but can only be considered a misstep for Atari."[96]

In 2006, *IGN* editor Craig Harris rated the original Jaguar controller as the worst game controller ever, criticizing the unwarranted recycling of the 1980s "phone keypad" format and the small number of action buttons, which he found particularly unwise given that Atari was actively trying to court fighting game fans to the system.[97] In an overview of the Jaguar's launch, Andrew McNamara of *Game Informer* said that the controller "is better than we suspected, but is still behind the times", arguing that by this time a controller with at least six action buttons was essential, if not as a pack-in, then at least as a peripheral available at launch.[98] Ed Semrad of *Electronic Gaming Monthly* commented that many Jaguar games gratuitously used all of the controller's phone keypad buttons, making the controls much more difficult than they needed to be.[99] *GamePro*'s The Watch Dog remarked: "The controller usually doesn't use the keypad, and for games that use the keypad extensively (*Alien vs. Predator*, *Doom*), a keypad overlay is used to minimize confusion. But yes, it is a lot of buttons for nuttin'."[100] Atari added more action buttons for its Pro Controller, to improve performance in fighting games in particular.[101][102]

Legacy

On May 14, 1999, Hasbro Interactive announced that it had released all patents to the Jaguar, declaring it an open platform,[13] and enabling extensive homebrew development without licensing or fees.[15][14] The console's complex architecture obstructed homebrew and accurate emulation for decades. In 2022, developer Rich Whitehouse released BigPEmu, the first emulator to run the entire Jaguar library,[57] and in 2023 this included Jaguar VR games on modern headsets.[88]

Molds

In 1997, Steve Mortensen, a developer of dental imaging equipment, purchased the Jaguar cartridge and console factory molds, including the molds for the CD add-on, from JTS.[103] With minor modification, they fit its HotRod camera,[104] and the cartridge molds were reused to create an optional memory expansion card.[105] In a retrospective, Imagin founder Steve Mortenson praised the design, but admitted that their device came at the time of the dental industry's transition to USB, and apart from a few prototypes, the molds went unused.[106]

In December 2014, the molds were purchased from Imagin Systems by Mike Kennedy, owner of the Kickstarter funded *Retro Videogame Magazine*, to propose a new crowdfunded video game console, the Retro VGS,[107] later rebranded the Coleco Chameleon[108] with a licensing agreement with Coleco. The purchase of the molds was far cheaper than designing and manufacturing entirely new molds, and Kennedy described their acquisition as "the entire reason [the Retro VGS] is possible".[109] However, the project was terminated in March 2016 following criticism of Kennedy[110] and doubts regarding demand for the proposed console. Two "prototypes" were discovered to be fakes and Coleco withdrew from the project.[111] After the project's termination, the molds were sold to Albert Yarusso, the founder of the AtariAge website.[112]

See also

- Contiki, portable operating system, including GUI, TCP/IP, and web browser for the Jaguar.

References

1. "Atari Ships Jaguar For New York And San Francisco Markets; World's First 64-bit Interactive Multimedia Home Entertainment System Available" (https://web.archive.org/web/20160315141016/http://www.thefreelibrary.com/ATARI+SHIPS+JAGUAR+FOR+NEW+YORK+AND+SAN+FRANCISCO+MARKETS%3B+WORLD%27S...-a014659911). *PR Newswire*. November 23, 1993. Archived from the original (http://www.thefreelibrary.com/ATARI+SHIPS+JAGUAR+FOR+NEW+YORK+AND+SAN+FRANCISCO+MARKETS%3b+WORLD%27S...-a014659911) on March 15, 2016. Retrieved May 10, 2011.
2. Euer Video Games Team (September 1994). "Warpzone - Jaguar - Jaguar in Deutschland!" (https://archive.org/details/video-games-de-1994-09/page/38/mode/1up). *Video Games*. No. 34. Future-Verlag. p. 38.
3. "Scene - Next Generation Battle - Japan" (https://retrocdn.net/index.php?title=File%3AMegaFun_DE_1995-03.pdf&page=28). *Mega Fun*. No. 30. CT Computec Verlag GmbH & Co. KG. March 1995. p. 28. Archived (https://web.archive.org/web/20180713232606/https://retrocdn.net/index.php?title=File%3AMegaFun_DE_1995-03.pdf&page=28) from the original on July 13, 2018. Retrieved June 24, 2018.
4. "¿Qué Consola Comprar?" (https://archive.org/stream/HobbyConsolas051/Hobby_Consolas_051#page/n35/mode/2up). *Hobby Consolas* (in Spanish). No. 51. Axel Springer SE. December 1995. pp. 36–37.
5. Item 7. Management's discussion and analysis of financial condition and results of operations (https://web.archive.org/web/20210225185700/https://google.brand.edgar-online.com/displayfilinginfo.aspx?FilingID=261582-33477-51099&type=sect). *Securities and Exchange Commission Form 10-K* (Report). Atari Corporation. April 12, 1996. p. 8. Archived from the original (https://google.brand.edgar-online.com/displayfilinginfo.aspx?FilingID=261582-33477-51099&type=sect) on February 25, 2021. Retrieved April 6, 2021.

6. "Atari Jaguar Lifetime Sales" (https://web.archive.org/web/20170824014231/http://betaphasegames.com/Feature_Jaguar_Lifetime_Sales.html). Beta Phase Games. Archived from the original (http://betaphasegames.com/Feature_Jaguar_Lifetime_Sales.html) on August 24, 2017. Retrieved February 1, 2026.
7. "AtariAge - Atari Jaguar History" (http://www.atariage.com/Jaguar/history.html). *www.atariage.com*. Archived (https://web.archive.org/web/20160513071033/http://www.atariage.com/Jaguar/history.html) from the original on May 13, 2016. Retrieved December 9, 2008.
8. "Clunky". *Next Generation*. No. 4. Imagine Media. April 1995. p. 41.
9. Kretzinger, Boris (February 22, 2023). *Clipped Claws* (http://archive.org/details/clipped-claws). pp. 148–149, 224–225, 252–253. Retrieved October 25, 2025.
10. "Once and Future Kings" (https://archive.org/details/GamePro_Issue_070_May_1995/page/n29/mode/2up). *GamePro*. No. 80. IDG. May 1995. pp. 28–30.
11. "Stop Press: Ashes to Ashes...". *Next Generation*. No. 19. Imagine Media. July 1996. p. 17.
12. Johnston, Chris (April 8, 2000). "Atari Goes to Hasbro" (https://www.gamespot.com/articles/atari-goes-to-hasbro/1100-2462915/). *GameSpot*. Archived (https://web.archive.org/web/20210204132911/https://www.gamespot.com/articles/atari-goes-to-hasbro/1100-2462915/) from the original on February 4, 2021. Retrieved February 20, 2020.
13. "Hasbro Releases Jaguar Publishing Rights" (http://www.atariage.com/Jaguar/archives/HasbroRights.html). Hasbro Interactive. Archived (https://web.archive.org/web/20130524063922/http://www.atariage.com/Jaguar/archives/HasbroRights.html) from the original on May 24, 2013. Retrieved May 14, 2008. "Beverly, MA (May 14, 1999) – Leading entertainment software publisher, Hasbro Interactive announced today it has released all rights that it may have to the vintage Atari hardware platform, the Jaguar."
14. "Classic Gamer Newswire: Jaguar News — Hasbro Sets Jaguar Free" (https://archive.org/details/Classic_Gamer_Magazine_Volume_1_Issue_1_1999-03_Classic_Gamer_US/page/n9/mode/1up). *Classic Gamer Magazine*. Vol. 1, no. 1. March 1999. p. 10.
15. Goss, Patrick. "Redundant gadgets (Atari Jaguar entry)" (https://web.archive.org/web/20071011200651/http://tech.uk.msn.com/features/gallery.aspx?cp-documentid=6171299&imageindex=5). Archived from the original (https://tech.uk.msn.com/features/gallery.aspx?cp-documentid=6171299&imageindex=5) on October 11, 2007. Retrieved October 23, 2007.
16. *Atari: From Boom to Bust and Back Again*. Imagine Publishing. 2012.
17. "Atari Explorer, Z*Net, & ST Report: Atari Explorer Online: 16-Jan-95 #0401" (https://www.atariarchives.org/cfn/09/09/02/0453.php). *www.atariarchives.org*. Archived (https://web.archive.org/web/20230617225035/https://www.atariarchives.org/cfn/09/09/02/0453.php) from the original on June 17, 2023. Retrieved June 17, 2023.
18. "TheOne Magazine". *TheOne Magazine*. No. 36. September 1991. p. 26.
19. "The Jaguar Rules Atari's Jungle". *GamePro*. No. 30. January 1992. p. 20.
20. "Atari: From Boom to Bust and Back Again". *Next Generation*. No. 4. Imagine Media. April 1995. p. 39.
21. DigitalNeohuman (April 25, 2010). *1994 Summer CES* (https://www.youtube.com/watch?v=-j1f9SVEDw8). Retrieved December 29, 2025 – via YouTube.
22. National Videogame Museum (January 13, 2018). *Atari Jaguar Phear Demo CES 1995* (https://www.youtube.com/watch?v=o457jl9zZbs). Retrieved December 29, 2025 – via YouTube.
23. "COMPANY NEWS; I.B.M. TO MANUFACTURE NEW ATARI ENTERTAINMENT SYSTEM (Published 1993)" (https://www.nytimes.com/1993/06/29/business/company-news-ibm-to-manufacture-new-atari-entertainment-system.html). *The New York Times*. June 29, 1993. Archived (https://web.archive.org/web/20230525125430/https://www.nytimes.com/1993/06/29/business/company-news-ibm-to-manufacture-new-atari-entertainment-system.html) from the original on May 25, 2023.
24. Kretzinger, Boris (February 22, 2023). *Clipped Claws* (http://archive.org/details/clipped-claws). pp. 96–97, 123–124. Retrieved October 25, 2025.
25. blob:https://imgur.com/0b9f824b-6413-4717-9628-8220ceb02910

26. "Letters". *Next Generation*. No. 4. Imagine Media. April 1995. p. 107. "The fact is that occasionally products do launch in some 'test' markets before making it national. Atari's Jaguar is a prime example (it was available in San Francisco and New York six months before anywhere else)."
27. Atari Corporation Annual Report, 1993. pp 14.
28. Atari Corporation Annual Report. pp 11.
29. Miller, Chuck; Dille, H. E.; Wilson, Johnny L. (January 1994). "Battle Of The New Machines" (http://www.cgwmuseum.org/galleries/index.php?year=1994&pub=2&id=114). *Computer Gaming World*. pp. 64–76. Archived (https://web.archive.org/web/20191214005055/http://www.cgwmuseum.org/galleries/index.php?year=1994&pub=2&id=114) from the original on December 14, 2019. Retrieved November 2, 2017.
30. *Atari Jaguar History (http://www.atariage.com/Jaguar/history.html) Archived (https://web.archive.org/web/20160513071033/http://www.atariage.com/Jaguar/history.html) May 13, 2016, at the Wayback Machine*. AtariAge. Retrieved December 9, 2008.
31. Atari Corporation 1994 annual report, p. 3.
32. "ProReview: Alien vs. Predator". *GamePro*. No. 75. IDG. December 1994. pp. 180–181.
33. "Which Game System is the Best!?". *Next Generation*. No. 12. Imagine Media. December 1995. pp. 36–85.
34. "Atari Jaguar Stalks Japan" (https://www.atarimax.com/freenet/freenet_material/6.16and32-BitComputersSupportArea/8.OnlineMagazines/showarticle.php?497). *ST Report*. No. 1048. AtariMax. November 25, 1994. Retrieved January 6, 2026.
35. "The Hot Number: 112". *Electronic Gaming Monthly*. No. 71. Sendai Publishing. June 1995. p. 30.
36. Thomas, Don (December 1996). "Atari's Historic Road to Nowhere". *Next Generation*. No. 24. Imagine Media. pp. 97–104.
37. "Atari's President Talks Back". *Next Generation*. No. 7. July 1995. pp. 6–12.
38. "Letters". *Next Generation*. No. 10. Imagine Media. October 1995. p. 140.
39. Atari Corporation Annual Report, 1993 (https://www.sec.gov/Archives/edgar/data/802019/0000891618-96-000213.txt) Archived (https://web.archive.org/web/20170706035949/https://www.sec.gov/Archives/edgar/data/802019/0000891618-96-000213.txt) July 6, 2017, at the Wayback Machine. pp 3.
40. "Just who is winning the 32-bit war?" (https://dn790006.ca.archive.org/0/items/Next-Generation-1996-05/Next%20Generation%201996-05.pdf) (PDF). *Next Generation*. Vol. 2, no. 5. May 1996. p. 22 – via Internet Archive.
41. "Atari Drops Jaguar?". *Next Generation*. No. 13. Imagine Media. January 1996. p. 21. "Then in November, UK newspaper *The Sunday Times* ... put forward that Atari plans to give up on the Jaguar in favor of PC development ... *The Sunday Times* article is not the only piece of speculation regarding Atari's commitment to hardware to have appeared in the media over the last two weeks."
42. "Atari Teeters on Grave's Edge". *GamePro*. No. 91. IDG. April 1996. p. 16.
43. "Crumbling Atari Still Defiant". *Next Generation*. No. 16. Imagine Media. April 1996. pp. 16–17.
44. "Atari and JT Storage Reorganisation Plan" (https://web.archive.org/web/20061209123854/http://contracts.onecle.com/atari/jt.mer.1996.04.08.shtml). One Cle. Archived from the original (http://contracts.onecle.com/atari/jt.mer.1996.04.08.shtml) on December 9, 2006. Retrieved November 25, 2006.
45. "Video Game Timeline". *Electronic Gaming Monthly*. No. 102. Ziff Davis. January 1998. p. 137.
46. "A History of JT Storage / JTS (including the Atari division)" (https://mcurrent.name/atarihistory/jt_storage.html). *mcurrent.name*. Archived (https://web.archive.org/web/20210427140329/https://mcurrent.name/atarihistory/jt_storage.html) from the original on April 27, 2021. Retrieved May 31, 2020.

47. "Tidbits...". *Electronic Gaming Monthly*. No. 94. Ziff Davis. May 1997. p. 24. "Atari Jaguar game maker Telegames refuses to desert loyal owners of the 64-Bit machine ... and remains the lone third-party publisher. The company has six new games in the works, according to its online site ..."
48. "Infogrames to Acquire Hasbro Interactive" (https://web.archive.org/web/20011119190727/http://pc.ign.com/news/28701.html). *IGN*. December 6, 2000. Archived from the original (http://pc.ign.com/news/28701.html) on November 19, 2001. Retrieved September 30, 2019.
49. "Infogrames completes Hasbro Interactive acquisition" (https://www.gamespot.com/articles/infogrames-completes-hasbro-interactive-acquisition/1100-2679841/). *GameSpot*. January 29, 2001. Archived (https://web.archive.org/web/20200610001354/https://www.gamespot.com/articles/infogrames-completes-hasbro-interactive-acquisition/1100-2679841/) from the original on June 10, 2020. Retrieved May 20, 2020.
50. "Atari News: Atari Jaguar" (https://web.archive.org/web/20020222182322/http://www.myatari.net/issues/dec2001/news.htm). *MyAtari*. No. 14. December 2001. Archived from the original (http://www.myatari.net/issues/dec2001/news.htm) on February 22, 2002. Retrieved November 1, 2024.
51. "News: Atari consoles going cheap!" (https://web.archive.org/web/20020827013502/http://myatari.net/issues/jan2002/news.htm). *MyAtari*. No. 15. January 2002. Archived from the original (http://myatari.net/issues/jan2002/news.htm) on August 27, 2002. Retrieved November 1, 2024.
52. "Features: GAME, set, match!" (https://web.archive.org/web/20020825170634/http://myatari.net/issues/feb2002/game.htm). *MyAtari*. No. 15. February 2002. Archived from the original (http://myatari.net/issues/feb2002/game.htm) on August 25, 2002. Retrieved November 1, 2024.
53. "Atari 50: the Anniversary Celebration" (https://atari.com/products/atari-50th-the-anniversary-celebration). *Atari*. Retrieved January 27, 2024.
54. Atari Corp. (1995). *Jaguar Software Reference Manual - Version 2.4* (https://web.archive.org/web/20130315005843/http://www.hillsoftware.com/files/atari/jaguar/jag_v8.pdf) (PDF). Atari Corp. Archived from the original (http://www.hillsoftware.com/files/atari/jaguar/jag_v8.pdf) (PDF) on March 15, 2013. Retrieved November 26, 2012.
55. Joe Venor (2009). "What's this "Lay off the 68k" and "GPU in Main" Malarkey? (TECHNICAL)" (http://atariowlproject.blogspot.com/2009/10/atari-jaguar-homebrew-whats-this-lay.html). The Owl Project. Archived (https://web.archive.org/web/20180612142447/http://atariowlproject.blogspot.com/2009/10/atari-jaguar-homebrew-whats-this-lay.html) from the original on June 12, 2018. Retrieved February 18, 2018.
56. ATARI JAGUAR (https://www.retrogamer.net/profiles/hardware/atari-jaguar-2/) Archived (https://web.archive.org/web/20150906051454/http://www.retrogamer.net/profiles/hardware/atari-jaguar-2/) September 6, 2015, at the Wayback Machine by Retro Gamer Team, November 27, 2014
57. Linneman, John; Whitehouse, Rich (May 13, 2023). *Inside the Atari Jaguar with Rich Whitehouse: Technical Breakdown & BigPEmu* (https://www.youtube.com/watch?v=i6n6xExbknE) (Video). Digital Foundry. Event occurs at 12:45. Retrieved January 6, 2026.
58. "Jaguar Model Differences" (https://consolemods.org/wiki/Jaguar:Jaguar_Model_Differences). *ConsoleMods Wiki*. Retrieved January 5, 2026.
59. Atari Jaguar Software Reference Manual, Atari Corp. 1995, Pg 2
60. Atari Jaguar Order (http://untergrund.net/users/ggn/Atari%20HQ/Documents/Atari/Jaguar/Eco1686.pdf), Atari, 1994
61. "Atari's 64-bit Jaguar Stalks the Competition". *GamePro*. No. 51. IDG. October 1993. pp. 16–17.
62. "Atari Jaguar Unveiled—Stalks 3DO" (http://www.cgwmuseum.org/galleries/index.php?year=1993&pub=2&id=112). *Computer Gaming World*. November 1993. pp. 10–11. Archived (https://web.archive.org/web/20160316202150/http://cgwmuseum.org/galleries/index.php?year=1993&pub=2&id=112) from the original on March 16, 2016. Retrieved March 28, 2016.
63. "Feline Friends". *GamePro*. No. 89. IDG. February 1996. p. 22.

64. "Atari Team Tap Multi-Player Adapter" (http://www.computinghistory.org.uk/det/34799/Atari-Team-Tap-Multi-Player-Adapter/). *The Centre for Computing History*. Archived (https://web.archive.org/web/20150923205922/http://www.computinghistory.org.uk/det/34799/Atari-Team-Tap-Multi-Player-Adapter/) from the original on September 23, 2015. Retrieved June 11, 2015.
65. "NBA Jam Tournament Edition (Jaguar) - Manual" (https://web.archive.org/web/20150425173718/http://atariage.com/manual_html_page.html?SoftwareID=2512). *AtariAge*. [Original publisher: Midway Games]. February 1995. Archived from the original (https://atariage.com/manual_html_page.html?SoftwareID=2512) on April 25, 2015. Retrieved June 11, 2015.
66. "Games Watch: AirCars" (https://archive.org/details/games-world-08/page/n73/mode/2up). *Games World*. No. 8. Paragon Publishing. February 1995. pp. 74–75.
67. Rovi Games (2007). "Aircars - Overview" (https://web.archive.org/web/20141114113644/http://www.allgame.com/game.php?id=7197). *AllGame*. Rovi Corporation. Archived from the original (http://www.allgame.com/game.php?id=7197) on November 14, 2014. Retrieved April 18, 2018.
68. "News - Jaguar: BattleSphere" (https://retrocdn.net/index.php?title=File%3AMegaFun_DE_1995-05.pdf&page=14). *Mega Fun* (in German). No. 32. Computec. May 1995. p. 14.
69. Jung, Robert A. (April 1996). "Previews: BattleSphere — Garage Development Team 4Play Primes a Rarity: Hot Jag Software" (https://archive.org/details/intelligent-gamers-fusion-1996-04/page/n70/mode/1up). *Intelligent Gamer's Fusion*. Vol. 2, no. 8. Decker Publications. p. 71.
70. Vinciguerra, Robert. "A Complete History of Online Console Gaming in the United States" (http://www.revrob.com/sci-a-tech-topmenu-52/38-a-complete-history-of-online-console-gaming-in-the-united-states). *The Rev. Rob Times*. RevRob.com. Retrieved December 5, 2007.
71. Minter, Jeff. "VLM - History" (http://www.minotaurproject.co.uk/vlm.php). Llamasoft. Archived (https://web.archive.org/web/20150519043441/http://www.minotaurproject.co.uk/vlm.php) from the original on May 19, 2015. Retrieved June 11, 2015.
72. Wolf, Mark J. P. (2003). "Abstraction in the Video Game" (http://www.phil-fak.uni-duesseldorf.de/fileadmin/Redaktion/Institute/Kultur_und_Medien/Medien_und_Kulturwissenschaft/Dozenten/Szentivanyi/Computerspielanalyse_aus_kulturwissenschaftlicher_Sicht/WolfAbstraction.pdf) (PDF). Archived (https://ghostarchive.org/archive/20221009/http://www.phil-fak.uni-duesseldorf.de/fileadmin/Redaktion/Institute/Kultur_und_Medien/Medien_und_Kulturwissenschaft/Dozenten/Szentivanyi/Computerspielanalyse_aus_kulturwissenschaftlicher_Sicht/WolfAbstraction.pdf) (PDF) from the original on October 9, 2022. Retrieved June 11, 2015.
73. *Tech Talk: Atari Releases a Product!!!* (https://archive.org/details/game-informer-issue-32-december-1995/page/n61/mode/1up), GI Magazine, August 2024 [December 2005], p. 60, retrieved August 18, 2024
74. "Atari Memory Track - User Manual" (https://web.archive.org/web/20150509193646/http://kick-ass.asuscomm.com/html/library/documents/mt.pdf) (PDF). Atari Corporation. 1995. Archived from the original (http://kick-ass.asuscomm.com/html/library/documents/mt.pdf) (PDF) on May 9, 2015. Retrieved June 12, 2015.
75. Todd, Mowatt (May 1995). "Atari to Unleash New Jaguar CD and Jaguar III". *Electronic Gaming Monthly*. No. 70. Ziff Davis. p. 28.
76. "WCES: The Calm Before the Storm". *Next Generation*. No. 3. Imagine Media. March 1995. p. 19.
77. Edwards, Benj (May 14, 2011). "10 Unreleased Video Game Consoles - Atari Jaguar Duo (1995) - Slideshow from" (https://web.archive.org/web/20131202235650/http://www.pcmag.com/slideshow/story/264435/10-unreleased-video-game-consoles/3). *PC Magazine*. Archived from the original (https://www.pcmag.com/slideshow/story/264435/10-unreleased-video-game-consoles/3) on December 2, 2013. Retrieved November 24, 2013.
78. Iida, Keita; Goldberg, Marty. "Atari Jaguar VR Headset" (http://www.atarihq.com/museum/jaglynx/jagvr.html). *AGH Museum*. Atari Gaming Headquarters. Archived (https://web.archive.org/web/20170418190341/http://www.atarihq.com/museum/jaglynx/jagvr.html) from the original on April 18, 2017. Retrieved June 10, 2015.

79. "Nintendo introduces video game players to three-dimensional worlds with new virtual reality video game system" (http://www.planetvb.com/modules/advertising/?r17). Business Wire / Planet Virtual Boy. November 14, 1994. Archived (https://web.archive.org/web/20180628124825/https://www.planetvb.com/modules/advertising/?r17) from the original on June 28, 2018. Retrieved June 10, 2015.
80. Dye, Lee (February 22, 1995). "The Cutting Edge: COMPUTING / TECHNOLOGY / INNOVATION : Virtual Reality Applications Expand : Imaging: Technology is finding important places in medicine, engineering and many other realms" (https://www.latimes.com/archives/la-xpm-1995-02-22-fi-34851-story.html). *Los Angeles Times*. Archived (https://web.archive.org/web/20150925105508/http://articles.latimes.com/1995-02-22/business/fi-34851_1_virtual-reality) from the original on September 25, 2015. Retrieved June 10, 2015.
81. Quartermann (May 1995). "Gaming Gossip". *Electronic Gaming Monthly*. No. 70. Ziff Davis. p. 54.
82. "1995: The Calm Before the Storm?". *Next Generation*. No. 13. Imagine Media. January 1996. p. 56.
83. Thompson, Clint. "Jaguar VR" (http://jagcube.atari.org/jaguarvr.html). *JagCube*. Atari.org. Archived (https://web.archive.org/web/20180409174210/http://jagcube.atari.org/jaguarvr.html) from the original on April 9, 2018. Retrieved June 10, 2015.
84. "Incredibly Rare Working Prototype 'Atari Jaguar Virtual Reality Headset' Hardware Surfaces On eBay" (https://web.archive.org/web/20190323200514/http://www.retrocollect.com/News/incredibly-rare-working-prototype-atari-jaguar-virtual-reality-headset-hardware-surfaces-on-ebay.html). *RetroCollect*. January 23, 2015. Archived from the original (http://www.retrocollect.com/News/incredibly-rare-working-prototype-atari-jaguar-virtual-reality-headset-hardware-surfaces-on-ebay.html) on March 23, 2019. Retrieved June 10, 2015.
85. Plafke, James (January 23, 2013). "Atari Jaguar had a VR headset?! One of the two left intact is up for auction" (https://web.archive.org/web/20131105094901/http://www.geek.com/games/the-atari-jaguar-had-a-vr-headset-auction-1536947/). *Geek.com*. Ziff Davis. Archived from the original (http://www.geek.com/games/the-atari-jaguar-had-a-vr-headset-auction-1536947/) on November 5, 2013. Retrieved August 23, 2025.
86. Riba L., Alex (January 1997). "Juegos: Missile Command 3D" (https://archive.org/details/AtariFan/AtariFan_09/page/n19/mode/1up). *Atari Fan* (in Spanish). No. 9. Comercial Atheneum, S.A. p. 20.
87. Halliwell, Clay (March 27, 1997). "Martin Brownlow Interview: The programmer of MC3D speaks" (https://web.archive.org/web/20160303202933/http://www.atarihq.com/jeo/archive.htm). *Jaguar Explorer Online*. Vol. 1, no. 1. White Space Publishers. Archived from the original (http://www.atarihq.com/jeo/archive.htm) on March 3, 2016. Retrieved August 23, 2025. (Transcription (https://www.atarimax.com/freenet/freenet_material/6.16and32-BitComputersSupportArea/8.OnlineMagazines/showarticle.php?637) by The Cleveland Free-Net Atari SIG Historical Archive. Archived (https://web.archive.org/web/20060516025112/https://www.atarimax.com/freenet/freenet_material/6.16and32-BitComputersSupportArea/8.OnlineMagazines/showarticle.php?637) 2006-05-16 at the Wayback Machine).
88. McFerran, Damien (August 7, 2023). "The Atari Jaguar Emulator 'BigPEmu' Gets VR Emulation" (https://www.timeextension.com/news/2023/08/the-atari-jaguar-emulator-bigpemu-gets-vr-emulation). *Time Extension*. Retrieved January 6, 2026.
89. "Jaguar's Cat Box". *GamePro*. No. 69. IDG. June 1994. pp. 184–186.
90. "No Litterbox". *GamePro*. No. 83. IDG. August 1995. p. 108.
91. Official CatBox Manual - Final Version 1.01c - May 8, 1996
92. "System Shopper". *GamePro*. No. 63. IDG. December 1993. pp. 46–49.
93. "GameFan's 2nd Annual Megawards" (https://archive.org/stream/GamefanVolume2Issue02/GamefanVolume2Issue02February1994#page/n57/mode/2up). *GameFan*. Vol. 2, no. 2. Shinno Media. January 1994. p. 58. "Best New System: Winner: The Atari Jaguar"
94. "System Analysis: Jaguar / Jaguar CD". *Game Players*. No. 79. Signal Research. 1995. p. 68.

95. Greg Orlando (May 15, 2007). "Console Portraits: A 40-Year Pictorial History of Gaming" (https://www.wired.com/gaming/gamingreviews/multimedia/2007/05/gallery_game_history?slide=28&slideView=7). *Wired News*. Condé Nast Publications. Archived (https://web.archive.org/web/20081223161345/http://www.wired.com/gaming/gamingreviews/multimedia/2007/05/gallery_game_history?slide=28&slideView=7) from the original on December 23, 2008. Retrieved March 23, 2008.
96. Mark Langshaw. "Atari retrospective: The rise and fall of a gaming giant (http://www.digitalspy.co.uk/gaming/news/a453849/atari-retrospective-the-rise-and-fall-of-a-gaming-giant.html) Archived (https://web.archive.org/web/20150628080650/http://www.digitalspy.co.uk/gaming/news/a453849/atari-retrospective-the-rise-and-fall-of-a-gaming-giant.html) June 28, 2015, at the Wayback Machine". *Digital Spy*, January 27, 2013.
97. "Top 10 Tuesday: Worst Game Controllers" (https://web.archive.org/web/20070114141120/http://xbox360.ign.com/articles/690/690449p1.html). *IGN*. February 21, 2006. Archived from the original (http://xbox360.ign.com/articles/690/690449p1.html) on January 14, 2007. Retrieved August 7, 2009.
98. McNamara, Andrew (January 1994). "Atari Stalks the Top Slot with their 64-bit Jaguar System" (https://archive.org/details/game-informer-issue-14-january-february-1994_202408/page/n48/mode/1up). *Game Informer*. Vol. III, no. 1. p. 47.
99. "Review Crew: Syndicate". *Electronic Gaming Monthly*. No. 69. Sendai Publishing. April 1995. p. 38.
100. "Buyers Beware". *GamePro*. No. 89. IDG. February 1996. p. 14.
101. Bruiser (April 4, 2012). "5 Reasons Why the Atari Jaguar Isn't So Bad" (http://www.leftovercultrereview.com/2012/04/04/5-reasons-why-the-atari-jaguar-isnt-so-bad/). *Leftover Culture Review*. LOCR. Archived (https://web.archive.org/web/20180202193359/http://www.leftovercultrereview.com/2012/04/04/5-reasons-why-the-atari-jaguar-isnt-so-bad/) from the original on February 2, 2018. Retrieved February 1, 2018.
102. Clarke, Bruce (February 18, 2007). "Dragon: The Bruce Lee Story" (https://web.archive.org/web/20180202130731/http://www.ataritimes.com/index.php?ArticleIDX=564). *The Atari Times*. TAT. Archived from the original (http://www.ataritimes.com/index.php?ArticleIDX=564) on February 2, 2018. Retrieved February 1, 2018.
103. Kretzinger, Boris (February 22, 2023). *Clipped Claws* (http://archive.org/details/clipped-claws). pp. 299–300. Retrieved October 25, 2025.
104. "Atari Jaguar Revived As Dental Camera" (http://www.1up.com/news/atari-jaguar-revived-dental-camera). *1UP*. January 1, 2010. Retrieved October 24, 2010.
105. "HotRod" (https://web.archive.org/web/20101117020347/http://www.imaginsystems.com/Graphics/HotRod%20DS-final.pdf) (PDF). Imagin. Archived from the original (http://www.imaginsystems.com/Graphics/HotRod%20DS-final.pdf) (PDF) on November 17, 2010. Retrieved October 24, 2010.
106. "How the Atari Jaguar Became Dental Equipment (Mini-Doc) - Adam Koralik" (https://www.youtube.com/watch?v=9APovyGdkhs). *YouTube*. September 20, 2018. Archived (https://web.archive.org/web/20230815112441/https://www.youtube.com/watch?v=9APovyGdkhs) from the original on August 15, 2023. Retrieved August 15, 2023.
107. "Home" (https://web.archive.org/web/20150703182244/http://www.retrovgs.com/). July 3, 2015. Archived from the original (http://www.retrovgs.com/) on July 3, 2015. Retrieved December 27, 2016.
108. "Home" (https://web.archive.org/web/20160114164829/http://www.retrovgs.com/). January 14, 2016. Archived from the original (http://www.retrovgs.com/) on January 14, 2016. Retrieved December 27, 2016.
109. "Retro VGS #1" (https://web.archive.org/web/20150729185157/http://www.retrovgs.com/media.html). Archived from the original (http://www.retrovgs.com/media.html) on July 29, 2015. Retrieved July 31, 2015.

110. Purchese, Robert (April 5, 2016). "Coleco Chameleon boss: "I am officially tabling the console venture for good" " (http://www.eurogamer.net/articles/2016-04-05-coleco-chameleon-boss-i-am-officially-tabling-the-console-venture-for-good). *Eurogamer*. Archived (https://web.archive.org/web/20161228032510/http://www.eurogamer.net/articles/2016-04-05-coleco-chameleon-boss-i-am-officially-tabling-the-console-venture-for-good) from the original on December 28, 2016. Retrieved December 27, 2016.
111. "Coleco Removes Its Name From The Chameleon Console, But Aims To Produce "New Products" In The Future" (http://www.nintendolife.com/news/2016/03/coleco_removes_its_name_from_the_chameleon_console_but_aims_to_produce_new_products_in_the_future). *Nintendo Life*. March 9, 2016. Archived (https://web.archive.org/web/20161228032323/http://www.nintendolife.com/news/2016/03/coleco_removes_its_name_from_the_chameleon_console_but_aims_to_produce_new_products_in_the_future) from the original on December 28, 2016. Retrieved December 27, 2016.
112. "Coleco Chameleon .... hardware speculations? - Page 318 - Modern Gaming" (http://atariage.com/forums/topic/247145-coleco-chameleon-hardware-speculations/?p=3484385). *AtariAge Forums*. Archived (https://web.archive.org/web/20240118060133/https://forums.atariage.com/topic/247145-coleco-chameleon-hardware-speculations/page/318/#comment-3484385) from the original on January 18, 2024. Retrieved December 27, 2016.

External links

- Atari Jaguar review, 1994 (http://st-news.com/issues/st-news-volume-9-issue-2/previews/the-jaguar/) Archived (https://web.archive.org/web/20170128233806/http://st-news.com/issues/st-news-volume-9-issue-2/previews/the-jaguar/) January 28, 2017, at the Wayback Machine
- Atari Corp. press released related to Jaguar, 1993-1997 (archived) (https://web.archive.org/web/20070216161427/http://justclaws.atari.org/press.htm)

Atari Jaguar CD

The **Atari Jaguar CD** is a CD-ROM peripheral for the Atari Jaguar video game console. Only 11 games were released for the Jaguar CD during its lifetime. However, previously unfinished and homebrew games have since been released.

Atari Jaguar CD

Jaguar CD atop the console with the ProController

Manufacturer	Atari Corporation
Type	Video game console peripheral
Generation	Fifth
Released	September 21, 1995
Introductory price	US$149.95 (equivalent to $320 in 2025)
Discontinued	1996
Media	CD-ROM

History

Atari Corporation announced a CD-ROM drive for the Jaguar before the console's November 1993 launch.[1][2] Codenamed Jaguar II during development,[3] the Jaguar CD was released on September 21, 1995 for US$149.95 (equivalent to about $320 in 2025).[4][5] It was originally scheduled for launch during the 1994 holiday shopping season, with multiple delays.[6] In mid-1994, Atari and Sigma Designs signed an agreement to co-develop a PC board that would allow Jaguar CD games to be played on home computers, with a scheduled release by the end of 1994;[7] however, it was never released.

Technicals

The drive fits into the ROM cartridge slot atop the console, with its own pass-through cartridge slot to optionally run software that uses cartridge only or that uses cartridge and CD in tandem.[8] The Memory Track cartridge stores saved game position and high scores. Several publications have criticized the Jaguar CD's design for resembling a toilet.[9][10][11][12]

The Jaguar CD has a double-speed (2×) drive[13] and built-in VLM (Virtual Light Machine) software by Jeff Minter, using a spectrum analyzer for a sophisticated video light show for audio CDs.[8] It is bundled with *Blue Lightning*, *Vid Grid*, the *Tempest 2000* soundtrack CD, and a *Myst* demo disc. Every startup screen is unique, using the VLM for a random light show.

Jaguar CDs can store up to 790MB,[14] more than conventional CD-ROMs. Its proprietary CD format is based on the audio CD format, instead of standard CD-ROM data formats. It allows for more storage, and its incompatibility foils casual piracy, at the expense of reduced error correction.

Game library

See also

- 64DD
- Famicom Disk System
- Sega CD
- Super NES CD-ROM
- Xbox 360 HD DVD Player

References

1. "Atari's 64-bit Jaguar Stalks the Competition". *GamePro*. No. 61. IDG. October 1993. pp. 16–17.
2. "Atari Jaguar Unveiled—Stalks 3DO" (http://www.cgwmuseum.org/galleries/index.php?year=1993&pub=2&id=112). *Computer Gaming World*. November 1993. pp. 10–11. Retrieved 28 March 2016.
3. "Atari Gears Up for Battle". *Next Generation*. No. 4. Imagine Media. April 1995. pp. 14–15.
4. "Atari Corp" (http://www.thefreelibrary.com/Atari+Corp.-a017358217). HFN. 1995-09-04. Retrieved 2011-05-15.
5. "Atari Jaguar CD system pounces onto multimedia marketplace" (https://web.archive.org/web/20131224114141/http://www.thefreelibrary.com/Atari+Jaguar+CD+system+pounces+onto+multimedia+marketplace.-a017456629). Business Wire. 1995-09-21. Archived from the original (http://www.thefreelibrary.com/Atari+Jaguar+CD+system+pounces+onto+multimedia+marketplace.-a017456629) on 2013-12-24. Retrieved 2011-05-15.
6. "1995: The Calm Before the Storm?". *Next Generation*. No. 13. Imagine Media. January 1996. p. 45.
7. "Jaguar to Roar on PC". *GamePro*. No. 72. IDG. September 1994. p. 160.
8. Wise, Carey (September 1995). "Gamer's Day at Atari". *Electronic Gaming Monthly*. No. 74. Ziff Davis. pp. 64–66.
9. Elston, Brett (June 19, 2008). "Consoles of the '90s" (https://www.gamesradar.com/consoles-of-the-90s/5/). *GamesRadar*. Retrieved November 30, 2021.
10. Gilbert, Henry (August 28, 2013). "Weirdest console redesigns in gaming history" (https://www.gamesradar.com/weirdest-console-redesigns-gaming-history/). *GamesRadar*. p. 4. Retrieved November 30, 2021.
11. Williams, Andrew (March 10, 2017). "12 new games created for long-obsolete consoles" (https://www.techradar.com/news/12-new-games-created-for-long-obsolete-consoles). *TechRadar*. p. 3. Retrieved November 30, 2021.
12. "The 10 ugliest pieces of technology ever made" (https://www.telegraph.co.uk/technology/2019/09/12/10-ugliest-pieces-technology-ever-made/atari-jaguar/). *The Daily Telegraph*. September 12, 2019. Retrieved November 30, 2021.
13. "Jaguar CD". *GamePro*. No. 86. IDG. November 1995. p. 20.
14. "Jaguar Plugs into the CD Revolution". *Next Generation*. No. 6. Imagine Media. June 1995. pp. 18–19.

Atari Joystick Controller TV Video Game System

The **Atari Joystick Controller TV Video Game System** is a 2003 entry Jakks Pacific's Plug It In & Play TV Games lineup. The device itself is designed to look like the CX40 joystick used on the Atari 2600 and has an Atari licence. It was sold in Europe by Revell GmbH.

Games list

- *Adventure*
- *Asteroids*
- *Breakout*
- *Centipede*
- *Circus Atari*
- *Gravitar*
- *Missile Command*
- *Pong*
- *Volleyball*
- *Yars' Revenge*

Basic Fun version

In 2017, Basic Fun released a version of this joystick called *Atari 2600 Plug & Play Joystick* with the game list otherwise being the same except with *Canyon Bomber*, *Crystal Castles*, and *Warlords* replacing *Circus Atari*, *Pong*, and *Yars' Revenge*.[1][2]

See also

- Handheld TV game
- Atari Flashback

References

1. "Basic Fun" (https://web.archive.org/web/20180216105448/http://www.basicfun.com/brandoverview/electronic_games). *www.basicfun.com*. Archived from the original (http://www.basicfun.com/brandoverview/electronic_games) on 2018-02-16.
2. "Atari 2600 Plug & Play Joystick from Basic Fun!" (https://web.archive.org/web/20180618203459/https://ttpm.com/p/24901/basic-fun/atari-2600-plug-play-joystick/). Archived from the original (https://ttpm.com/p/24901/basic-fun/atari-2600-plug-play-joystick/) on 2018-06-18. Retrieved 2018-06-18.

Atari Flashback

The **Atari Flashback** is a line of dedicated video game consoles produced since 2004, currently designed, produced, published and marketed by AtGames under license from Atari SA. The Flashback consoles are "plug-and-play" versions of the 1970s Atari 2600 console with built-in games rather than using ROM cartridges. The latest home console model, Atari Flashback 12 Gold, was released in 2023 and has 130 games.

The first version, designed by Atari veteran Curt Vendel, was modeled after an Atari 7800 and contained 20 games, of which five were 7800 titles. Each subsequent home console in the series is modeled after the 2600 instead; the Atari Flashback 2 was released in 2005, included 40 built-in games, and was the only one with a 2600 hardware SoC. In 2011, Atari, Inc. stopped producing the Flashback in-house and licensed it to AtGames, who continued from there on beginning with the Flashback 3, including a handheld version, Atari Flashback Portable, in 2016. Several variations of the Flashback 8 were released in 2017, including the Gold edition, which introduces scan line filtering, a gameplay rewind feature, and HDMI output. Since the Flashback X in 2019, the exterior designs have been more faithful near-replicas of the original Atari 2600 in miniature forms.

Atari Flashback

Flashback X, released in 2019

Developer	AtGames Atari, Inc. (until 2011)
Manufacturer	Legacy Engineering Group (2004–2011) AtGames (2011–present)
Type	Dedicated console
Lifespan	2004–present
Units sold	1 million+
System on a chip	NES-on-a-chip (original Flashback) Atari 2600-on-a-chip (Flashback 2 and 2+)
Online services	Firmware updates (Flashback 9, 9 Gold, X, X Deluxe, 50th Gold and 12 Gold only)
Dimensions	5.7 in × 3.8 in × 1.7 in (14.5 cm × 9.7 cm × 4.3 cm) (Flashback 12 Gold)
Weight	1.07 lb (0.49 kg) (Flashback 12 Gold)
Website	www.atgames.us (https://www.atgames.us/)

Home consoles

Original console

The original Atari Flashback was released in November 2004,[1][2][3] with a retail price of $45.[1][4] The console resembles a smaller version of the Atari 7800,[5][6] and its controllers are also smaller versions of the 7800's joystick controllers, but with the addition of "pause" and "select" buttons. The controllers are not compatible with the original 7800 console.[4] It was designed by Atari veteran Curt Vendel and his company Legacy Engineering Group, which designs other home video game and video arcade products.[7]

The console lacks a cartridge slot, making it incompatible with 7800 games. Instead, the console features 20 built-in games, including 15 Atari 2600 games and five 7800 games.[4] Some of the games originally required analog paddle controllers and were made to work with the included joysticks. The Atari Flashback runs on famiclone, rather than Atari hardware. As a result, its games do not match their original counterparts entirely.[4][8] The game library includes *Saboteur*, a game that went unreleased for 20 years.[1]

The Flashback sold approximately 500,000 units.[8] Craig Harris of IGN was critical of the game conversions and opined that original copies of these games were superior, writing "it's just horrifying to see Atari, a company that outright owns these games and the original hardware, produce such shoddy renditions of the classic 2600 and 7800 games." Harris complained of problems such as flicker, poor collision detection, and missing sound. He praised the controllers for their reduced size, finding them more comfortable to use, but he was disappointed that they are incompatible with the original 7800.[4]

The original Atari Flashback

Atari Flashback 2

The Atari Flashback 2 was released in August 2005[9][10] as an improved version of its predecessor.[8] It retailed for $30 and included 40 built-in Atari 2600 games.[11][12][13] It is a small near-replica of the 2600, about two-thirds the size of the original. Its controllers are also replicas of the 2600 joysticks.[14][15] The 2600 and Flashback 2 controllers are compatible with both systems.[10][13]

Instead of switches, the Flashback 2 console has several buttons, some of which are used to adjust power and reset it. A "select" button is used to choose between single-player and multiplayer modes, for certain games that offer the latter. Two other buttons are used to adjust the joystick difficulty for the left and right controller respectively.[13][15] An AV cord is hardwired into the back of the console.[15] The back also has a switch to toggle games between color and black-and-white.[13]

Atari Flashback 2

Vendel and Legacy Engineering returned to develop the Flashback 2. In designing it, Vendel relied on materials from his Atari History Museum.[7] He recreated the original Atari hardware on a single chip, allowing games to run as they originally did.[10] The console's hardware makes it easy to mod.[10][16] The Flashback 2's motherboard can be altered to accept 2600 cartridges,[17][18] a concept that the console was designed around.[7][19]

The Flashback 2 was better received compared to its predecessor.[7] John Falcone of CNET praised the controllers and considered them the best aspect of the console.[15] The Flashback 2 sold 860,000 units in the United States. A PAL version was never released.[7] The console was discontinued in 2006.[20]

In 2011, Atari Interactive filed a $30 million lawsuit against Tommo, accusing the latter of knowingly selling pirated Flashback 2 consoles.[20]

Games

Aside from the 40 built-in games,[13] the Flashback 2 also contains two secret games (*Super Breakout* and *Warlords*), which are accessible through a combination of joystick moves on the console's main menu.[10] Five of the 40 games are prototypes that were previously unreleased.[15] While the original Flashback only includes games published by Atari, the Flashback 2 features two games by Activision: *Pitfall!* and *River Raid*.[21][22] A few of the included games are homebrews.[22]

Some games, such as *Lunar Lander*, exhibit some flicker. This is due to limitations in the original Atari 2600 hardware, which the Flashback 2 reproduces accurately. Vendel noted that the games exclusive to the Flashback 2 were programmed under a strict schedule. For a revision of the Flashback 2, Vendel commissioned developers to tweak these games in order to reduce flickering.[23]

Since the Flashback 2, every home console in the series has used a variant of the original Atari 2600 joystick.

Most Atari Flashback systems use RCA cables for video output.

Atari Flashback 2+

In January 2010, Atari announced pre-orders for the Atari Flashback 2+, to be released on February 22, 2010. It included 20 classic Atari 2600 games and 20 new Atari games.[24] The game lineup was mostly the same as the original Flashback 2. However, games such as *Pitfall!*, *River Raid*, and *Wizard* did not appear and were replaced by sports games.

Atari Flashback 3

The Atari Flashback 3 was manufactured by AtGames[25] and was released in September 2011.[26] The Flashback 3 included 60 built-in Atari 2600 games, 2 joysticks, and a case design that was similar to the Flashback 2.[27][28] Unlike its predecessors, the Flashback 3 used emulation.[29] It could not be modded to play 2600 cartridges.[28]

PCMag opined that some of the games were inferior to their original arcade counterparts.[28]

Atari Flashback 3

Atari Flashback 4

The Atari Flashback 4 was released by AtGames on November 13, 2012. The console looked similar to its predecessor but included wireless joystick controllers.[30] Like its predecessor, the Flashback 4 used emulation.[29] The console increased its library to 75 games,[30] 15 more than the Flashback 3.

AtGames also released several alternate versions, including the *Atari Flashback 4: 40th Anniversary Deluxe Edition*. This included a set of replica Atari 2600 paddles, five collectible posters, and a copy of the original Atari joystick patent signed by Nolan Bushnell. AtGames also developed the Atari Flashback 64, a Walmart exclusive version with wired controllers and only 64 games, including *Space Invaders*. Some versions of the Flashback 4 included a 76th "bonus" game, *Millipede*.

Atari Flashback 5

The Atari Flashback 5 was released on October 1, 2014. Like the previous two releases, it was built by AtGames. It was the same as the Flashback 4, with infrared wireless joysticks, but it added 17 more games, increasing the total to 92 games.[31]

Atari Flashback 6

The Atari Flashback 6 was released on September 15, 2015. Like the previous three releases, it was built by AtGames. It was the same as the Flashback 5, with infrared wireless joysticks, but it added 8 more games, increasing the total to 100 games.[32][33]

Atari Flashback 7

The Atari Flashback 7 was released on October 1, 2016. Like the previous four releases, it was built by AtGames. It is the same as the Flashback 6 with the infrared wireless joysticks, but it adds one more game - *Frogger* - increasing the total to 101 games.[34][35][36]

The Atari Flashback 7 Deluxe includes two wired paddle controllers in addition to the wireless joysticks.[37]

Atari Flashback 8

The Atari Flashback 8 was released in September 2017[38] by AtGames.[39] Several variations were released.[40] A basic model, the Flashback 8 Classic, featured 105 games and two wired controllers.[40][41] The Flashback 8 Deluxe was identical, except that it included a set of paddle controllers in addition to the joysticks.

Flashback 8 with joystick, released in 2017

The Flashback 8 Gold had 120 games and wireless controllers as well as ports for 2600 controllers.[40][41][42] The Gold edition had "save" and "pause" features as well as scan line filtering.[41][43] It also allowed the player to rewind gameplay by several seconds. In addition, it introduced HDMI output for 720p.[44][40]

The Atari Flashback 8 Gold Deluxe also had 120 games, but included two wired paddles in addition to two wireless joysticks. The Flashback 8 Gold Activision Edition had 130 games, including several by Activision, although the other versions also featured some Activision games.[40][41] All the games were emulated.[45]

Atari Flashback 9

The Atari Flashback 9 (Model No: AR3050) was released on November 15, 2018,[46] by AtGames. It included two wired controllers and 110 games.

The Atari Flashback 9 Gold (Model No: AR3650) included 120 games and wireless controllers. Both versions featured an SD card slot and an output of 720p.[47][48][49] The SD slot on both basic and gold models was used for firmware updates, downloaded games, and saved game states.

The Atari Flashback 9 (Model No: AR3230) was a Family Dollar exclusive. It included two wired controllers and 110 games, and it featured composite video output along with an SD slot.

Atari Flashback X

The Atari Flashback X was released in 2019[50] and attempted to capitalize on the mini console trend, started by releases like the NES Classic Edition and Sega Genesis Mini, with a case redesign that more faithfully captured the aesthetic of being a near-perfect physical replica of an Atari 2600 in miniature form. Like the previous releases, it was built by AtGames.


Atari Flashback X Deluxe

The basic model (Model No: AR3060) included two wired controllers and 110 games. The deluxe model (Model No: AR3060S) included 10 additional games. A firmware update through the AtGames website allowed both models to download more games.

Atari Flashback 50th Anniversary Edition

The Atari Flashback 50th Anniversary Edition saw a limited release in 2022. Physically it was a slight re-coloration of the Atari Flashback X. It featured brass switches instead of chrome, and it had the gold "Atari 50th" logo stamped onto its wood-veneer trim. Like the previous releases, it was built by AtGames.


Atari Flashback 50th Anniversary Edition

The basic model (Model No: AR3070) included two wired standard controllers and 110 games. The gold model (Model No: AR3080) included two wired standard controllers, two wired paddle controllers, and 130 games. Only the gold model supported official firmware updates from the AtGames website to allow more games to be downloaded.

Atari Flashback 12 Gold

The Atari Flashback 12 Gold (Model No: AR3080B) was given a limited release in 2023. Although it features Gold in its title, like past Atari Flashback releases, there is no basic model of the Flashback 12. Physically it is a slight re-coloration of the Atari Flashback X and Atari Flashback 50th Anniversary Edition that amalgamates the two prior aesthetics. It features brass switches, as seen on the Atari Flashback 50th Anniversary Edition, but the standard silver Atari logo is stamped onto its wood-veneer trim as seen on the Atari Flashback X. Like the previous releases, it was built by AtGames. The model includes two wired standard controllers, two wired paddle controllers, and 130 games. The list of 130 games included is identical to the Atari Flashback 50th Anniversary Edition Gold model. The Atari Flashback 12 Gold features support for official firmware updates from the AtGames website to allow for the download of more games.

Games by Flashback version

Games	Flashback[4]	Flashback 2	Flashback 2+[24]	Flashback 3[26]	Flashback 4[30]	Flashback 5[31]	Flashback 6 and 7[a]	Flashback 8	Flashback 8 Gold	Flashback 8 Gold Activision	Flashback 9	Flashback 9 Gold	Flashback X	Flashback X Deluxe	Flashbac 50th
	2004	2005	2010	2011	2012	2014	2015/2016	2017	2017	2017	2018	2018	2019	2019	2022

Handheld consoles

Atari Flashback Portable

In 2007, Vendel was working on a handheld console known as the Atari Flashback Portable. It was being designed to run on three "AAA" batteries, at a screen resolution of 320x240, and it would feature AV output with two joystick controller ports for multiplayer.[51][52][53] Games are loaded into internal 2MB memory by use of a USB cable. The release date was projected as early 2008 with a retail price of approximately $40. However, Vendel announced in 2010 that the project was not going to be released by Atari and no further information was released.[54]


The 2016 Flashback Portable


The 2019 Flashback Portable

A new handheld console, also called the Atari Flashback Portable, was released in November 2016. It contains 60 games built in and an SD slot for downloaded games. It has a 3.2" LCD, AV output port and mini USB charge port.[55]

A second edition of Atari Flashback Portable was released in September 2017. Like the first Atari Flashback Portable, it was built by AtGames. It includes 70 games with the most notable additions to this edition being four Namco games which are *Dig Dug*, *Galaxian*, *Pac-Man*, and *Xevious*. The version of *Pac-Man* included is a homebrew version that is more faithful to the original arcade game and not the original Atari 2600 version of *Pac-Man* released in 1982.[56]

A third edition of the Atari Flashback Portable was released by AtGames in September 2018. The standard edition includes 80 games.[57]

A fourth edition of the Atari Flashback Portable was released by AtGames in September 2019. It features a woodgrain-like body design that mirrors the woodgrain look on the original Atari 2600 console. The standard edition includes 80 games.[58]

The second (2017) edition of the Flashback Portable includes the following games:

- *Adventure*
- *Adventure II*
- *Air Raiders*
- *Aquaventure*

- *Asteroids*
- *Astroblast*
- *Atari Climber*
- *Barnstorming*
- *Black Jack*
- *Bowling*
- *Breakout*
- *Centipede*
- *Chase It!*
- *Circus Atari*
- *Crystal Castles*
- *Dark Cavern*
- *Demons to Diamonds*
- *Desert Falcon*
- *Dig Dug*
- *Dodge 'Em*
- *Double Dunk*
- *Fatal Run*
- *Frog Pond*
- *Frogger*
- *Frogs and Flies*
- *Fun with Numbers*
- *Galaxian*
- *Golf*
- *Gravitar*
- *Hangman*
- *Haunted House*
- *Human Cannonball*
- *Kaboom!*
- *Millipede*
- *Miniature Golf*
- *Miss It!*
- *Missile Command*
- *Night Driver*
- *Pac-Man*
- *Pitfall!*
- *Pong*
- *Pressure Cooker*
- *Radar Lock*
- *RealSports Basketball*
- *Return to Haunted House*
- *River Raid*
- *Saboteur*
- *Save Mary*
- *Secret Quest*
- *Shield Shifter*
- *Slot Machine*
- *Solaris*
- *Space Attack*
- *Star Ship*
- *Star Strike*
- *Stellar Track*
- *Strip Off*
- *Submarine Commander*
- *Super Breakout*
- *Swordquest: Earthworld*
- *Swordquest: Fireworld*
- *Swordquest: Waterworld*
- *Tempest*
- *Video Checkers*
- *Video Chess*
- *Video Pinball*
- *Wizard*
- *Xevious*
- *Yars' Return*
- *Yars' Revenge*

The third (2018) edition includes the following games:[57]

- *3-D Tic-Tac-Toe*
- *Adventure*
- *Adventure II*
- *Amidar*
- *Aquaventure*
- *Asteroids*
- *Asteroids Deluxe*
- *Atari Climber*
- *Basketball*
- *Black Jack*
- *Bowling*
- *Breakout*
- *Centipede*
- *Chase It!*
- *Circus Atari*
- *Crystal Castles*
- *Demons to Diamonds*
- *Desert Falcon*
- *Dig Dug*
- *Dodge 'Em*
- *Double Dunk*
- *Escape It!*
- *Fatal Run*
- *Frogs and Flies*
- *Frogger*
- *Fun with Numbers*
- *Galaxian*
- *Golf*
- *Gravitar*
- *Gyruss*
- *Hangman*
- *Haunted House*
- *H.E.R.O.*
- *Human Cannonball*
- *Kaboom!*
- *Millipede*
- *Miniature Golf*
- *Miss It!*
- *Missile Command*
- *MotoRodeo*
- *Night Driver*
- *Off the Wall*
- *Pac-Man*
- *Pitfall!*
- *Pooyan*
- *Pressure Cooker*
- *Radar Lock*
- *RealSports Baseball*
- *RealSports Boxing*
- *RealSports Football*
- *RealSports Tennis*
- *Return to Haunted House*
- *River Raid*
- *Saboteur*
- *Save Mary*
- *Secret Quest*
- *Shield Shifter*
- *Slot Machine*
- *Solaris*
- *Space Raid*
- *Sprintmaster*
- *Star Ship*
- *Stellar Track*
- *Strip Off*
- *Submarine Commander*
- *Super Breakout*
- *Swordquest: Earthworld*
- *Swordquest: Fireworld*
- *Swordquest: Waterworld*
- *Tempest*
- *Track & Field*
- *Tutankham*
- *Video Checkers*
- *Video Chess*
- *Video Pinball*
- *Video Olympics (Pong)*
- *Wizard*
- *Xevious*
- *Yars' Return*
- *Yars' Revenge*

The fourth (2019) edition includes the same games as the third (2018) edition but with Atari's unreleased prototype game *Frog Pond* replacing *Frogs and Flies*.

Other products

Atari Flashback Classics is a compilation of various Atari video games. It is the console release of *Atari Vault* and its DLC on Microsoft Windows, MacOS and Linux. The compilation was first released in 2016, for PlayStation 4 and Xbox One,[59][60] split into three volumes. Then, it was released for Nintendo Switch and PlayStation Vita in 2018,[61][62][63] and finally on Atari VCS in 2020 as Atari VCS Vault, split into two volumes.[64]

In October 2018, AtGames released Atari Flashback Blast!, a trio of wireless controllers each with 20 built-in games.[65][66][67]

See also

- List of retro style video game consoles

Notes

a. The Flashback 7 includes *Frogger* as an additional game over its predecessor
b. Homebrew title
c. A previously unreleased Atari 2600 title that was in the prototype or development stage before officially being cancelled or quietly shelved
d. Atari 7800 version
e. An Atari 7800 game
f. As a hidden game
g. Custom port made exclusively for the Flashback
h. Included in some versions of the Flashback 4

References

1. Baer, Adam (2004-11-04). "Two Blasts From the Past Revive the Atari Classics" (https://www.nytimes.com/2004/11/11/technology/circuits/two-blasts-from-the-past-revive-the-atari-classics.html). *The New York Times*. Retrieved 2021-05-04.
2. Reeks, Anne (2004-11-16). "At Home" (http://www.chron.com/news/article/At-Home-1524235.php). *Houston Chronicle*. Retrieved 2021-05-04.
3. "Atari Flashback brings back old games" (https://archive.triblive.com/news/atari-flashback-brings-back-old-games/). *United Press International*. 2004-11-20. Retrieved 2021-05-04.
4. Harris, Craig (2004-12-15). "Atari Flashback: Atari's first retro plug-and-play device isn't exactly what it promises" (https://www.ign.com/articles/2004/12/15/atari-flashback). *IGN*. Retrieved 2021-05-04.
5. Breznican, Anthony (2004-09-08). "Centipede's comeback: Atari to hit gamers with blasts from past" (https://tulsaworld.com/archive/centipedes-comeback-atari-to-hit-gamers-with-blasts-from-past/article_da79dc7d-a706-5408-8b24-bab48c9a4886.html). *Tulsa World*. Associated Press. Retrieved 2021-05-04.
6. Lipsey, Sid (2004-12-17). "What to get the gamer who (probably) has everything" (http://www.cnn.com/2004/TECH/12/17/game.gifts/index.html). *CNN*. Retrieved 2021-05-04.
7. Wen, Howard (2007-06-05). "Curt Vendel: The Escapist Interview" (https://www.escapistmagazine.com/v2/curt-vendel-the-escapist-interview/). *The Escapist*. Retrieved 2021-05-04.
8. "Building a Better *Flashback*" (https://archive.org/details/video-game-collector-004/page/n6). *Video Game Collector*. No. 4. July 2005. p. 7.
9. Wiley, James (2005-07-12). "Atari to offer plug-n-play induced retro flashbacks" (https://www.engadget.com/2005-07-12-atari-to-offer-plug-n-play-induced-retro-flashbacks.html). *Engadget*. Retrieved 2021-05-04.
10. Lee, Nicole (2005-08-01). "The Best Atari Yet" (https://www.wired.com/2005/08/the-best-atari-yet/). *Wired*. Retrieved 2021-05-04.
11. Mohammed, Arshad (2005-11-12). "Atari invites parents to travel back to the '70s" (https://www.nbcnews.com/id/wbna10009708). *NBC News*. Retrieved 2021-05-04.
12. Barbaro, Michael (2005-11-19). "Ready, Aim, Shop" (https://www.nytimes.com/2005/11/19/business/ready-aim-shop.html). *The New York Times*. Retrieved 2021-05-04.
13. Lance Ulanoff (2005-11-16). "Atari Flashback 2" (https://www.pcmag.com/article2/0,2817,1887136,00.asp). *PC Magazine*. Ziff Davis. Retrieved 2014-01-03.
14. Harris, Ron (2005-09-27). "Tech Test: Atari Flashback 2 a retro blast" (https://tulsaworld.com/archive/tech-test-atari-flashback-2-a-retro-blast/article_30b15b37-f42f-5d31-84e8-9e8dd1036c53.html). *Tulsa World*. Associated Press. Retrieved 2021-05-04.
15. Falcone, John (2006-10-25). "Atari Flashback 2 review" (https://www.cnet.com/reviews/atari-flashback-2-review/). *CNET*. Retrieved 2021-05-04.
16. Barton, Matt; Loguidice, Bill (2008-02-28). "A History of Gaming Platforms: Atari 2600 Video Computer System/VCS" (https://www.gamasutra.com/view/feature/131956/a_history_of_gaming_platforms_.php?page=2). *Gamasutra*. Retrieved 2021-05-04.
17. Melanson, Donald (2005-08-04). "Mod an Atari Flashback 2 into a full-fledged Atari 2600" (https://www.engadget.com/2005-08-04-mod-an-atari-flashback-2-into-a-full-fledged-atari-2600.html). *Engadget*. Retrieved 2021-05-04.
18. "Playing original Atari 2600 cartridges on the Atari Flashback" (https://www.siliconera.com/playing-original-atari-2600-cartridges-on-the-atari-flashback/). *Siliconera*. 2007-03-06. Retrieved 2021-05-04.
19. "Hacking the Atari Flashback 2 Console - Cartridge Port Mod" (http://atarimuseum.com/fb2hacks/). Atarimuseum.com. Retrieved 2013-01-28.
20. Cifaldi, Frank (2011-07-06). "Bootleg Consoles Attract Lawsuit From Atari" (https://www.gamedeveloper.com/business/bootleg-consoles-attract-lawsuit-from-atari). *Gamasutra*. Retrieved 2021-05-04.
21. Roper, Chris (2005-07-12). "Atari Flashback 2 to Include Activision Games" (https://www.ign.com/articles/2005/07/12/atari-flashback-2-to-include-activision-games). *IGN*. Retrieved 2021-05-04.
22. Sinclair, Brendan (2005-07-12). "Atari, Activision team up for Flashback 2" (https://www.gamespot.com/articles/atari-activision-team-up-for-flashback-2/1100-6128924/). *GameSpot*. Retrieved 2021-05-04.
23. "60,000 Rev C's on the water... - Atari Flashback Consoles - AtariAge Forums" (http://www.atariage.com/forums/topic/89603-60000-rev-cs-on-the-water/#entry1089008). Atariage.com. Retrieved 2013-01-28.
24. "Atari Flashback 2+" (https://web.archive.org/web/20100125162947/http://www.atari.com/games/atari_flashback2_plus). Atari.com. Archived from the original (http://www.atari.com/games/atari_flashback2_plus) on 2010-01-25.
25. "AtGames Atari Flashback 3 page" (https://web.archive.org/web/20120425044932/http://www.atgames.net/front/bin/ptdetail.phtml?Part=AR2660&Category=103701). Atgames.net. 2013-01-24. Archived from the original (http://www.atgames.net/front/bin/ptdetail.phtml?Part=AR2660&Category=103701) on 2012-04-25. Retrieved 2013-01-28.
26. "AtGames To Launch The Atari Flashback 3 Retro Gaming Console With 60 Built-In Games Recreating The Original Atari 2600 Retro Gaming Experience" (https://www.scribd.com/document/64345391/AtGames-to-Launch-the-Atari-Flashback-3-Retro-Gaming-Console-with-60-Built-in-Games-Recreating-the-Original-Atari-2600-Retro-Gaming-Experience). *Scribd*. 2011-09-08. Retrieved 2021-05-04.
27. Purchese, Robert (2011-09-07). "Atari Flashback 3 console: 60 games, £50" (https://www.eurogamer.net/articles/2011-09-07-atari-flashback-3-console-60-games-GBP50). *Eurogamer*. Retrieved 2021-05-04.
28. "Atari Flashback 3" (https://www.pcmag.com/archive/atari-flashback-3-289742). *PCMag*. 2011-11-01. Retrieved 2021-05-04.
29. Hannley, Steve (2012-10-01). "Atari Flashback 4 Brings Asteroids, Space Invaders & More Into the Mix" (https://hardcoregamer.com/2012/10/01/atari-flashback-4-brings-asteroids-space-invaders-more-into-the-mix/14589/). *Hardcore Gamer*. Retrieved 2021-05-04.
30. Dave Tach (2012-11-12). "Atari Flashback 4 channels 2600 nostalgia with a 75 game bundle" (http://www.polygon.com/2012/11/12/3637034/atari-flashback-4-channels-2600-nostalgia-with-a-75-game-bundle). *Polygon*. Vox Media. Retrieved 2013-12-27.
31. "Atari Flashback 5 w/two Wired Controllers" (https://web.archive.org/web/20150705191811/http://www.atgames.us/Atari-Flashback-5-w-two-Wired-Controllers-AR2660WD.htm). Archived from the original (http://www.atgames.us/Atari-Flashback-5-w-two-Wired-Controllers-AR2660WD.htm) on 2015-07-05. Retrieved 2015-07-05.
32. "Atari Flashback" (https://web.archive.org/web/20150925001246/http://retroproducts.atgames.net/index.php/products/atari/). *AtGames*. Archived from the original (http://retroproducts.atgames.net/index.php/products/atari/) on 2015-09-25.
33. McFerran, Damien (2016-12-14). "6 NES Mini alternatives to get your retro fix from this Christmas" (https://www.techradar.com/news/6-nes-mini-alternatives-to-get-your-retro-fix-from-this-christmas). *TechRadar*. Retrieved 2021-05-04.
34. "Atari Flashback 7" (https://web.archive.org/web/20161127193940/http://atgames.us/Atari-Flashback-7-AR3210X.htm). Archived from the original (http://atgames.us/Atari-Flashback-7-AR3210X.htm) on 2016-11-27. Retrieved 2016-10-05.
35. Gaudiosi, John (2016-12-07). "So You Can't Find an NES Classic: Here Are 7 More Ways to Play Retro Games" (https://www.mensjournal.com/gear/so-you-cant-find-an-nes-classic-here-are-7-more-ways-to-play-retro-games-w454138/). *Men's Journal*. Retrieved 2021-05-04.
36. Rego, Nick (2017-12-05). "10 gadget stocking stuffers gifts that are under AED 400" (https://web.archive.org/web/20210621075119/https://www.techradar.com/news/10-gadget-stocking-stuffers-gifts-that-are-under-aed-400). *TechRadar*. Archived from the original (https://www.techradar.com/news/10-gadget-stocking-stuffers-gifts-that-are-under-aed-400) on 2021-06-21. Retrieved 2021-05-04.
37. Atari Flashback 7 Deluxe (https://www.amazon.com/dp/B01N07VE70), amazon.com
38. Bruno, Tom (2018). *Gaming programs for all ages at the library : a practical guide for librarians* (http://worldcat.org/oclc/1154685769). Rowman & Littlefield. p. 60. ISBN 978-1-5381-0820-8. OCLC 1154685769 (https://search.worldcat.org/oclc/1154685769).
39. Hakim, Danny (2017-11-24). "From Atari (Remember It?), a New Console With Old Games" (https://www.nytimes.com/2017/11/24/business/atari-flashback-video-games.html). *The New York Times*. Retrieved 2021-05-05.
40. Falcone, John (2017-07-17). "Flashback 8 Gold is Atari fans' SNES Classic alternative" (https://www.cnet.com/reviews/atari-flashback-8-gold-preview/). *CNET*. Retrieved 2021-05-05.
41. Osborn, Alex (2017-07-07). "Atari Flashback 8 Gold Console Includes 120 Atari 2600 Games" (https://www.ign.com/articles/2017/06/10/atari-flashback-8-gold-console-includes-120-atari-2600-games). *IGN*. Retrieved 2021-05-05.
42. Stein, Scott (2017-07-28). "Atari Flashback 8 Gold: Vintage gaming on your HDTV" (https://www.cnet.com/pictures/ataris-full-flashback-goes-hd/). *CNET*. Retrieved 2021-05-05.

43. "These Mini Atari and Sega Genesis Consoles Make Playing Old-School Games Even More Awesome" (https://www.maxim.com/entertainment/atari-and-sega-bring-back-classic-game-consoles-2017-7). *Maxim*. 2017-07-21. Retrieved 2021-05-05.
44. Cranz, Alex (2017-07-28). "I Tested Two Retro Consoles—One Good, One Hot Garbage" (https://gizmodo.com/i-tested-two-retro-consoles-one-good-one-hot-garbage-1797304161). *Gizmodo*. Retrieved 2021-05-05.
45. Abbott, Benjamin; Bradley, Alan (2021-03-04). "Best retro game consoles 2021" (https://www.gamesradar.com/best-retro-consoles/). *GamesRadar*. Retrieved 2021-05-05.
46. "Atari Flashback 9" (https://www.amazon.com/Atari-Flashback-9-Electronic-Games/dp/B07FK293JJ). *Amazon.com*. Retrieved 2021-05-04.
47. Stodart, Leah (2020-03-11). "Switch your COD for 16-bit with Sega and Atari mini consoles on sale" (https://mashable.com/shopping/march-11-sega-genesis-atari-flashback/). *Mashable*. Retrieved 2021-05-04.
48. Ervin-Eickhoff, Brent (2020-11-25). "9 Alternatives to the PS5 and Xbox Series X You Can Buy Right Now" (https://www.complex.com/pop-culture/alternatives-to-the-ps5-and-xbox-seriesx/). *Complex*. Retrieved 2021-05-04.
49. "The best birthday gift ideas for men: From unique to practical, these cool picks will wow" (https://www.popsci.com/story/reviews/best-birthday-gift-ideas-for-men/). *Popular Science*. 2021-03-24. Retrieved 2021-05-04.
50. "ATARI FLASHBACK X REVIEW" (https://pixelatedgamer.com/atari-flashback-x-review/). 2020-01-14.
51. Grant, Christopher (2007-06-27). "A peek at the Atari Flashback Portable prototype" (https://www.engadget.com/2007-06-27-a-peak-at-the-atari-flashback-portable-prototype.html). *Engadget*. Retrieved 2021-05-06.
52. Patel, Nilay (2007-06-28). "First pics of the Atari Flashback Portable surface" (https://www.engadget.com/2007-06-28-first-pics-of-the-atari-flashback-portable-surface.html). *Engadget*. Retrieved 2021-05-06.
53. Anis, Arthur (2008-11-28). "An Interview with Curt Vendel" (https://web.archive.org/web/20090209043145/http://www.retroblast.com/20081128724/Latest/An-Interview-with-Curt-Vendel.php). *RetroBlast!*. Archived from the original (http://www.retroblast.com/20081128724/Latest/An-Interview-with-Curt-Vendel.php) on 2009-02-09.
54. Vendel, Curt. "AtariAge Forums" (http://www.atariage.com/forums/topic/166983-atari-flashback-portable/). "Project is dead unless someone wants to pony up the cash to help bring it to market. I may make a few custom ones for people later this year (ala Ben Heck type low volume, custom built) but official production units just aren't going to happen, there just isn't the needed support from Atari to make this a reality, sorry guys."
55. AtGames. "Atari Flashback Portable" (https://web.archive.org/web/20161118040829/http://atgames.us/Atari-Flashback-Ultimate-Portable-Game-Player-AP2632.htm). Archived from the original (http://atgames.us/Atari-Flashback-Ultimate-Portable-Game-Player-AP2632.htm) on 2016-11-18.
56. "Atari Flashback Portable Game Player (2017): The Official Game List" (https://web.archive.org/web/20180820172931/https://armchairarcade.com/perspectives/2017/07/18/atari-flashback-portable-game-player-2017-official-game-list/). Archived from the original (http://armchairarcade.com/perspectives/2017/07/18/atari-flashback-portable-game-player-2017-official-game-list/) on 2018-08-20. Retrieved 2017-11-22.
57. Loguidice, Bill (2018-11-05). "Atari Flashback Portable Game Player (2018): The Official Game List" (https://armchairarcade.com/perspectives/2018/11/04/atari-flashback-portable-game-player-2018-the-official-game-list/). *Armchair Arcade*. Retrieved 2020-07-22.
58. "Atari Flashback Portable" (https://www.atgames.us/products/atari-flashback-portable-2019). *AtGames*. Retrieved 2020-07-22.
59. "Atari Flashback Classics: Volume 1 (PS4)" (https://www.metacritic.com/game/atari-flashback-classics-vol-1/critic-reviews/?platform=playstation-4). *Metacritic*. Retrieved 2021-05-06.
60. Peeples, Jeremy (2016-11-03). "Atari Flashback Classics Vol. 1 and Vol. 2 Now Available on Xbox One" (https://hardcoregamer.com/2016/11/03/atari-flashback-classics-vol-1-and-vol-2-now-available-on-xbox-one/234173/). *Hardcore Gamer*. Retrieved 2021-05-06.
61. Scullion, Chris (2018-12-18). "Atari Flashback Classics Review (Switch)" (https://www.nintendolife.com/reviews/nintendo-switch/atari_flashback_classics). *Nintendo Life*. Retrieved 2021-05-06.
62. "Atari Flashback Classics (Switch)" (https://www.metacritic.com/game/atari-flashback-classics/critic-reviews/?platform=nintendo-switch). *Metacritic*. Retrieved 2021-05-06.
63. "Atari Flashback Classics (Vita)" (https://www.metacritic.com/game/atari-flashback-classics/critic-reviews/?platform=playstation-vita). *Metacritic*. Retrieved 2021-05-06.
64. "Atari Unveils Atari VCS Vault of 100 Games Optimized for the New Wireless Classic Joystick" (https://finance.yahoo.com/news/atari-unveils-atari-vcs-vault-150000251.html). *Yahoo Finance*. 2020-11-12. Retrieved 2023-11-29.
65. Shive, Chris (2018-09-25). "AtGames Announces New Plug and Play Retro Systems" (https://hardcoregamer.com/2018/09/25/atgames-announces-new-plug-and-play-retro-systems/313488/). *Hardcore Gamer*. Retrieved 2021-05-06.
66. Knoop, Joseph (2019-11-20). "Deals: Get These Bandai Namco, Atari, or Activision Retro Consoles for Only $5" (https://www.ign.com/articles/2019/10/26/deals-get-these-bandai-namco-atari-or-activision-retro-consoles-for-only-5). *IGN*. Retrieved 2021-05-06.
67. Saltzman, Marc (2019-03-07). " 'Pac-Man,' 'Space Invaders' and classic video games get extra lives at home, on mobile" (https://www.usatoday.com/story/tech/columnist/2019/03/07/retro-video-games-resurge-create-arcades-home-and-go/3058520002/). *USA Today*. Retrieved 2021-05-06.

External links

- Archive of Atari Flashback product page (https://web.archive.org/web/20041127044055/http://atari.com/us/games/atari_flashback/7800).
- Archive of Atari Flashback 2 product page (https://web.archive.org/web/20051027002359/http://www.atari.com/us/games/atari_flashback2/7800).
- Atari Flashback 2 online manual: HTML (https://web.archive.org/web/20081230173638/http://www.atari.com/us/images/games/FBK2/manual/main.htm), PDF (https://web.archive.org/web/20070209233822/http://www.atari.com/us/images/games/FBK2/manual/largeprintmanual.pdf)

Atari VCS (2021 console)

The **Atari VCS** is a home video game console produced by Atari VCS, LLC, an affiliate of Atari, Inc., part of the Atari SA group.[6] It is part of the ninth generation of video game consoles, alongside Microsoft's Xbox Series X and Series S, Sony's PlayStation 5 and Nintendo's Switch 2. Its exterior encasing design is intended to pay homage to the Atari 2600; however, the console plays modern games and streaming entertainment via AtariOS, a Linux-based operating system that allows users to download and install other compatible games, including those compatible with Windows 10 and Windows 11. The system shares a name with the original Atari's 1977 Video Computer System, usually shortened to VCS, which was renamed to Atari 2600 in 1982.

The system was first revealed as Ataribox in June 2017 and partially crowdfunded starting in May 2018.[7] After several delays, the console was expected to ship in March 2020, but was delayed again due to the COVID-19 pandemic.[8] Initial units for backers were shipped in December 2020, while the console had a general release in June 2021, in Australia, New Zealand and then in North America; shipping was initially restricted to the United States only by Atari and official distributors before it was expanded to include Canada by October 2021. The VCS has not been released in European, African or Asian territories.[9] In March 2023, Atari announced it was releasing 100 numbered-edition consoles that were held in reserve.[10][11]

History

Atari Corporation left the hardware business around 1996, soon after it released the Atari Jaguar video game console, and was liquidated in 1998, with Hasbro Interactive purchasing the intellectual property of the brand.[12] In 2001, Infogrames Entertainment SA purchased Hasbro Interactive.[13] Infogrames later renamed itself Atari SA, while the

Atari VCS

Atari VCS 800 Onyx, controllers, and PC USB

Also known as	Project Ataribox
Developer	Atari
Manufacturer	Flex (console)[1] PowerA (controllers)[2]
Type	Home video game console
Generation	Ninth
Released	**Backers**: December 14, 2020 AUS/NZ: June 10, 2021[4] NA: June 15, 2021[3]
Lifespan	2020–present
Introductory price	US$299 (Onyx Base system) US$399 (All-In system)
Units sold	10,000+ as of Q4 2020[5]
Operating system	Debian-based (Atari OS)
CPU	14 nm AMD R1606G Zen processor with 2 cores and 4 threads @ 2.6 GHz (up to 3.5 GHz)
Memory	8 GB DDR4 (800 model) (upgradeable) 4 GB DDR4 (400 model) (upgradeable)
Storage	Internal flash memory: 32 GB

Hasbro Interactive subsidiary was renamed Atari Interactive.[14] Atari Interactive provided licensing for the various Atari Flashback dedicated consoles produced since 2004.

The concept of the Atari VCS came from Feargal Mac Conuladh, who joined Atari and became general manager to oversee the Ataribox release. Conuladh said that he was inspired to create the unit after seeing players connect laptops to televisions to use a larger screen to play games that were not available for consoles, and then use social media platforms outside of the games via the same laptop to communicate with friends.[15] He also saw that Atari's game catalog had a good amount of brand recognition.[16] His design goal was to feed nostalgia for the old Atari consoles and allow players to enjoy indie games without a personal computer.[16] Processor maker AMD provided custom componentry for it.[16] While Atari made most of the decisions on the unit's hardware, they have also kept open to suggestions from Atari fans on the unit's aesthetics and other visual features.[16]

Removable storage	Internal (user upgradeable) M.2 SSD, or external USB-based storage
Display	HDMI 2.0
Graphics	Radeon Vega 3 APU architecture with up to 4GB shared graphics memory
Controller input	Classic joystick, modern controller
Connectivity	2.4/5 GHz 802.11ac Wi-Fi Gigabit Ethernet Bluetooth 5.0 4 × USB 3.1
Online services	Atari VCS Store
Dimensions	11.6 in × 5.9 in × 1.9 in (29.5 cm × 15.0 cm × 4.8 cm)
Weight	3 lb (1.4 kg)
Website	www.atari.com/pages/atari-vcs (https://www.atari.com/pages/atari-vcs)

The console in its current rendition functions as a sort of hybrid between a home video game console and a gaming PC, two branches of electronics Atari has operated in previously. Conuladh took lessons learned from the commercial failure of the Ouya, a similar crowd-funded microconsole. One was to use the Linux operating system directly, rather than through the limited version offered through Android, as to be able to provide more capabilities and a more open system to developers and users.[15] Conuladh did not want to restrict what users could install on the device; while the unit's operating system was to have a storefront feature, he wanted users to be able to add software by any means possible. He also decided to use a higher-performance laptop/desktop APU than the smartphone/tablet APU used in the Ouya.[15] Conuladh also wanted to steer away from problems encountered by Valve's Steam Machines, which provided a minimum set of specifications for hardware that Valve expected other vendors to build towards, but ultimately never took off. Instead, the Atari VCS hardware configuration was to remain fixed and controlled by Atari.[15] Additionally, Atari expected to contract for the manufacture of all the consoles themselves, rather than relying on third parties to manufacture their own systems based on the Ataribox specifications.

In December 2017, just prior to opening for pre-orders for the VCS (at the time known as Ataribox), Atari recognized there were still several issues they needed to address with the hardware, and decided to postpone the pre-orders. At that point, Michael Arzt, the head for Atari Connected Devices, took over production while Conuladh left Atari, though the two had been coordinating its development previously. According to Atari CEO Fred Chesnais, this period gave them time to review what they wanted the Ataribox to do, and revise the unit's specifications and hardware without sacrificing the core elements of being a Linux-based system that would be able to run classic Atari games along with newer titles.[17]

Announcements

Atari first teased Project Ataribox in June 2017 during E3, releasing images of the box but did not call out any technical specifications. As this followed Nintendo's November 2016 release of the NES Classic Edition, a dedicated console that supported a number of pre-loaded Nintendo Entertainment System games, journalists believed that the new Atari system was developed in kind, to provide a way to play classic Atari games on a dedicated platform.[18]

Further information released in September 2017 provided more technical specifications, details on the software approach including the plans to use Linux and provide an open platform for other compatible software to be installed, and a planned release in the second quarter of 2019. The price is expected to fall between $249 and $299, based on configuration options. The announcement also stated some of the funding for the unit will come from a planned Indiegogo crowdfunding campaign to be launched before the end of 2017.[19] Conuladh said they chose Indiegogo to help with international sales and hardware support, including a close relationship with Arrow Electronics, an electronics components company, that has supported past Indiegogo projects.[16][15]

Pre-orders for the system were expected to start on December 14, 2017,[20] but Atari announced a temporary delay that day, stating "it is taking more time to create the platform and ecosystem the Atari community deserves".[21]

During the 2018 Game Developers Conference, Atari announced that the unit would be called the Atari VCS.[22] Pre-orders for the console and controllers started on May 30, 2018, exclusively via Indiegogo, with shipping expected in quarter 2 of 2019; the configurations included the wood-veneer front panel "Collector's Edition" model, and an all-black with red-orange highlights "Onyx" console model. A base system, consisting of a console and joystick controller, ran from $279 to $299.[23][24] Within the first day, the Atari VCS saw more than US$2.25 million in pre-orders, far exceeding the anticipated US$100 thousand they were seeking to start production.[25]

On June 27, 2018, Rob Wyatt, system architect for the original Xbox and designer of PlayStation 3's graphic systems, was announced as part of the VCS team. Wyatt and his company, Tin Giant, had been working with Atari for months to define hardware and operating system requirements. About joining the project, Wyatt said: "Who wouldn't want to be part of bringing Atari back? From the moment the AMD team introduced me to Atari and the VCS project, I have been intrigued and inspired by the opportunity that it represents."[26] The announcement came only days after British technology news website *The Register* and Atari faced off after an interview between a reporter and Atari COO Michael Arzt from March 2018 resurfaced. In the article, *The Register* reporter questioned the VCS project's legitimacy after Arzt was unable to answer certain questions about the project.[27]

In March 2019, Atari announced that they would be delaying the launch of the VCS to the end of 2019 and announced that the system has upgraded to an unannounced embedded 14 nm AMD Ryzen processor with Radeon Vega-based graphics and two Zen CPU cores. The new AMD processor supports native 4K video playback with modern HDCP, has built-in Ethernet and a secure framebuffer.[28][29]

In July 2019, Atari announced that they would be providing more information about the product's mass production and game content to be available for the system in summer 2019. By the end of summer 2019, no functional version of the AtariVCS meeting the product description has been

shown publicly, and additional details of gaming content have not been forthcoming.[30]

On October 4, 2019, Wyatt stated that he resigned from the project in a statement to *The Register*. Wyatt cited non-payment by Atari as a key reason for his departure. In wake of this news, several of those that had backed the Indiegogo campaign took to the project's Reddit forum to ask about the state of the project, but Atari subsequently took down these posts.[31] In April 2020, Wyatt filed a lawsuit against Atari to recover payment for his design work.[32]

Atari VCS's COO Michael Arzt stated in December 2019 that they were in the final stages of pre-production of the unit, with plans to ship the console to those that pre-ordered by March 2020 before the units were then sent to retail. Arzt explained that the lack of communications over the previous year was due to limitations with their partnership contracts, but promised that they would try to provide more regular updates moving forward.[33]

The console was delayed again in March 2020, due to the COVID-19 pandemic. Atari showed off a new production update on March 20, when they said that they have received enough parts to build the first 500 Atari VCS production units. However, most of these units were earmarked as dev kits for developers.[34]

Release

On May 29, 2020, Atari announced the first batch of 500 production units are ready to exit the factory by mid-June,[35] and expected all 10,000 VCS units would be delivered to backers by the end of 2020.[36]

The console was released and shipped to backers between December 14, 2020, and December 16, 2020.[37][38] while the retail release date was still unknown to this date. It was released about a month after the release of the PlayStation 5 and the Xbox Series X and Series S consoles,[39] with early backer reviews finding the performances to be inferior to those consoles.[40]

On December 22, 2020, Atari announced the success of a fund raising effort to Atari VCS run-rate production rhythm, then planned for the first quarter of 2021.[41]

The console was released worldwide on June 15, 2021.[42] It was released as two bundles, an Onyx Base bundle that includes the console. An All-In bundle includes the console and two controllers: a Classic Joystick modelled after the CX40 joystick, and a Modern Controller that resembles more current controllers.[43]

Hardware

The Atari VCS was announced in 2017 and is based on a customized AMD central processor using Radeon graphic processing technology.[19] Pictures of the unit released in July 2017 showed HDMI and USB ports, an Ethernet port, and an SD card slot. The unit's photos echo the look-and-feel of the Atari 2600, with a black veneer and faux wood-grain front plate, though sized about half as large.[18][44]

Conuladh said that they anticipate the hardware is comparable to a mid-range personal computer for 2017, powerful enough to run most games but not for more recent AAA titles.[16] This was before the platform was redesigned around AMD's new Ryzen R1000 chip, the R1606G announced

in 2019.[45] Since then, the VCS has been demonstrated at the 2020 CES playing *Fortnite* and *Borderlands 2*.[46]

The hardware includes a "Classic Joystick" controller and a "Modern Controller". The "Classic Joystick" is based on the single-button design of the Atari CX40 joystick, adding only additional inset buttons for accessing the console's menus,[22][47] as well as LED lighting. The "Modern Controller" features a layout typical of modern console platforms.[22] The controllers are designed in partnership with PowerA.[48]

The Atari VCS collector's edition was available only to Indiegogo backers, and is a numbered edition with a real wood Teak front panel. Three other editions are available online to the general public: ONYX (with a shiny black faceplate and red backplate), Black Walnut (also a real wood front panel) and Carbon Gold (with a shiny black faceplate accented with gold stripes). Carbon Gold is available exclusively through Walmart.

The Atari VCS features a Ryzen-based AMD R1606G APU with two cores and four threads (SMT) that clocks at 2.6 GHz up to 3.5 GHz[49] and a Vega 3 graphic solution (GCN 5) supporting OpenGL 4.6, Vulkan, with an HDMI 2.0 connection supporting 4K screens at 60 Hz with HDCP 2.2 protection. The VCS 800 features 8 GB of DDR4 2400 (4 GB for the VCS 400 model) upgradeable to 32 GB, and an internal eMMC storage of 32 GB with an available M.2 SSD SATA slot to increase the internal storage. Four USB 3.1 ports are provided, enabling external storage and support for accessories. The Atari VCS features one Gigabit Ethernet connection, WiFi and BlueTooth.

The Atari VCS is a PC/console hybrid, and its performance can be compared to a "Linux gaming PC".[50]

Software

The Atari VCS is driven by a Linux operating system.[51] In 2017, quoting a mail from the company it was said the software is specifically designed to be open to allow to install other Linux-compatible applications on the Atari VCS alongside pre-installed games,[19] using Atari Vault (now called Atari VCS Vault). Other applications that can be installed include streaming applications, music players, and web browsers.[16]

Whereas the Atari 2600 was a cartridge-driven game system, the VCS does not use cartridges or optical discs for games, but instead allows players to download games from a built-in store. The Atari VCS will have a custom storefront that Atari developed with an undisclosed "leading industry partner", where users can download additional video games and applications.[52] All users will have access to basic online features such as the store and online multiplayer; however, access to cloud storage and live streaming video games will be available exclusively on a subscription service.[52]

Atari has stated that the unit will ship with "tons of classic Atari retro games pre-loaded, and current titles from a range of studios".[19] Conuladh stated that there will be "hundreds" of Atari games, plus a number of other retro games from other catalogs.[15] The console will ship with Antstream Arcade, a game streaming service that supports titles from the Amiga, Commodore 64, ZX Spectrum and arcade games.[53]

Atari announced that the Google Chrome web browser will be pre-installed and will power some of the console's online services.[54] On August 13, 2021, Atari added support for Xbox Cloud Gaming, Nvidia GeForce Now, Amazon Luna, and Google Stadia through the built-in chrome browser, with each service presented as a separate app.[55]

Accessories

The Atari VCS is available bundled with the Classic Joystick and Modern Controller ("all in"). There is also the option to purchase the device without them. This comes as Atari allows users to use their own pre-existing accessories including remotes, mouse and keyboards, microphones, external speakers and other controllers. The Atari VCS is compatible with most PC peripherals via both Bluetooth and USB 3.0.[52]

In November 2022, Atari released the PC Mode USB. This provides a simple "plug-and-play" way to the operate the Atari VCS as a Linux PC. It is an Atari-branded 128 GB USB 3.2 drive that comes preloaded with a custom Debian operating system, additional storage and the LibreOffice Suite.[56]

On July 5, 2023, Atari announced that Playmaji's Polymega Remix add-on and Polymega App would be supported by the Atari VCS, as part of a "strategic collaboration" with the company. This follows Atari's minority investment into Playmaji, which occurred around the same time.[57][58]

Backward compatibility

The Atari VCS is not compatible with physical games from legacy Atari consoles because there are no cartridge readers on the system. Atari announced on October 15, 2021, under their new series called 'Flashback Fridays' that emulated versions of selected Atari 7800 games will become available for purchase via Atari VCS Store for $3 each. The first two Atari 7800 titles to be announced were Basketbrawl 7800 and Desert Falcon 7800.[59] As of January 24, 2022, 14 Atari 7800 games are available on the Atari VCS.[60]

Games

Reception

Pre-release

Early backers reviews were mixed. *GameRevolution* praised the console's "thankfully" small size, but also stated that its design "still remains subdued enough to match the style of modern consoles". It also found that the Classic Controller "lacks in utility", due to the lack of modern games that can be played with it.[40] *Video Games Chronicle* criticized the console's architecture, saying that it does not give Microsoft or Sony "anything to worry about".[61] Due to the strong competition and Atari's conflicted history, *CNET* concluded that the console has an "identity crisis".[62] Although with this criticism, *Tom's Guide* stated that Atari VCS "may be not as good as a next-gen console, but buying one is lot easier than working out where to buy a PS5."[63]

Post-launch

IGN awarded the system a 5/10, saying: "The Atari VCS tries to do some interesting things but ultimately fails as a console and a PC alternative."[64] *CGMagazine* gave the console a generally favorable review, especially to retro lovers, but outlined that "its price point is just a bit too high to recommend."[65]

Sales

Exact sales figures for the VCS are unknown, but according to Atari's financial reports, sales related to hardware fell from $2.44 million in 2021 to around $212,000 in 2022. Due to the "underperformance by the VCS", the company suspended the relationship with the original manufacturing partner in December 2022. Atari said it "remains committed to the VCS platform" and has been adding more support for developers and continues to add more games to the store. Atari also stated "there are several hardware projects under development that will expand the VCS ecosystem and create additional utility for users."[66]

See also

- Atari Flashback
- Atari 2600+

References

1. "Atari: April 2018" (http://www.atari-investisseurs.fr/wp-content/uploads/2018/04/PRES-ATARI-2018-04-US-VDEF2.pdf) (PDF). atari-investisseurs.fr. Archived (https://web.archive.org/web/20180628044404/http://www.atari-investisseurs.fr/wp-content/uploads/2018/04/PRES-ATARI-2018-04-US-VDEF2.pdf) (PDF) from the original on June 28, 2018. Retrieved June 28, 2018.
2. Palumbo, Alessio (May 31, 2018). "Atari VCS Specs Unveiled – Bristol Ridge A10, Radeon R7, 8GB DDR4 RAM, Mouse & Keyboard Support" (https://wccftech.com/atari-vcs-specs-bristol-ridge-radeon-r7/). wccftech.com. Archived (https://web.archive.org/web/20180628072335/https://wccftech.com/atari-vcs-specs-bristol-ridge-radeon-r7/) from the original on June 28, 2018. Retrieved June 28, 2018.
3. "Atari VCS Finally Launches This Month" (https://www.ign.com/articles/atari-vcs-release-date-confirmed). June 2, 2021. Retrieved December 7, 2021.
4. "Atari returns with the new Atari VCS on 10 June" (https://www.geekzone.co.nz/content.asp?contentid=23588&fbclid=IwAR2sPv4btS7bdK2n3aEFO-tFyVp5of7IlzC1pdOy-B_phDqmQvZ24svkXak). Retrieved December 7, 2021.
5. "November 30, 2021 - Annual General Meeting" (https://atari-investisseurs.fr/wp-content/uploads/2021/12/ATARI_AGM_30112021-Presentation.pdf) (PDF). Retrieved December 7, 2021.
6. "Terms of Use" (https://atari.com/pages/terms-conditions). *Atari*®. Retrieved September 16, 2024.
7. "Atari® Announces Atari VCS™ Pre-Sale Begins May 30th on INDIEGOGO with Exclusive Wood-Front Collector's Edition, Onyx Model and Accessories" (https://web.archive.org/web/20180501055941/https://www.atari.com/news/atari-announces-atari-vcs-pre-sale-begins-may-30th-indiegogo-exclusive-wood-front-collectors). *Atari*. April 30, 2018. Archived from the original (https://www.atari.com/news/atari-announces-atari-vcs-pre-sale-begins-may-30th-indiegogo-exclusive-wood-front-collectors) on May 1, 2018. Retrieved April 30, 2018.
8. "Atari VCS console delayed, report blames Coronavirus outbreak" (https://us.blastingnews.com/gaming/2020/02/atari-vcs-console-delayed-yet-again-due-to-coronavirus-outbreak-003063581.html). February 5, 2020. Retrieved March 14, 2020.

9. "The Atari VCS retro-inspired console is finally available to buy" (https://www.pocket-lint.com/games/news/157185-atari-vcs-retro-inspired-console-finally-gets-a-release-date-and-price). June 16, 2021. Retrieved December 27, 2022.
10. "Atari Drops Limited Supply of 2600 Collectible Cartridges and Atari VCS Collector's Editions - Cerebral-Overload" (https://cerebral-overload.com/2023/03/atari-drops-limited-supply-of-2600-collectible-cartridges-and-atari-vcs-collectors-editions/). March 27, 2023. Retrieved November 3, 2025.
11. "Atari VCS Collector's Edition Now Available To Purchase" (https://retrododo.com/atari-vcs-collectors-edition/). *Retro Dodo*. April 4, 2023. Retrieved November 3, 2025.
12. Johnston, Chris (April 8, 2000). "Atari Goes to Hasbro" (https://www.gamespot.com/articles/atari-goes-to-hasbro/1100-2462915/). *GameSpot*.
13. "Company News; Hasbro Completes Sale Of Interactive Business — New York Times" (https://www.nytimes.com/2001/01/30/business/company-news-hasbro-completes-sale-of-interactive-business.html?n=Top%2FNews%2FBusiness%2FCompanies%2FHasbro+Inc). *New York Times*. January 30, 2001. Archived (https://web.archive.org/web/20180630190216/https://www.nytimes.com/2001/01/30/business/company-news-hasbro-completes-sale-of-interactive-business.html?n=Top%2FNews%2FBusiness%2FCompanies%2FHasbro+Inc) from the original on June 30, 2018. Retrieved July 27, 2018.
14. "Anthony Jacobson and Pierre Hintze Hire Release FINAL" (https://web.archive.org/web/20121025053601/http://atari.com/sites/default/files/Anthony_Jacobson_and_Pierre_Hintze_Hire_Release_FINAL_100709_GB.pdf) (PDF) (Press release). Atari. October 7, 2009. Archived from the original (https://www.atari.com/sites/default/files/Anthony_Jacobson_and_Pierre_Hintze_Hire_Release_FINAL_100709_GB.pdf) (PDF) on October 25, 2012. Retrieved May 15, 2018.
15. Takahashi, Dean (October 18, 2017). "Former Xbox leader Ed Fries quizzes Feargal Mac on Atari's new console" (https://venturebeat.com/2017/10/18/former-xbox-leader-ed-fries-quizzes-feargal-mac-on-ataris-new-console/). *Venture Beat*. Archived (https://web.archive.org/web/20171019004916/https://venturebeat.com/2017/10/18/former-xbox-leader-ed-fries-quizzes-feargal-mac-on-ataris-new-console/) from the original on October 19, 2017. Retrieved October 18, 2017.
16. Takahashi, Dean (September 25, 2017). "Ataribox runs Linux on AMD chip and will cost at least $250" (https://venturebeat.com/2017/09/25/ataribox-runs-linux-on-amd-chip-and-will-cost-at-least-249/). *Venture Beat*. Archived (https://web.archive.org/web/20170926060200/https://venturebeat.com/2017/09/25/ataribox-runs-linux-on-amd-chip-and-will-cost-at-least-249/) from the original on September 26, 2017. Retrieved September 26, 2017.
17. Takahashi, Dean (March 26, 2018). "Atari pressed the reset button on its Atari VCS game console" (https://venturebeat.com/2018/03/26/atari-pressed-the-reset-button-on-its-atari-vcs-game-console/). *Venture Beat*. Archived (https://web.archive.org/web/20180326220913/https://venturebeat.com/2018/03/26/atari-pressed-the-reset-button-on-its-atari-vcs-game-console/) from the original on March 26, 2018. Retrieved March 26, 2018.
18. Kerr, Chris (July 17, 2017). "The AtariBox sounds like an NES Classic with a modern twist" (https://www.gamedeveloper.com/business/the-ataribox-sounds-like-a-nes-classic-with-a-modern-twist). *Gamasutra*. Archived (https://web.archive.org/web/20170927000224/https://www.gamasutra.com/view/news/301859/The_Ataribox_sounds_like_a_NES_Classic_with_a_modern_twist.php) from the original on September 27, 2017. Retrieved September 26, 2017.
19. Kerr, Chris (September 26, 2017). "Back to the future: AtariBox price and (some) tech specs revealed" (https://www.gamedeveloper.com/business/back-to-the-future-ataribox-price-and-some-tech-specs-revealed). *Gamasutra*. Archived (https://web.archive.org/web/20170926235728/https://www.gamasutra.com/view/news/306507/Back_to_the_future_Ataribox_price_and_some_tech_specs_revealed.php) from the original on September 26, 2017. Retrieved September 26, 2017.
20. Seppela, Timothy (December 11, 2017). "Ataribox pre-orders start this week, without any game details" (https://www.engadget.com/2017/12/11/ataribox-preorders-december-14/). *Engadget*. Archived (https://web.archive.org/web/20171212031648/https://www.engadget.com/2017/12/11/ataribox-preorders-december-14/) from the original on December 12, 2017. Retrieved December 11, 2017.

21. Lilly, Paul (December 14, 2017). "Atari hits pause button on AMD-powered Ataribox preorders" (http://www.pcgamer.com/atari-hits-pause-button-on-amd-powered-ataribox-preorders/). *PC Gamer*. Archived (https://web.archive.org/web/20171214200340/http://www.pcgamer.com/atari-hits-pause-button-on-amd-powered-ataribox-preorders/) from the original on December 14, 2017. Retrieved December 14, 2017.
22. Takahashi, Dean (March 19, 2018). "Ataribox is now Atari VCS, preorders open in April for retro-inspired console" (https://venturebeat.com/2018/03/19/atari-unveils-atari-vcs-its-first-home-game-console-in-9-years/). *Venture Beat*. Archived (https://web.archive.org/web/20180319223157/https://venturebeat.com/2018/03/19/atari-unveils-atari-vcs-its-first-home-game-console-in-9-years/) from the original on March 19, 2018. Retrieved March 19, 2018.
23. "Atari VCS pre-orders start May 30th, but it won't ship until 2019" (https://www.engadget.com/2018/04/30/atari-vcs-pre-orders-start-may-30th/). *Engadget*. Archived (https://web.archive.org/web/20180501015105/https://www.engadget.com/2018/04/30/atari-vcs-pre-orders-start-may-30th/) from the original on May 1, 2018. Retrieved May 1, 2018.
24. Warren, Tom (May 30, 2018). "Atari's retro VCS console is now available for preorder" (https://www.theverge.com/2018/5/30/17408184/ataris-vcs-console-preorder-specifications-release-date-pricing). *The Verge*. Archived (https://web.archive.org/web/20180530184337/https://www.theverge.com/2018/5/30/17408184/ataris-vcs-console-preorder-specifications-release-date-pricing) from the original on May 30, 2018. Retrieved May 30, 2018.
25. Lee, Dave (May 31, 2018). "Atari VCS throwback console attracts $2m in pre-orders" (https://www.bbc.com/news/technology-44311478). *BBC*. Archived (https://web.archive.org/web/20180531105629/https://www.bbc.com/news/technology-44311478) from the original on May 31, 2018. Retrieved May 31, 2018.
26. Sheehan, Gavin (June 27, 2018). "Rob Wyatt Officially Joins the Atari VCS Team" (https://www.bleedingcool.com/2018/06/27/rob-wyatt-officially-joins-atari-vcs-team/). Bleeding Cool. Archived (https://web.archive.org/web/20180628015818/https://www.bleedingcool.com/2018/06/27/rob-wyatt-officially-joins-atari-vcs-team/) from the original on June 28, 2018. Retrieved June 27, 2018.
27. Sirani, Jordan (June 22, 2018). "Atari's New Console Under Fire Again As Crowdfunding Campaign Nears End" (http://www.ign.com/articles/2018/06/22/ataris-new-console-under-fire-again-as-crowdfunding-campaign-nears-end). IGN. Archived (https://web.archive.org/web/20180628015910/http://www.ign.com/articles/2018/06/22/ataris-new-console-under-fire-again-as-crowdfunding-campaign-nears-end) from the original on June 28, 2018. Retrieved June 27, 2018.
28. Fingas, Jon (March 18, 2019). "Atari VCS gets a spec boost and another delay" (https://www.engadget.com/2019/03/18/amd-atari-vcs-delay/). *Engadget*. Retrieved March 27, 2019.
29. Gera, Emily (March 19, 2019). "Atari VCS Is Getting An Upgrade, Launch Pushed to End of 2019" (https://variety.com/2019/gaming/news/atari-vcs-upgrade-launch-1203166492/). *Variety*. Retrieved March 27, 2019.
30. "Atari VCS Medium.com Blog" (https://medium.com/@atarivcs/atari-vcs-teases-the-future-at-the-e3-expo-in-los-angeles-c08e970a90d9). *Medium.com/@AtariVCS*. July 19, 2019.
31. McCarthy, Kieren (October 8, 2019). "Game over: Atari VCS architect quits project, claims he hasn't been paid for six months" (https://www.theregister.co.uk/2019/10/08/atari_architect_quits/). *theregister.co.uk*. Retrieved October 8, 2019.
32. Takahashi, Dean (April 2, 2020). "Xbox co-creator Rob Wyatt sues Atari for failing to pay him for design of VCS console" (https://venturebeat.com/2020/04/02/xbox-co-creator-rob-wyatt-sues-atari-for-failing-to-pay-him-for-design-of-vcs-console/). *Venture Beat*. Retrieved April 3, 2020.
33. Moyse, Chris (December 2, 2019). "Troubled Atari VCS project is 'deep into the final stages of pre-production' " (https://www.destructoid.com/troubled-atari-vcs-project-is-deep-into-the-final-stages-of-pre-production--573958.phtml). *Destructoid*. Retrieved December 2, 2019.
34. "Atari VCS: Managing the Unexpected" (https://medium.com/@atarivcs/atari-vcs-managing-the-unexpected-d87ac17b99df). *Medium*. March 23, 2020.
35. "An Anniversary, Production Updates, and @Home Testing Underway!" (https://medium.com/@atarivcs/an-anniversary-production-updates-and-home-testing-underway-1061dc880703).

36. Brian Shea (July 1, 2020). "Atari's New Console, The VCS, Launches This Fall" (https://www.gameinformer.com/2020/07/01/ataris-new-console-the-vcs-launches-this-fall). Game Informer. Archived (https://web.archive.org/web/20200702094814/https://www.gameinformer.com/2020/07/01/ataris-new-console-the-vcs-launches-this-fall) from the original on July 2, 2020.
37. Rémi Bouvet (July 7, 2020). "The Atari VCS 800 will land on December 14 at a rate of $389.99" (https://www.tomshardware.fr/latari-vcs-800-debarquera-le-14-decembre-prochain-a-un-tarif-de-38999-dollars/) (in French). Tom's Hardware.
38. Atari (December 16, 2020). "ATARI VCS: Shipping of the Indiegogo backer units Native integration of Google Chrome for enriched content Release of the dedicated VCS Companion App" (http://www.globenewswire.com/news-release/2020/12/16/2146472/0/en/ATARI-VCS-Shipping-of-the-Indiegogo-backer-units-Native-integration-of-Google-Chrome-for-enriched-content-Release-of-the-dedicated-VCS-Companion-App.html). GlobeNewswire. "Paris, December 16, 2020 – Atari, one of the world's most iconic consumer brands and interactive entertainment producers, announces the shipping of the Atari VCS to its Indiegogo backers"
39. Will Greenwald (January 9, 2020). "Hands On With the Atari VCS, a Strange, Streaming Slice of Nostalgia" (https://www.pcmag.com/news/hands-on-with-the-atari-vcs-a-strange-streaming-slice-of-nostalgia). PCMag. "It looks like 2020 is shaping up to be a big year for game consoles. Sony is launching the PlayStation 5. Microsoft is launching the Xbox Series X. And Atari Interactive is launching the Atari VCS."
40. Jason Faulkner (January 4, 2021). "Atari VCS Review (2021) - 'Hard to recommend as anything other than an oddity' " (https://www.gamerevolution.com/features/670818-atari-vcs-review-2021). GameRevolution. "This System-on-a-Chip Is fairly capable, though it lacks the horsepower to be a capable modern gaming machine."
41. Atari (December 22, 2020). "Successful completion of Atari's private placement to accelerate development of the Atari VCS as well as new video game partnerships" (http://www.globenewswire.com/news-release/2020/12/22/2149114/0/en/Successful-completion-of-Atari-s-private-placement-to-accelerate-development-of-the-Atari-VCS-as-well-as-new-video-game-partnerships.html) (Press release). GlobeNewswire. "With the funds raised, Atari will accelerate the development of the Atari VCS in order to reach its run-rate production rhythm, currently planned for the first quarter of 2021, earlier, notably by consolidating its supplies of critical components, and to facilitate the ramp up of the distribution networks in the United States and internationally."
42. Bonifac, Igor (June 15, 2021). "Atari VCS is now available to buy" (https://www.engadget.com/atari-vcs-now-available-193329467.html). *Engadget*. Retrieved June 15, 2021.
43. Shea, Brian (June 2, 2021). "Atari VCS Release Date Is This Month" (https://www.gameinformer.com/2021/06/02/atari-vcs-release-date-is-this-month). *Game Informer*. Archived (https://web.archive.org/web/20210602200310/https://www.gameinformer.com/2021/06/02/atari-vcs-release-date-is-this-month) from the original on June 2, 2021. Retrieved June 2, 2021.
44. Browne, Ryan (September 26, 2017). "Atari's new console to cost less than $300 and ship next spring" (https://www.cnbc.com/2017/09/26/atari-console-ataribox-to-ship-next-spring.html). *CNBC*. Archived (https://web.archive.org/web/20170927000021/https://www.cnbc.com/2017/09/26/atari-console-ataribox-to-ship-next-spring.html) from the original on September 27, 2017. Retrieved September 26, 2017.
45. AtariVCS (March 18, 2019). "More Power is Coming to the Atari VCS™" (https://medium.com/@atarivcs/more-power-is-coming-to-the-atari-vcs-20c02f3aefc2). Medium. "The Atari VCS will now be powered by a 14nm AMD processor featuring high-performance Radeon Vega graphics architecture and two "Zen" CPU cores. This new processor replaces the model from the "Bristol Ridge" family that had been in the plan since originally selected for the Atari VCS back in 2017. AMD's all-new Ryzen embedded R1606G chip will be faster, cooler, and more efficient, allowing the VCS to benefit from a simpler and more effective power architecture and thermal solution."
46. Atari VCS (January 17, 2020). "CES 2020: Recap from the Atari VCS Meeting Suite" (https://medium.com/@atarivcs/ces-2020-recap-from-the-atari-vcs-meeting-suite-1ab66df4b6a). Medium. "Guests played games from our downloaded Steam, Epic and GOG libraries, including Fortnite, Borderlands 2, Basketball Classics, and others."

47. Workman, Robert (November 30, 2017). "Atari Reveals Its AtariBox Controller, And It's Decidedly Old-School" (http://comicbook.com/gaming/2017/12/01/atari-ataribox-controller-old-school-atari-2600/). *Comicbook.com*. Archived (https://web.archive.org/web/20171212084125/http://comicbook.com/gaming/2017/12/01/atari-ataribox-controller-old-school-atari-2600/) from the original on December 12, 2017. Retrieved December 11, 2017.
48. Atari VCS (May 21, 2019). "Peripherals Update: Designed for Atari VCS™, in partnership with PowerA" (https://atarivcs.medium.com/peripherals-update-designed-for-atari-vcs-in-partnership-with-powera-252685b0f2f1). Medium. "The Atari VCS team and our peripherals partner PowerA have been excited to take on the challenge of designing the Atari VCS Classic Joystick and Modern Controller with the right mix of essential features, both old and new."
49. Hayden Dingman (July 13, 2019). "What's inside the Atari VCS: Faux wood paneling, AMD's Ryzen, and the soul of a Steam Machine" (https://www.pcworld.com/article/3402456/whats-inside-the-atari-vcs-ryzen-emulator.html). PC World. "AMD's Ryzen Embedded R1606G processor, a dual-core/quad-thread part that clocks at 2.6GHz, with 3.5GHz boost"
50. Owen S. Good (April 3, 2020). "Atari VCS designer sues company for unpaid salary" (https://www.polygon.com/2020/4/3/21207056/atari-vcs-lawsuit-designer-rob-wyatt-launch-dates-delay). Polygon. "The Atari VCS, despite its name, is not a throwback mini-console"
51. Portnoy, Sean (May 31, 2018). "Atari VCS gaming console Linux mini-PC finally available to pre-order" (https://www.zdnet.com/article/atari-vcs-gaming-console-linux-mini-pc-finally-available-to-pre-order/). *ZDNET*. Retrieved December 7, 2023.
52. Parrish, Kevin (June 22, 2018). "The Atari VCS: Everything you need to know" (https://web.archive.org/web/20180803011529/https://www.digitaltrends.com/gaming/atari-vcs-specs-release-date-games-price-news/). *Digital Trends*. Archived from the original (https://www.digitaltrends.com/gaming/atari-vcs-specs-release-date-games-price-news/) on August 3, 2018. Retrieved December 5, 2018.
53. Takahashi, Dean (September 29, 2019). "Atari: Antstream Arcade to bring thousands of retro games to Atari VCS console" (https://venturebeat.com/2019/09/29/atari-antstream-arcade-to-bring-thousands-of-retro-games-to-atari-vcs-console/). *Venture Beat*. Retrieved September 30, 2019.
54. "Atari VCS Uses Google Chrome Browser" (https://gamerant.com/atari-vcs-chrome-browser/). *Game Rant*. December 18, 2020. Retrieved February 1, 2021.
55. "Atari® VCS™ Enables Direct Access to All Major Cloud Video Game Stream" (https://atari.com/blogs/newsroom/atari%c2%ae-vcs%e2%84%a2-enables-direct-access-to-all-major-cloud-video-game-streaming-services). *Atari*®. August 14, 2021. Retrieved April 3, 2026.
56. "Atari VCS PC Mode USB" (https://atari.com/products/usb-port). *Atari*®. Retrieved December 30, 2022.
57. McFerran, Damien (July 6, 2023). "Atari And Polymega Maker Playmaji Are Joining Forces" (https://www.timeextension.com/news/2023/07/atari-and-polymega-maker-playmaji-are-joining-forces). *Time Extension*. Retrieved August 11, 2023.
58. McEvoy, Sophie (July 6, 2023). "Atari makes minority investment into Playmaji" (https://www.gamesindustry.biz/atari-makes-minority-investment-into-playmaji). *GamesIndustry.biz*. Retrieved August 11, 2023.
59. Gavin Sheehan (October 15, 2020). "Atari VCS Officially Launches Flashback Fridays Series" (https://bleedingcool.com/games/atari-vcs-officially-launches-flashback-fridays-series/). BleedingCool. "Atari has launched a brand new series for the Atari VCS as players can now experience Flashback Fridays every week."
60. GamingLyfe.com (November 18, 2020). "THE ATARI VCS RELEASES OVER A DOZEN NEW GAMES THIS NOVEMBER" (https://gaminglyfe.com/the-atari-vcs-releases-over-a-dozen-new-games-this-november/). gaminglyfe.com. "Find a list below of all of the currently-available classic "Flashback" games currently available in the Atari VCS Store."

61. Scullion, Chris (March 3, 2021). "Atari VCS Review: Atart's first console in 28 years is all style, no substance" (https://www.videogameschronicle.com/review/atari-vcs-review/). *Video Games Chronicle*. Archived (https://web.archive.org/web/20210512021803/https://www.videogameschronicle.com/review/atari-vcs-review/) from the original on May 12, 2021. Retrieved June 3, 2021.
62. Ackerman, Dan (April 30, 2021). "Atari VCS hands-on: A computer-console hybrid with an identity crisis" (https://www.cnet.com/news/atari-vcs-hands-on-a-computer-console-hybrid-with-an-identity-crisis/). *CNET*. Archived (https://web.archive.org/web/20210430124843/https://www.cnet.com/news/atari-vcs-hands-on-a-computer-console-hybrid-with-an-identity-crisis/) from the original on April 30, 2021. Retrieved June 3, 2021.
63. Pritchard, Tom (January 26, 2021). "Forget PS5 — Atari VCS offers 'something different' " (https://www.tomsguide.com/news/forget-ps5-atari-vcs-offers-something-different). *Tom's Guide*. Archived (https://web.archive.org/web/20210126214859/https://www.tomsguide.com/news/forget-ps5-atari-vcs-offers-something-different) from the original on January 26, 2021. Retrieved June 3, 2021.
64. *Atari VCS Review - IGN* (https://www.ign.com/articles/atari-vcs-review), June 25, 2021, retrieved August 17, 2021
65. "Atari VCS Review - CGMagazine" (https://www.cgmagonline.com/review/hardware/atari-vcs-review/). October 10, 2021. Retrieved November 10, 2021.
66. Hill, Brandon (December 19, 2022). "Atari VCS in Jeopardy After Atari Pull Manufacturing Contracts" (https://www.tomshardware.com/news/atari-ends-vcs-production-contracts). *Tom's Hardware*. Retrieved December 19, 2022.

External links

- Official website (https://atarivcs.com/)

Atari 2600+

The **Atari 2600+** is a home video game console developed and produced by Atari, Inc. in collaboration with Plaion since 2023. The console is a slightly smaller replica of the four-switch woodgrain model of the Atari 2600, and supports the use of original 2600 as well as Atari 7800 cartridges.[2] The console comes bundled with a 10-in-1 cartridge that includes several classic Atari games.[3]

Atari 2600+

Atari 2600+ console with bundled joystick and 10-in-1 cartridge

Developer	Atari
Manufacturer	Plaion[1]
Type	Home video game console
Generation	Ninth
Released	WW: November 17, 2023
CPU	Rockchip 3128
Memory	256MB DDR3 RAM
Display	HDMI 2.0
Dimensions	10.6 in × 7 in × 2.8 in (26.9 cm × 17.8 cm × 7.1 cm)
Weight	1.3 lb (0.59 kg)
Backward compatibility	Atari 2600 and Atari 7800
Website	atari.com/products/atari-2600-plus (https://atari.com/products/atari-2600-plus)

Hardware

The 2600+ is an 80% scale replica of the 1980 CX2600-A model of the Atari 2600[4][5] and still carries the *Video Computer System* name on it. The system comes with a replica CX40 joystick.[6] The joystick also uses the same hardware and therefore the system is backwards compatible with the older joysticks.[7] The system weighs 1.3 pounds (590 g), which is less than a third of the original unit.[7]

The display output is provided through a single HDMI interface, while power is provided by a single USB-C to USB-A cable to a wall socket.[7] The processor is a Rockchip 3128.[5]

Software

The Atari 2600+ is backwards compatible with the vast majority of Atari 2600 and Atari 7800 cartridges.[5] A few cartridges do not function because the system uses software-based emulation[6] instead of a binary compatible system-on-chip hardware.

The bundled cartridge has switches itself for selecting what game to launch.[6] It includes 10 games:[4]

- *Adventure* (1980)
- *Combat* (1977)
- *Dodge 'Em* (1980)

- *Haunted House* (1982)
- *Maze Craze* (1980)
- *Missile Command* (1980)
- *RealSports Volleyball* (1982)
- *Surround* (1977)
- *Video Pinball* (1981)
- *Yars' Revenge* (1982)

Exterior comparison of original six-switch Atari 2600 (top) and Atari 2600+ (bottom)

Development

The Atari 2600+ was announced on August 22, 2023.[8] Atari, Inc. worked together with German publisher Plaion who is the manufacturing and distributing partner.[9] The console was released in November 2023 in North America, European territories, Australia and New Zealand.[10]

Reception

Seth Macy of *IGN* reviewed the system and gave a score of 7 out of 10, concluding: "An attractive, emulator-based solution to reliving the 1980s in the modern era, with a dedication to recreating the original experience that's both a blessing and a curse."[6] *PC World*'s Ida Blix, with a score of 4 out of 5, praised the design and cartridge backwards compatibility, but was critical of the price and that it only comes with one controller.[11] Phil Hayton of *GamesRadar+* called it an "awesome recreation" of the original system, and further stated that "after 46 years, I might retire my original console, as the newcomer is a worthy successor."[12] *The Guardian*'s Keith Stuart, however, commented that "as with many pop cultural relics from the 1970s, the charm and novelty may wear off too soon, the weirdness and limitations all too obvious". He also thought it was expensive compared to what the Atari Flashback offers.[13]

See also

- Atari Flashback series
- Atari VCS (2021 console)

References

1. Atari Half-Year Financial Report September 30, 2023 (https://atari-investisseurs.fr/wp-content/uploads/2023/12/ATARI_HY-23-24_Financial-Report_DEF.pdf) (PDF) (Report). Atari. "Atari and manufacturing and distribution partner PLAION..."
2. Nam, Michael (September 30, 2023). "Atari 2600+ sees its future in retro gaming | CNN Business" (https://www.cnn.com/2023/09/30/tech/atari-2600-plus-wade-rosen-nintendo-playstation/index.html). *CNN*. Archived (https://web.archive.org/web/20231001011901/https://www.cnn.com/2023/09/30/tech/atari-2600-plus-wade-rosen-nintendo-playstation/index.html) from the original on October 1, 2023. Retrieved October 20, 2023.
3. Orland, Kyle (November 22, 2023). "Review: New Atari 2600+ doesn't justify its plus sign" (https://arstechnica.com/gaming/2023/11/review-new-atari-2600-doesnt-justify-its-plus-sign/2/). *Ars Technica*. Retrieved September 16, 2024.

4. Scullion, Chris (August 22, 2023). "The Atari 2600+ is a modern version of Atari's classic console which plays original cartridges" (https://www.videogameschronicle.com/news/the-atari-2600-is-a-modern-version-of-ataris-classic-console-which-plays-original-cartridges/). *VGC*. Archived (https://web.archive.org/web/20230822144556/https://www.videogameschronicle.com/news/the-atari-2600-is-a-modern-version-of-ataris-classic-console-which-plays-original-cartridges/) from the original on August 22, 2023. Retrieved August 22, 2023.
5. Davis, Wes (August 22, 2023). "A new Atari 2600 will play your old cartridges" (https://www.theverge.com/2023/8/22/23841336/atari-2600-plus-compatible-with-7800-cartridges). *The Verge*. Archived (https://web.archive.org/web/20230822153436/https://www.theverge.com/2023/8/22/23841336/atari-2600-plus-compatible-with-7800-cartridges) from the original on August 22, 2023. Retrieved August 22, 2023.
6. Macy, Seth G. (December 7, 2023). "Atari 2600+ Review" (https://www.ign.com/articles/atari-2600-review). *IGN*. Retrieved September 16, 2024.
7. "Atari 2600 Plus Review: A Modern Throwback" (https://www.cnet.com/tech/gaming/atari-2600-plus-review-a-modern-throwback/). *CNET*. Retrieved September 16, 2024.
8. Gardner, Matt. "The Atari 2600 Is Back, Backward Compatible, And It's Got Wood" (https://www.forbes.com/sites/mattgardner1/2023/08/22/the-atari-2600-is-back-backward-compatible-and-its-got-wood/). *Forbes*. Retrieved September 16, 2024.
9. "AN ICON RETURNS: ATARI® AND PLAION ANNOUNCE FAITHFUL RECREATION OF THE ATARI 2600(™)" (https://presse.plaion.com/en-US/AN-ICON-RETURNS-ATARI-AND-PLAION-ANNOUNCE-FAITHFUL-RECREATION-OF-THE-A) (Press release). PLAION Press Server. August 22, 2023. Retrieved October 14, 2025.
10. "Atari® 2600+ Now Available for Pre-Order Worldwide" (https://atari.com/blogs/newsroom/atari-2600-now-available-for-pre-order-worldwide). *Atari®*. September 13, 2023. Retrieved September 16, 2024.
11. "Atari 2600 Plus review: Party like it's 1977" (https://www.pcworld.com/article/2161782/atari-2600-plus-review.html). *PCWorld*. Retrieved September 16, 2024.
12. Phil Hayton (November 15, 2023). "Atari 2600+ review: "After 46 years, I might retire my original console" " (https://www.gamesradar.com/atari-2600-plus-review/). *gamesradar*. Retrieved September 16, 2024.
13. Stuart, Keith (November 16, 2023). "Atari 2600+ review – a perfect 1970s pop cultural relic" (https://www.theguardian.com/games/2023/nov/16/atari-2600-review-a-perfect-1970s-pop-cultural-relic). *The Guardian*. ISSN 0261-3077 (https://search.worldcat.org/issn/0261-3077). Retrieved September 16, 2024.

External links

- Official website (https://atarivcs.com/)