From the creators of retro GAMER

Videogames Hardware Handbook

Old for 2016

1977 to 1999
Consoles ▫ Computers ▫ Handhelds

The Games Machine Collector's Manual

AMSTRAD

NINTENDO 64

ODYSSEY

SEGA SATURN

GAME BOY COLOR

BBC MICRO

NES

INTELLIVISION

ATARI

VIRTUAL BOY

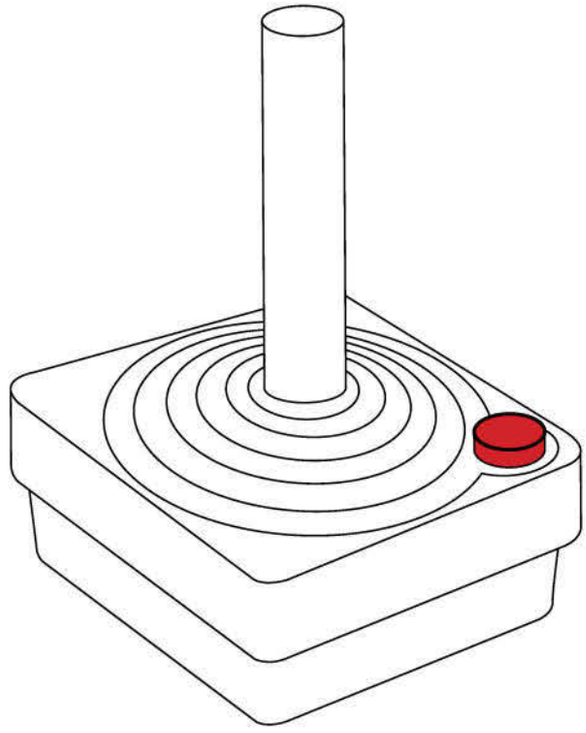
GAME GEAR

COMMODORE 64

SNES

ZX SPECTRUM

248
PAGES OF HISTORY'S GREATEST VIDEOGAME HARDWARE



Welcome to Videogames Hardware Handbook

With retro gaming now more popular than ever, it's never been easier to play your favourite classic game. Online services like Virtual Console and Good Old Games grant us access to a wealth of releases that you once had to scour car boot sales to find, while developers like Square Enix seem intent on remaking all their greatest hits on modern consoles. However, there really is nothing quite like playing an old game on the hardware it was intended for, which is where the book you see before you will come in handy. Charting the history of videogames hardware from 1977 to 1999, this handbook inspects many of the greatest games machines ever made, retelling their fascinating behind-the-scenes stories and detailing the best games you should look out for once you've bought one. This revised edition includes new sections on the Acorn Electron, SNES and the Philips Videopac G7000, as well as its predecessor Magnavox Odyssey – the very first gaming console. Once you've read about the very best retro hardware within, you'll definitely want to buy at least one.

Videogames Hardware Handbook

Imagine Publishing Ltd
Richmond House
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Dorset BH2 6EZ
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Twitter: @Books_Imagine
Facebook: www.facebook.com/ImagineBookazines

Head of Publishing
Aaron Asadi

Head of Design
Ross Andrews

Production Editor
Sanne de Boer

Designer
John Ndojelana

Senior Art Editor
Greg Whitaker

Printed by
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Videogames Hardware Handbook

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Magnavox

ODYSSEY

GAMING STARTED HERE

Released in August 1972, the Magnavox Odyssey introduced the concept of turning your television set into an interactive gaming device. Marty Goldberg takes you on a journey to discover the story behind the very first commercial videogame console

To boldly go where no man has gone before. When those words were uttered on American television screens during the debut of *Star Trek* in September 1966, viewers in living rooms across the country had no idea just how true those words were to become. Within the span of a few short years, their television sets would be doing just that thanks to the nondescript team of electrical engineers working away in Nashua, New Hampshire. Lead by 44-year-old Ralph Baer, the group would transform that standard television set into an interactive device, creating an entertainment medium for the home just as transformative as when movies and television shows first started being broadcast into homes. When the team had started its work during that fateful summer that new medium didn't even have a name. It was just a dream of the future, based on an idea Ralph had over a decade before its creation.

» Ralph Baer sadly passed away in December 2014.

In 1950, Ralph Baer was working for defence contractor Loral Electronics Corporation in New York. Just two years before that year he had been the first person in the US to graduate with a Bachelor Of Science in Television Engineering, putting him in an exclusive echelon of engineers in the US which was familiar with this new but quickly spreading entertainment technology.

While working on a high-class projection TV set, the only TV set he'd wind up building over the next two decades, Ralph had an epiphany. The test equipment he was working with electronically created lines and checkerboard patterns on the screen. He started to muse, what if the circuitry could be expanded into a game on the TV, and maybe even be built into the set? What if a TV set could be used for something *other* than watching broadcast shows?

The bright idea he had come up with would help launch an entertainment medium that itself wound up becoming a multi-billion dollar industry decades later. In a perfect world where everyone shared Ralph's vision, kids growing up in the Fifties would have been able to switch over from *Howdy Doody* to play a game with their friends on Saturday morning.

But that was not to be, thanks to chief engineer Sam Lackoff. Being a 28-year-old engineer very low on the corporate totem pole meant that Ralph's vision lost out to Sam's senior project management blinders. Ralph was told that his projection TV project was behind schedule and he should stop wasting time. And after that project was done, Ralph had to move on from one defense contract after the next, which is what he remained in for the next few decades. During the next 16 years, though, he eventually rose to the rank of chief engineer at Loral and then a VP for engineering at Transitron and then, finally, division manager at Sanders Associates. That's where he was when the next part of his journey took place.

In late August 1966, Ralph was enjoying a sunny day on the steps of a bus terminal. On a business trip for Sanders, the tardiness of another engineer forced Ralph to do what most talented engineers do: dream up new ideas for circuits. Only in this case he harked back to his doomed idea from back in 1951, the one he never quite lost hope in pursuing. Ralph started doodling notes for his plan to use ordinary home TV sets to play electronic games. By the time the other engineer was done, Ralph had the feeling he was on to something.

When he got back to his office at Sanders on 1 September 1966 Ralph took his notes and created a four-page document that outlined his plan for turning a standard TV into an interactive gaming device. Within that document was a description that included how the TV itself would interface with a 'box' that would cost around $25. In turn, it would play games – ideas for these were also sketched out and spanned the categories of action, artistic, instructional, board, card, sports and 'game monitoring' (which had the 'box' unit functioning like a pair dice used in games like *Dungeons & Dragons*). It was the idea of the technology to interface with a TV for playing these games that was where the groundbreaking magic happened.

> "While working on a high-class projection TV set, Ralph had an ephinany. What if the circuitry could be expanded into a game on the TV?"

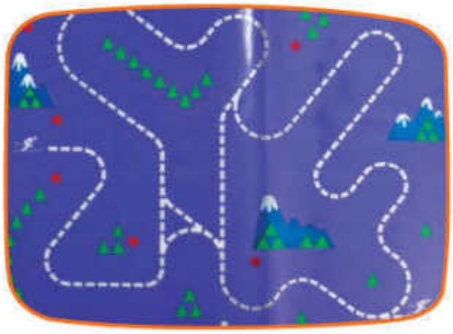
Long before today's wall of various digital inputs on the back of our HDTVs, in 1966 the only way to get into a TV (which at that time was analog) was through its antennas. Unlike the vector and dot displays available to big university computers of the time period (which allowed the computer direct control of the display like an etch-a-sketch), to interface with a TV, your device had to generate a coded video signal which was in turn decoded by the normal TV circuitry to 'draw' a single frame on the screen (usually at a rate of 24 of these a second). Each of those frames was constructed by lines and lines of pixels, drawn left to right one horizontal row at a time until the screen was filled. The video signal was the transmission of

BATTERY COMPARTMENT

■ An optional power supply was available, but most owners ran it with batteries. six 'C' batteries to be precise, which came with the unit.

» The Magnavox Odyssey, shipped with a number of different games for its 1972 release.

» This dial is used to centre the vertical line of the TV screen.



INSIDE THE MAGNAVOX ODYSSEY

The bits and pieces that powered Ralph's console

CENTRE ADJUSTMENT

■ Used to adjust the position of the vertical mid-screen line on the television, used in *Table Tennis*, *Tennis* and other games.

ACCESSORY PORT

■ The Odyssey has a built-in port to connect accessories beyond the two controllers that came with the unit. Unfortunately, only the (now rare) lightgun was released.

SPEED ADJUSTMENT

■ Unlike later *Pong*-only consoles, the Odyssey allows you to adjust how fast the ball (or whatever this third object represents in the current game) moves.

CONTROLLER PORTS

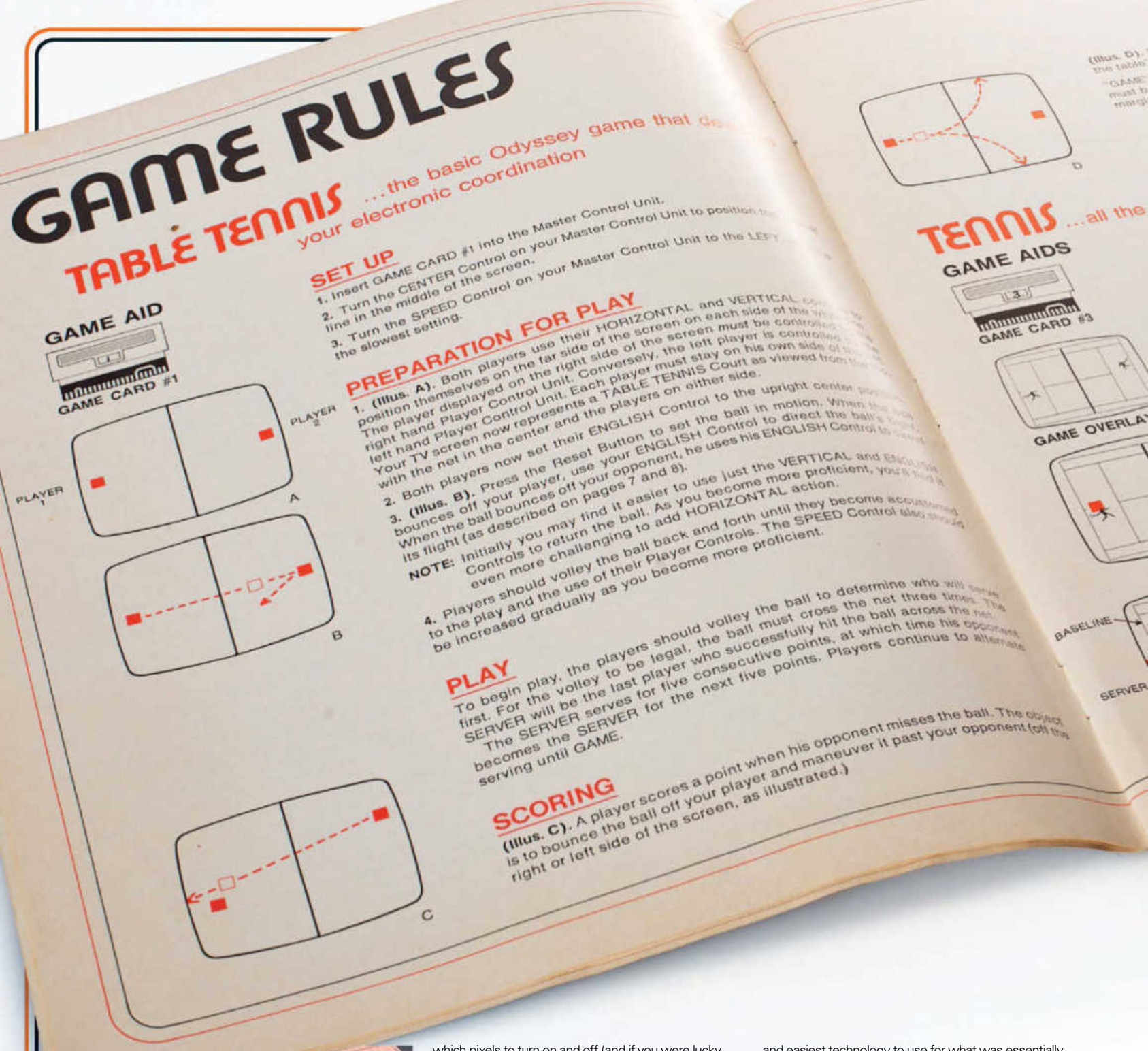
■ Long before the DB-9 port was adopted as the standard for detachable controllers with the Atari 2600, the Odyssey's detachable controllers use a 12-pin port.

MODULES

■ All the logic used in the various games are on these cards, as well as the display circuitry. Includes spot generator, gate gatrix, glip-glop (for direction changes), and more.

GAME SELECTOR CARD PORT

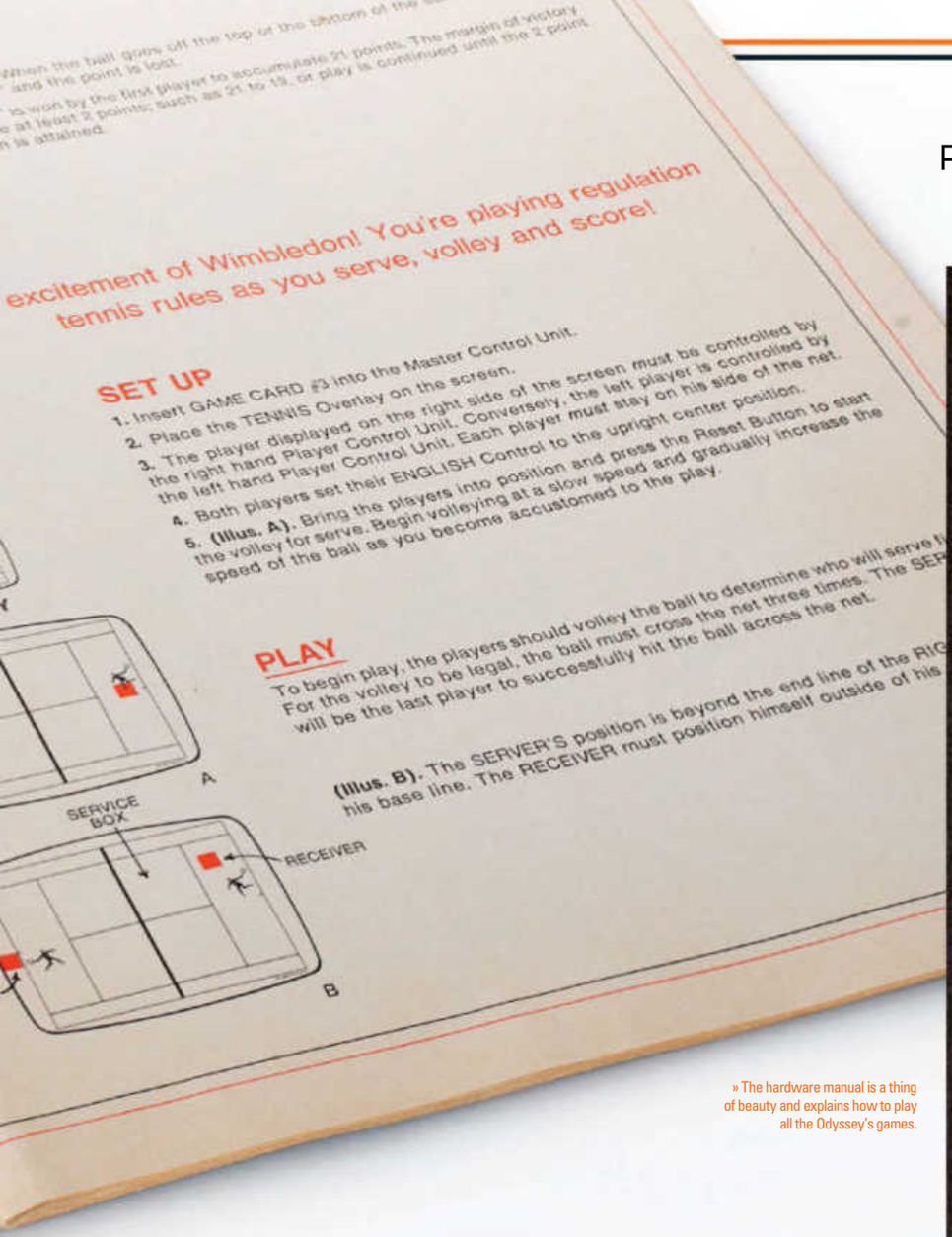
■ Instead of using a large slider or switch to select one of the many built in games, the Odyssey uses jumper cards which effectively do the same thing.



which pixels to turn on and off (and if you were lucky enough to own a colour TV it included the colour info for each pixel as well), and it's where the entire medium of videogames originally got its name from. Ralph's challenge, and the challenge of anyone attempting to interface with a video display at that time, was to get basic objects onto this relatively one dimensional display and make them appear to be moving around at the will of the players. Referred to as a spot motion circuit, it was the basis for videogames in the home and arcades for many years to come – though Ted Dabney would wind up inventing his and Nolan Bushnell's spot motion circuitry in 1970, independent of Ralph's work.

By 6 September 1966 Ralph had the initial schematics laid out for a spot motion circuit and was assigned a technician by the name of Bob Tremblay to build and test it. Called 'TV Game Unit 1', it was built with vacuum tubes because that was the cheapest and easiest technology to use for what was essentially a proof of concept and still not fully-approved project. Transistors and ICs simply hadn't been around long enough yet to make them affordable, let alone for Ralph to have worked with them much. In December 1966 Ralph demonstrated it to corporate director of research and development, Herbert Chapman. Herbert found some some potential and gave Ralph the green light and funding to pursue his project further.

Ralph and one of his engineers, by the name of Bob Solomon, began planning out the games and how to take advantage of colour in the games they were going to display in a new 19-inch colour TV. Yes, Ralph's plan was for a full-colour game system. By early 1967 Ralph was working on a transistorised version and he brought in another technician by the name of Bill Harrison (who was already known for his work in transistorised circuits) to replace the now departed Bob Tremblay.


excitement of Wimbledon! You're playing regulation tennis rules as you serve, volley and score!

SET UP

1. Insert GAME CARD #3 into the Master Control Unit.
2. Place the TENNIS Overlay on the screen.
3. The player displayed on the right side of the screen must be controlled by the right hand Player Control Unit. Conversely, the left player is controlled by the left hand Player Control Unit. Each player must stay on his side of the net.
4. Both players set their ENGLISH Control to the upright center position.
5. **(Illus. A)**. Bring the players into position and press the Reset Button to start the volley for serve. Begin volleying at a slow speed and gradually increase the speed of the ball as you become accustomed to the play.

PLAY

To begin play, the players should volley the ball to determine who will serve f
For the volley to be legal, the ball must cross the net three times. The SER
will be the last player to successfully hit the ball across the net.

(Illus. B). The SERVER'S position is beyond the end line of the RIG
his base line. The RECEIVER must position himself outside of his

SERVICE BOX

RECEIVER

A

B

» The hardware manual is a thing of beauty and explains how to play all the Odyssey's games.

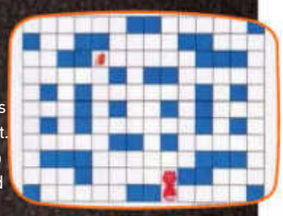
EARLY GAMES

Five releases that moulded the Odyssey

TENNIS

■ The game that started it all. Nolan Bushnell saw this game at a demo of the Odyssey and gave Al Alcorn the challenge to create a version of it as a warm-up. Al created a simplified version known as *Pong*. The original used the Odyssey's controls to provide horizontal and vertical motion, too.

CAT & MOUSE



■ The first maze chase videogame. One player is a cat and the other a mouse. Cat chases mouse. Cat catches mouse. Cat easts mouse. There's not much more to it than that. The maze itself only exists on the overlay, so you're really on the honour system to try and keep your blocks in the lines.

HAUNTED HOUSE

■ One of the more fun two-player games on the Odyssey, it's basically a half-card/half-videogame set in a haunted house. You play a detective that has has to move from clue to clue to get to a treasure. Your opponent is a ghost that's hidden until the right moment and then, boo!

SHOOTING GALLERY

■ In this game which utilised the groundbreaking lightgun peripheral, you use the lightgun to shoot your square bouncing back and forth lighting up targets in the overlay. Once you hit it ten times in one row, you move the light down to the next row to go back and forth, and so on.

HOCKEY

■ Yes, long before the Sega Mega Drive, the Odyssey was *the* place for sports games. Ok, it was the only place for sports games. You start in the centre against your opponent and try and score a goal. If the puck goes out of bounds, you face off in one of the relevant areas dotted on the field.

> Ralph's challenge was to get basic objects on to this relatively one dimensional display and make them appear to be moving around at the will of the players

Working in the small 10-by-20 foot lab, they started working on a 'light pen' for the game unit for use in playing quiz games. Coming up with a novel way of generating coded spots, the two eventually expanded it into the first video-based lightgun and, in turn, their first interactive video patent. With other work at Sanders taking higher priority at times, the work on this video entertainment system wasn't continuous, but it did move forward in leaps and bounds regardless. Ralph continued to lay out more game ideas including maze games, racing games, baseball games, and more.

By the middle of June 1967 they had TV Game Unit 2 completed. Looking like a metal box with a bunch of knobs and pump controls, the unit played a pumping game (where the object was for each play to pump water to the other person's area), a bucket filling game, *Chess*, *Steeple Chase*, *Fox And Hounds*, *Colour Wheel* and a target shooting game that used the two lightguns

they had built. Also made up were colour transparencies to affix to the TV screen to add more detailed playfield graphics, and circuitry to enable them to sync an audio cassette that would play Ralph's pre-recorded explanations of the games directly through the TV speaker for the eventual demo to the higher-ups. It was a success and work began on TV Games Unit 3, and the two were joined by an engineer by the name of Bill Rusch as they looked to improve and modularise the circuitry from Unit 2 and come up with more games.

They even looked at using 7400 TTL chip (Transistor-Transistor Logic, a digital logic chipset that because the base of most early video arcade games), but it was deemed to expensive. TV Game Unit 3 got the missing colour circuitry to play full colour games, and an important addition by Bill Rusch: a third 'spot' for the machine itself to move around. Rusch came up with the idea of using the spot as a ball for sports games like like *Tennis*, *Ping Pong*, *Soccer*, *Handball* and *Hockey*. It was the birth of what would become known as 'ball and paddle' or *Pong*-style games, and was completed by November 1967.

With the addition of circuitry design by Harrison to make the spots rounded instead of square and the inclusion of two joysticks and a set of horizontal, vertical, and 'english' motion knobs, TV Game Unit 4 was born. That soon evolved into TV Game Unit 5 with the addition of de/dt circuitry to get more realistic motion and a focus on moving towards production, and after an eight month hiatus work on TV Game Unit 6 was started with the addition of a rotary switch. This finally lead towards a final reworking of the entire unit into TV Game Unit 7, which is more commonly known as the famous Brown Box.

Starting in January 1969, Sanders started shopping around its finished TV game unit to various television manufacturers in the hope they were the obvious choice for someone to license the technology to and get it on the market. RCA, Motorola, GE, Zenith, Sylvania, GE, Motorola, and Magnavox all took a look at the unit, but RCA was the only one to bite. That was until negotiations fell apart that summer. The chances for the game unit almost died there if it hadn't of been for former RCA marketing team member Bill Enders, who had left and joined up as VP of marketing at Magnavox. Getting Magnavox to reconsider, it took until March 1970 for an agreement to be reached and then until January 1971 for a licensing agreement to be signed.

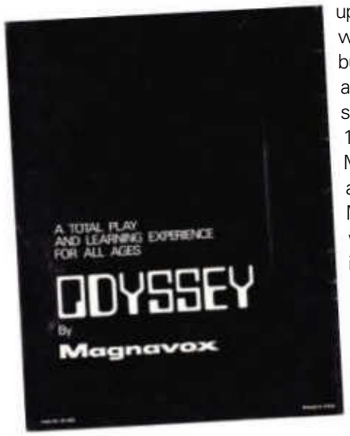
Unfortunately, during the move from the Brown Box prototype to the final Magnavox product, several of the team's innovations were dropped by Magnavox in favour of cost savings. The colour circuitry was first to go (for a savings of $1.64), then the pumping game controls, the rounded ball circuitry and more. Many of the games were pulled as well, for inclusion in a proposed later unit, though a few new ones were added as well. Plus, Magnavox's engineers also came

MORE MAGNAVOX

The odyssey of the odyssey

After the Odyssey and due to the popularity of *Pong* in the arcade, Magnavox released a set of *Pong*-only consoles in 1975 at the same time that Atari's home *Pong* debuted. Establishing the Odyssey as a brand name for all its consoles in the US (parent Philips used Videopac), it continued releasing a series of *Pong* related consoles until 1978's followup to the original Odyssey, the Odyssey 2 (called the G7000 by Philips). The followup to the O2 never materialised in the US due to the industry crash, however it was released under Philips as the G7400 – its last console until the CD-i.

» The controller is rather unwieldy to use now, but this was cutting-edge back in 1972.



up with replacing the 16-game selection switch with cards instead, allowing the user to select a built-in game by plugging in its respective card to activate it. Named Skill-O-Vision at this point, the system was test marketed from July to October 1971 in San Diego, California and Grand Rapids, Michigan to quite favourable reviews. A follow-up appearance in Magnavox's 'Profit Caravan' tour of Magnavox dealers in 22 states in the US also was well-received. Enough so that a May 1972 public introduction of the system was planned, at which point it was christened the Magnavox Odyssey.

When the May 1972 edition of the Profit Caravan rolled into town in Burlingame, California, amongst the crowd of onlookers was a young engineer from a coin operated game company

> "When talking about the Odyssey's sales figures, you have to keep in mind this was the first games console"

by the name of Nutting Associates, Nolan Bushnell. Having released the first coin-operated videogame the fall of the previous year, Nolan was looking to split off from Nutting with his partner Ted Dabney and had come to the demonstration to see what this first videogame unit for the home was all about. Bushnell took two things from the event. First was that he felt it was a poorly executed 'analog' system, and second that the included *Tennis* game was promising if it could be tweaked. With regards to the former, the context of the later patent trial between Magnavox and Atari has to be taken into account. While the attempt was made to portray the Odyssey as a then outdated analog system compared to Atari's 'fully digital' arcade game, *Pong*, it's not based in fact according to Ralph and the other Sanders engineers. As Ralph explained to us: "One look at the schematics of our last three designs (including the Brown Box which became the Odyssey game) shows that the circuitry is nearly all digital and pulse circuitry, except for the modulator-ch 3/4 oscillator and the sync generators. There is a set-reset-flip-flop for ball reversal upon coincidence with the paddle. Another S-R F-F reverses the ball upon coincidence with the wall in Handball. All coincidence detection is done by diode AND-gates. Even the symbol generators are pulse circuits. So much for the 'analog circuits' myth."

» The speed button set the speed for the ball and therefore the difficulty for *Table Tennis*.

System supplied by The National Videogame Arcade, gamecity.org

For the latter, Atari's Al Alcorn-created *Pong* actually did create a superior version of the game thanks to Alcorn's clever method of using a single spinner to provide a similar 'english' motion experience. And as Ralph admitted, it drove sales of the Odyssey for Magnavox considering during the time that the system was on the market from 1972-1975 it was the only way you could experience a *Pong* game in the home.

When talking about the Odyssey's sales figures, you have to keep in mind this was the first game console. So you really can't call it a failure by comparing it to other later game consoles, since each later generation continuously pushed the bounds of sales heights in the market. What is known is that sales in 1972 drove a run of 130,000 units that year which is a lot for new technology in that time period.

Remember, this is several years before even the most ubiquitous television device of the next two decades, VCRs, were even accepted into the home as well. Combined with the fact of the major recessions in both the US and UK during the Odyssey's prime market years of 1973-1975, the fact that over 330,000 units were manufactured during that time period points to a successful introduction. Enough so that Magnavox had Sanders and Ralph create the followup *Pong*-only consoles the Odyssey 100 and 200 which it released in the US in the later half of 1975 alongside Atari's entry into home consoles via Sears with its home *Pong*. The 200 was released in the UK under (then) Magnavox owner Phillips as the Philips Odyssey 200 in 1976.

Then again, who in 1972 would of thought a little idea a young engineer had in 1951 for gaming on a home television set would grow into an over 91.5 billion dollar worldwide gaming industry by the end of 2015?

» A gorgeous certification card, which reveals what numbered system you owned.

» There's a rather classic sci-fi look to the Odyssey's logo.

» These bare boards are a world away from the cartridges that would appear on later consoles.

FAIRCHILD CHANNEL F

The Fairchild Channel F is little known to modern gamers, as is its inventor Jerry Lawson. Here, Marty Goldberg gives you the inside scoop on the console that changed the consumer videogame industry for good

There's no other way to describe the Channel F other than a game-changer in the consumer videogame console industry. While it didn't cause dedicated console manufacturers to fly out of the market, it did signify a major coming change in the approach to consoles. It seems almost appropriate now that the company to give most of the world its introduction to microprocessor-driven home consoles was a semiconductor manufacturer. Much like the position Apple was in almost three decades later, this manufacturer had the capabilities to run all aspects of the console's creative process – design, fabrication and manufacturing. That company was Fairchild, and its division, Fairchild Semiconductor.

While the Channel F was in development at the same time as the Atari Video Computer System, Fairchild was the first to the market, launching in November 1976. Ultimately, what nullified any headstart over Atari was the hard lesson future competitors learned as well: If you don't have hot titles and people who know how to design the games people want to play, your console is not going to sell. But instead of jumping ahead, let's go back to the very beginning of the Channel F.

We mean literally the very beginning – the origins of the Channel F's chief creator. The Channel F's story starts with African-American engineer Jerry Lawson, an acquaintance of Atari notable Al Alcorn. Jerry was born during December 1940, and grew up in Queens, New York City. Getting into electronics young, Jerry was an amateur radio operator from the age of 13 and a typical 'science kid'. Building an amateur radio station in his room, he was a true testament to the changing stature of African-Americans in American society, a traditionally hostile environment for the ethnicity. In fact, Jerry's own grandfather had been a physicist who couldn't get hired by anyone except the post office.

Jerry's creative and entrepreneurial juices also started young when he started building and selling walkie-talkies. By his late teens he was doing television repairs, buying repair parts with a small allowance from his mother. The


FAIRCHILD
VIDEO ENTERTAINMENT SYSTEM
TIME MODE HOLD START
2 MIN 5 MIN 10 MIN 20 MIN
1 2 3 4
CKEY TENNIS GAME 3 GAME 4
INSERT CARTRIDGE
Press to Eject

FAIRCHILD CHANNEL F TOP FIVE

VIDEO BLACKJACK 1976
DEVELOPER: Fairchild

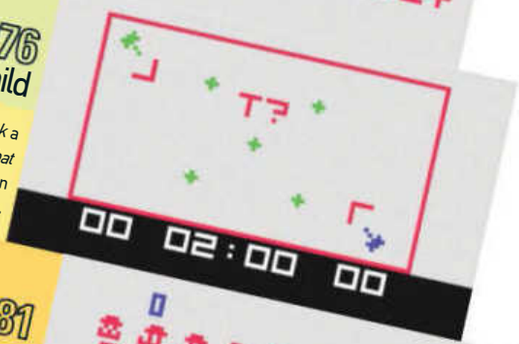
■ This was a launch title for the Fairchild and was certainly impressive for 1976, with presentation and details that wouldn't look out of place on the later Intellivision. It's a stronger effort than the later Atari release and is only let down by cryptic command options.

TIC-TAC-TOE 1976
DEVELOPER: Fairchild

■ While the graphics for this release are nothing special, it was unusual at the time for taunting you with "You lose turkey!" whenever you lost. It was released on *Videocart-1*, which also included *Shooting Gallery*, *Doodle* and (if one doodle program wasn't enough) *Quadra-Doodle*.

DESERT FOX 1976
DEVELOPER: Fairchild

■ Fairchild managed to release a version of Atari's arcade game *Tank* a year before Atari managed to include it as part of its pack-in title *Combat* for the launch of the Atari 2600. While it's missing *Tank*'s full-screen mazes, it does make great use of the Fairchild's unique controllers.

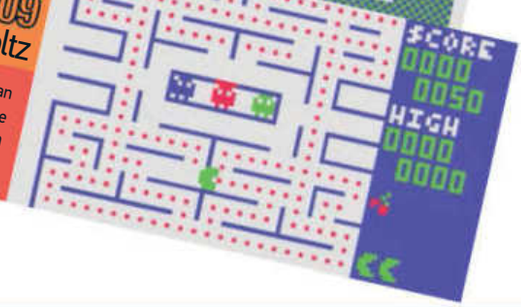


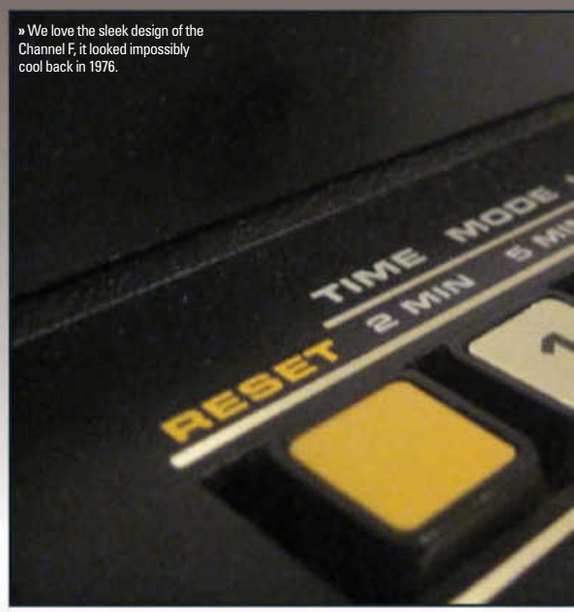
ALIEN INVASION 1981
DEVELOPER: Fairchild/Zircon

■ This was the last official cartridge, yet was first started in 1978. It's also the first (albeit unlicensed) conversion of *Space Invaders*. Designer Brad Reid-Selth changed the shields to pyramids and made the aliens look like hieroglyphics to skirt around potential legalities. Highly recommended.

PAC-MAN 2009
DEVELOPER: Fredric Blåholtz

■ A true rarity: a Channel F homebrew game. Created by Channel F fan Fredric Blåholtz, this actually manages to show off the potential of the system to handle the popular games of the period. Although only 50 copies exist, the ROM has been made available on the emulator MESS.





» We love the sleek design of the Channel F, it looked impossibly cool back in 1976.

experience eventually led him to attend both Queens College and City College of New York (CCNY) to formally study electronics. After college, Jerry's skills were further built up in an employment tour of the then who's who of the US electronics industry, starting with Grumman Aircraft and then Federal Electronics (a division of ITT) where he got to work with his true love – radar. From there it was PRD Electronics, a job that required him to go to programming school to learn how to code for the UNIVAC 128 mainframe the company was using for testing. While PRD gave him one of the key insights needed for the creation of the Channel F, it was the following job at Kaiser Electronics that got him to move from the East Coast to the West Coast in 1968, and the technology hotbed Palo Alto specifically. Eventually leaving to join various semiconductor companies, Jerry wound up at Fairchild Electronics in 1970 when they started taking on 'freelance engineers', a forerunner of today's tech consultants. In this case his job would be to visit Fairchild customers and help them with their product designs, functioning in a position called a Field Application Engineer.

Being the first in this new position, Jerry decided to think outside the box and asked Fairchild for a custom mobile home that was a Fairchild lab on wheels. It was during this time that Jerry saw his first videogame, Nolan Bushnell and Ted Dabney's *Computer Space*. A chance encounter in 1972 would lead him to walk through the doors of Nolan and Ted's new company Syzygy Co and meet

» The cartridge port was capable of taking large cartridges that were a similar size to the 8-track tape cartridges that were popular at the time.

THE CARTRIDGE FAMILY

Examining the Videocart design

The Channel F's cartridges, or Videocarts as they're called, are what the system is most known for. They look like eight-track tapes, and in fact the way the cartridges insert into the front of the console is very much like eight-track tape cartridges. This similarity is not a coincidence, and Fairchild leveraged people's familiarity with the audio medium when designing the first cartridge format. In fact, the system's manual even draws on this by stating the carts are inserted in "much the same way an eight-track audio cartridge is into a cartridge tape player."

Ron Smith did the mechanical design of the cartridge and cartridge bay on the system, designing a unique locking mechanism that not only secures the cartridge and flips open the protective cartridge contact cover, but grounds the cartridge from static charges. Ron also designed a cassette deck-style Eject button for safely removing the cartridge. Both designs were patented on 23 Aug 1976.

Inside the cartridge is almost no circuitry – just two of the companion ROM chips (the Fairchild 3851) that make up the F8 Microprocessor/ Microcontroller setup. Some later carts do add SRAM (Static Random Access Memory).

Al Alcorn for the first time. In these very early days before the company formally changed its name to Atari Inc, Al was smack in the middle of developing *Pong* when Jerry came walking in to try and sell them Fairchild character generators (electronic circuitry for putting alphanumeric characters on a screen). Al didn't need the generator – Nolan's stringent requirement for Al's project to have an extremely small budget forced him to come up with a unique method to generate *Pong*'s on-screen scoring – but it lit a fire in Jerry. Jerry turned around and decided to develop his own video arcade game in his garage that he completed by early 1975, *Demolition Derby*. The game, which made its debut at a pizza place in Campbell, California was unique in two regards: First; it was designed by a single person. Second; it used one of Fairchild's new microprocessors, the F8. In fact it was done before Milwaukee, Wisconsin's David Nutting produced what's largely considered the first microprocessor-driven arcade game, Midway's *Gun Fight*.

It can't be lost on you, the reader, how important this development was. Microprocessors were still extremely new to the coin-op industry and research was pretty much limited to trying to use microprocessors to control pinball machines. At a time when every arcade company was putting out discrete technology videogames, (games that are built entirely out of electronic logic circuitry) Jerry decided to build his around a microprocessor. *Demolition Derby*'s point of origin, being Jerry's garage, was also a traditional startup location for engineers of the time, something Jerry also became familiar with as a member of the now legendary Homebrew Computer Club. Using an actual CPU allowed Jerry to program the game vs hardwire it, but most importantly it would also unknowingly give him and ultimately Fairchild a head start in the consumer arena.

When Jerry had put his video arcade game test up at the pizza parlour, management at Fairchild found out about it. Upset at first with an employee doing a project like this on the side, they changed their minds quickly when they realised they could have Jerry take over from a contract with the firm Alpex, who they had designing their own videogame based around the Intel 8080 that was going sour. Soon, Jerry was heading a brand new videogame division, and with a sizable discretionary budget he began hiring new personnel to aid in reaching his vision: a fully programmable commercial home videogame system based on the Fairchild F8.

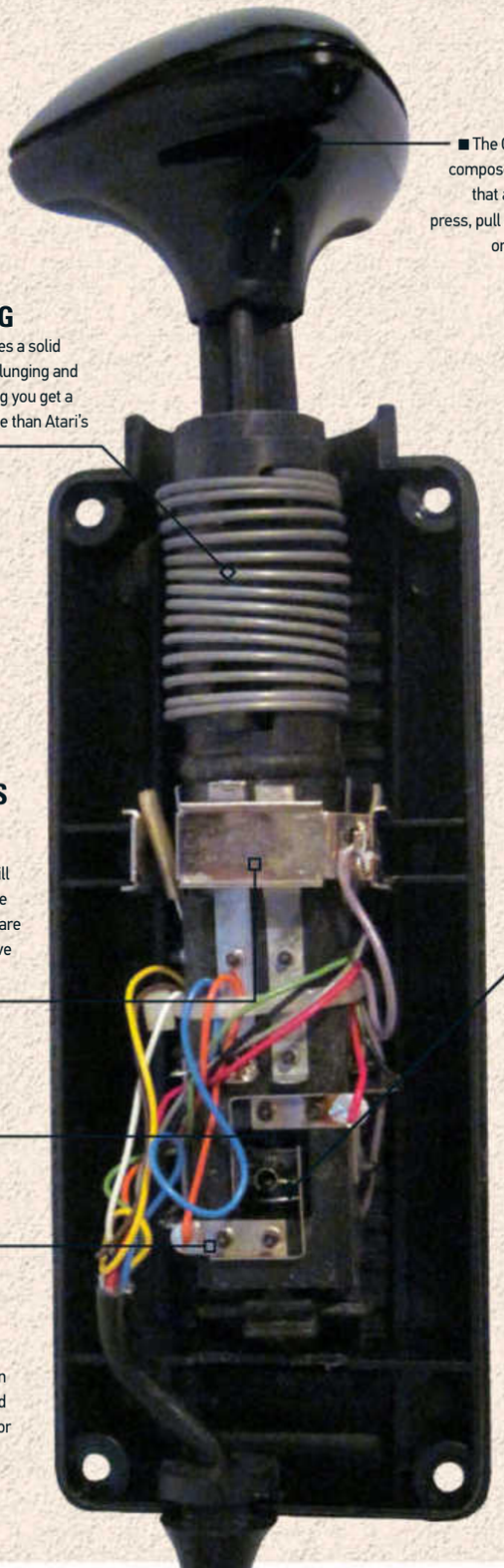
"Jerry's creative and entrepreneurial juices also started young when he started building and selling walkie-talkies"

The Fairchild F8 is an 8-bit microprocessor, and an interesting one. Unlike most microprocessors it has no support for an address bus. The reason? The F8 is actually a microcontroller (a small self-contained computer) composed of two chips: a 3850 CPU chip and a 3851 Program Storage Unit (PSU) chip. The CPU, with 76 instructions, handles all the traditional CPU functionality (including I/O access) with the exception of external memory access (it does have 64 bytes of RAM directly on it, half of what Atari's Video Computer System would wind up having on its release). The PSU handles memory access and includes the program counter, stack counter and 1k of application specific ROM. At that time, microprocessor based systems required multiple support chips that each performed a specific function, so the ability to have an entire system contained on two chips made it more cost effective and very powerful for the time.

Because this home game system was going to be a consumer device, Jerry knew it was going to be very important to have the games reside in removable cartridges. To do this, Jerry was going to have to bypass a problem that most kids of today would have no clue of for an electronics device: sparks and static electricity. Unplugging live circuitry risked causing sparks, and if the user had any static electricity built up in themselves they could risk destroying the ICs of the system. So Jerry's mechanical engineers solved the problem, but it still had to get past the Federal

INSIDE THE CONTROLLER

The inner workings of the Channel F's distinctive joystick



PLUNGER JOYSTICK HANDLE

■ The Channel F's controller handle is composed of a unique triangular shape that actually makes it easier to grip, press, pull and twist. Each tip is marked R or L to denote right or left player.

PLUNGER SPRING

■ The plunger spring creates a solid spring-back action for all plunging and pulling motions. When firing you get a much more tactile response than Atari's joystick Fire button.

ROTATIONAL POT AND CONTACTS

■ Rather than use an actual pot (potentiometer) as paddle games of the time did, the controller simulates the same pot functionality by providing two digital contacts that, when touched, denote turning right or left.

DIRECTIONAL CONTACT STRIPS

■ Digital in nature, the controller uses a unique contact mechanism that still allows it to rotate for paddle use. Four contacts in a square surround the stick and serve as contact points to denote different directions.

PUSH/PULL CONTACTS

■ The controller includes contacts for detecting when the plunger is either pushed (for firing) or pulled (used for unique motion for several other games).

CONTROLLER CONNECTOR

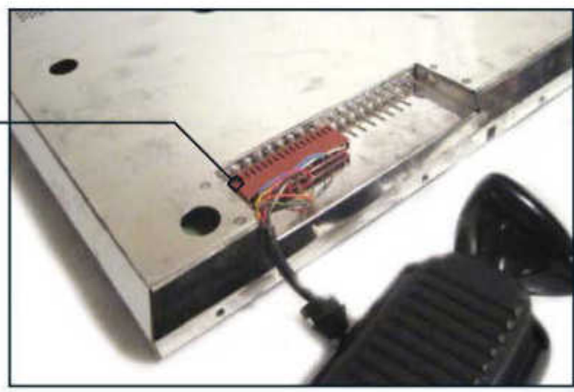
■ The controllers are hard wired to the system, meaning they can not be removed by the owner. However, their internal plug can be removed for servicing. The System II's controllers are removable however.

» The strange-looking controllers could be safely stored away in the console when not in use.

Communications Commission (FCC – America's government agency responsible for consumer electronics devices certification). Testing on this alone was extravagant for the time because removable memory devices hadn't been done before for that very reason, and the FCC had to make sure things didn't spark, surge or even melt. Consequently, every single new cartridge had to be submitted to them for testing and in the end each cartridge, the cartridge bay and even the console itself had to be encased internally with a heavy metal shield to cut down on possible interference. Interestingly, it was Jerry and his team's pioneering work that showed Al Alcorn and his Video Computer System team the way past the same problems during their development.

The Channel F's controllers were the next unique aspect of the console, considering that all other game consoles of the time were paddle based. Jerry prototyped a digital controller that functioned as both a joystick and a paddle, giving the Channel F the best of both worlds – an eight-way digital controller in the shape of a baseless stick with no fire buttons. You manipulate the controller by gesturing in any of the eight axis directions of moving forward or back, right or left, twisting right or left and pulling up or pushing down. The last motion is often used for firing within games. Jerry's mechanical engineer, Ron Smith, took it from prototype to the final design and industrial design engineer Nicholas Talesfore created the casing and iconic look.

A business opportunity analysis report given to Fairchild on 26 November 1975 gives a rare look at the state of this pioneering console at that time. It was prepared by Gene Landrum, a consultant who



also went on to do a similar report for Atari and the VCS before he was hired by Atari and led the development of Nolan's Chuck E Cheese franchise. In it, the console is still referred to as the Alpex Video Game even though it had already been transferred to the F8, because it's still based around the initial Alpex console design. Likewise, the project itself is called 'STRATOS' and is described as "an electronic videogame aimed at the consumer home TV aftermarket. It is designed to eliminate the possibility of game obsolescence through the use of a 'unique' and hopefully patentable cartridge technique for adding additional games… The main console has a three-game configuration of *Ice Hockey, Tennis* and *Shooting Gallery*… Design provides for more exotic controllers such as a keyboard for mathematical, educational and gambling games or steering mechanisms for road races, tank games, etc"

The entire console was expected to be able to be delivered for a materials cost of $28.48 and a list price of around $100, and Fairchild would need to sell 12 – 15,000 units a month that first year to break even from the development and startup costs. The report predicted the US videogame market would grow from $112 million in 1976 to $240 million in 1980, and for Fairchild to sell close to millions of units by then.

With the prototype a success with the Fairchild brass and the analysis report looking promising, Jerry's industrial design engineer Nicholas F Talesfore began work on the casing of the console and cartridges. He came up with a design factor ubiquitous with mid-to-late Seventies entertainment centre decorum: faux wood grain and smoked plastic. Combined with garish bright yellow cartridges the size of eight-track tapes called Videocarts, they believed it would fit in with anybody's rec room veneer. Game programs on the console are selected via a method similar to how you would select tracks on an eight-track tape player, by selecting one of four large buttons (sometimes in confusing multi-button selections). The labels on the cartridges, designed by local artist Tom Kamifuji, feature mid-Seventies style pop art influenced by Peter Max and rounding out the presentation of the system. Instead of the planned three games, two games are built in to the system: *Tennis* and *Hockey.*

"Because this home game system was going to be a consumer device, Jerry knew it was going to be very important to have the games reside in removable cartridges"

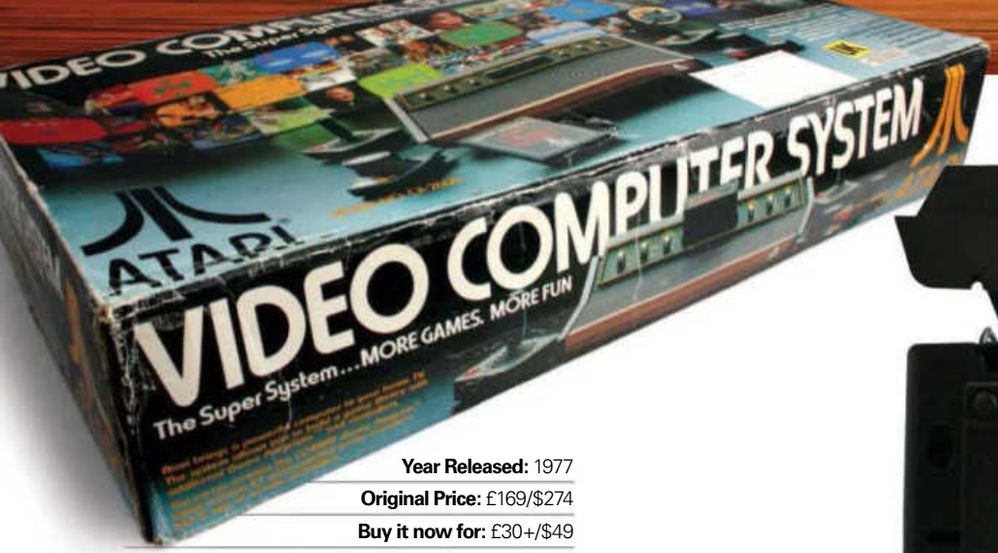
» A cool shot showing off the sheer size of the Channel F's Videocarts.

Fairchild's console was debuted at the Consumer Electronics Show in Chicago on 15 June 1976, sending a clear message to the press and the industry that the still *new* consumer videogame industry had just changed games again. Reviews were actually positive for the system, and many began questioning the relevance of the surplus of new *Pong* consoles entering the market at the time. The patent for the cartridge system was indeed filed for two months later, and final FCC approval of the unit came through in October, clearing the way for an official launch in November as the system hit store shelves at a retail price of $169.95. It must have been confusing for consumers though with the dual name of the system at launch; while the box said Channel F, the console had a nameplate with Video Entertainment System or VES. Popular myth had it that the name was changed with the release of Atari's Video Computer System (VCS or later known as the 2600) in 1977, however that's not the case. The confusion arises that the name changed to Channel F just before the system began being marketed and sold. Consequently, the label bar on the console's storage cover was never changed and the launch cartridges also state simply Fairchild on them while the outside packaging did state 'Channel F'.

Fairchild did a brisk OEM business for European companies over the next several years as the console was released throughout Europe as the Saba Videoplay (Germany), ITT Telematch (Germany), Normende Teleplay (Germany), Adman Grandstand (UK), Barco Challenger (Belgium), Dumont Videoplay (Italy) and Luxor Video Entertainment System (Sweden).

Unfortunately, compared to Atari's games on its new Video Computer System (which were mostly ports of its own coin-op games), the value and fun play just wasn't there. Fairchild released only 21 games before it decided to get out of the business. Electronics company Zircon wound up buying up the remaining stock including the briefly released cost-reduced Channel F System II. Zircon re-released the Channel F System II to the early Eighties videogame market along with five new cartridges and an ad campaign featuring Milton Berle, but the system didn't fare well and Jerry's legacy faded to obscurity. Jerry himself remained relatively unknown until being rediscovered during the early 21st Century, when he started making appearances at gaming conventions. He finally received the recognition he deserved when he was recognised by the industry at the International Game Developers Association conference in San Francisco, passing away only a month later on 9 April 2011.

A special thanks to Jeffery Koss for the photographs used in this feature.



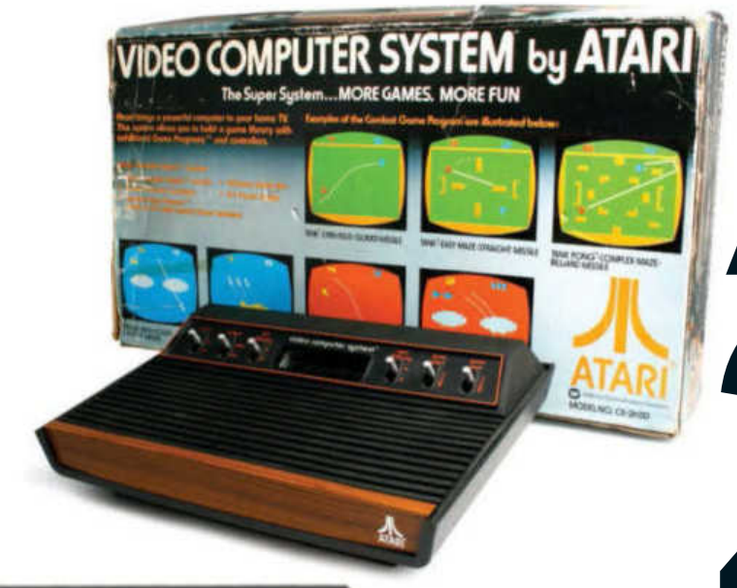
Year Released: 1977

Original Price: £169/$274

Buy it now for: £30+/$49

Associated Magazines: TV Gamer

Why the Atari 2600 was great… Even today the Atari 2600 is a thing of beauty. Built to last and featuring that famous wooden veneer, few things in life could give us as much pleasure as a day spent in front of the TV playing *Space Invaders* or *Combat*. It may have all ended in tears for Atari, but the 2600 remains one of the defining aspects of its legacy



ATARI 2600

CHANCES ARE THAT YOU OWNED THE ATARI 2600 – THE BEHEMOTH OF THE GAMING INDUSTRY FROM THE GENIUS THAT IS NOLAN BUSHNELL AND A LEGEND IN ITS OWN RIGHT. THE 2600 WAS TO BECOME AN OVERNIGHT SENSATION, AND FORGED MILLIONS OF MINDS TO THE WONDROUS BEAUTY OF VIDEOGAMES AS DETAILED IN THIS SPECIAL RETROSPECTIVE...

To this day, the Atari 2600 VCS (video computer system) is a gaming phenomenon, which, in the late Seventies, was a multimillion-dollar industry with over 30 million consoles sold worldwide and hundreds of millions of cartridges produced over three decades. Quite literally, if it wasn't for the Atari 2600 that made home videogaming for the masses on an affordable budget possible, then today's videogaming industry – which is more profitable than the movie and music industry combined – might have been a different story. Whereas the 2600 was revolutionary to the videogaming world in terms of its world dominance and game catalogue, it was also built to last – a gaming equivalent of a Swedish log cabin; early models resembled a mini-Panzerkampfwagen with wood panelling in the style of a Station Wagon powerhouse. One website, that shall remain anonymous, also provides tips on how to convert the indestructible joystick into a vibrating sex toy to appease the girlfriend; the quality of build is something that German engineers would have been envious of – "vor sprung durch technique Atari."

In 1972, Bushnell, Ted Dabney and Al Alcorn set up shop with Atari Computers and the rest is, as they say, history. Three years later, Atari released *Home Pong* and it was a huge success, thanks to Sears' marketing campaign and the genius of Bushnell, who was to become the Ray Winstone of the gaming world. Influenced by the Channel F console – the world's first electronic system to use a microchip – Atari followed suit in 1977 with the 2600 VCS that was complemented by nine cartridge games, including *Outlaw*, *Space War* and *Breakout*. The 2600 was to be gaming gold and, legend has it, that demand was so great over the

Origins

The name of 'Atari' originates from one of the world's oldest board games, *Go*, which Nolan Bushnell was known to enjoy playing and denotes the following: "A group of stones is in Atari if it has only one liberty left." As for the Atari symbol, it was designed by George Opperman in the early Seventies. By all accounts, *Pong* was very popular and the large letter 'A' represented two opposing videogame players with the centre of the *Pong* court in the middle. Got that? As for classic 2600 games that we still love playing, you really can't go wrong with *Combat*, *Demon Attack*, *Adventure*, *River Raid*, *Solans*, *Pitfall!*, *Yars Revenge*, *Kaboom*, *Frogger*, *Haunted House* and *H.E.R.O.* Also, the Intellivision was not the only system to feature voice synthesis as the 2600 also had *Quadron*, *Open Sesame* and *Berzerk* – the latter being an enhanced but hacked version. Bless…

» This is *Go*. It's loved the world over thanks to its challenging and deep gameplay and is held in particularly high regard in Japan.

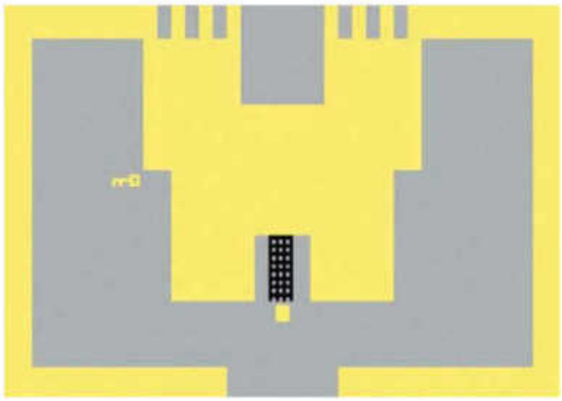
» *Grand Prix* was a belter of a driving game and still plays well today, even when compared to next-gen visual eyeball candy driving sims!

» One of the classic retro 2D action/adventure games: Activision's *Pitfall*. Quite why brick walls exists in secret underground chambers in a forbidden jungle is anyone's guess…

Christmas festivities that Atari executives helped man the production lines so that the public's hunger for the video sensation was satisfied.

Overnight, the Atari 2600 was raking in millions of dollars, and mainstream corporate companies paid close attention to the new form of home entertainment. In 1978, Warner Communications bought Atari and Bushnell left the company in search of other challenges by buying Pizza Time Theatre. A year later, and with more financial backing to boost development of software and marketing, the 2600 was graced with a further 12 games, but stiff competition in the shape of the Magnavox Odyssey 2 and the Mattel Intellivision – the latter being the world's first 16-bit console – threatened Atari's monopoly. The Intellivision was the strongest contender to the Atari by boasting more graphics power, a highly inventive gaming pad – which, some say, has only been surpassed by Nintendo's Wii – and innovative peripherals such as a keyboard and voice synthesis module. The Intellivision may have stomped in the clay footprint set by Atari, but in a short period of time, Mattel's machine had shifted over 4 million units: something had to be done before the 2600 would be superseded by the opposition. The answer came in 1980 with a gaming smash hit from Japan: *Space Invaders*. The arcade conversion to the 2600 proved to be a monstrous success, with scores of people buying the console just so they could play the game, and more were converted to the Atari cause when *Adventure* was released shortly afterwards. And in gaming history, *Asteroids* and *Lunar Lander* were the first two videogames to be registered in the US copyright office. The face of videogaming was changing rapidly – everyone wanted a piece of the action and things were going to get real ugly.

Four disgruntled Atari employees left the company to form Activision – a third-party outfit to drag from the coat tails of the 2600 – and released their own games in 1980: *Boxing, Checkers, Fishing Derby* and *Dragster*. Arguably, Activision's titles were better in quality than the ones that the 2600 had to offer, and Atari was not pleased that other parties were taking a slice of the pie and promptly sued. And lost. The giant cash cow that was Atari was forced to resign to the fact that other companies could release their own titles that were compatible with the 2600, and Activision made over $70 million in one year alone. 1981 was to be a gaming duel between the Atari and the Intellivision – in playgrounds across America, schoolboys would bicker over which system was superior to the other, but Atari finally won in a battle of attrition. Like



» Many retro gamers lost hours of their lives and girlfriends to the Atari 2600's *Adventure*: one of the very first RPGs that moulded and influenced the genre.

the confrontation between VHS and Betamax in the early Eighties, Atari had the edge due to market dominance.

To beat the stranglehold of the 2600 in the marketplace, Coleco believed that a graphically advanced machine would beat the ageing Atari and released the Colecovision in 1982. In response, Atari launched the 5200 – a more powerful machine on terms with Coleco's – and lowered the cost of the 2600 by a hundred bucks. Once again, Atari ruled the roost, and its dominance was assured as the Colecovision went the same way as the Intellivision and Arcadia released the Supercharger: a device that played games on an audio cassette and allowed multi-loads. A slew of third-party companies gave the Atari a vote of confidence and joined the fray as CBS, 20th Century Fox, Tigervision and many more – even X-rated games were available for the more mature gamer via Mystique – so long as Atari was presented with a percentage of the profits. Sales were strong, despite the 2600's age, and more games were released such as *Pac-Man* and *ET*, which were critical and commercial disasters. An urban myth states that the movie studio behind *ET* gave Atari less than two months to plan, develop and distribute the 2600 game in time to hit the US theatrical release. Only recently have the software developer and movie studio not been at loggerheads when it comes to film game adaptations, and, predictably, with such unrealistic delivery deadlines, *ET* was rushed and proved to be a satisfactory videogame: sales were so low that rumours surfaced of a million cartridge units being buried in a landfill in the Nevada desert.

It was the beginning of the end; there were too many games to meet demand, third-party companies began to fold, and the gaming crash was in full swing. Desperate times demand desperate measures, and to compensate for the severe lack of sales, Atari reduced the 2600 to $40 in 1984 and had announced the release of the 7800 and a more sophisticated 2600 with better graphics. This suggested end was nigh for videogames, and that the fad had passed, Warner Communications sold its home videogame division of Atari to Jack Tramiel, who believed that home computers would replace consoles. Tramiel snuffed out all new Atari releases and put an emphasis on the Commodore 64.

Financial experts predicted that the videogame industry was kaput, the bubble had burst and that the future for home entertainment relied on home computers, as a new gaming conflict commenced between the Sinclair Spectrum, Commodore 64, Dragon 32 and others. However, in 1986, Nintendo surprised everyone with the release of the NES console, which was a US sales blitzkrieg – every kid wanted one! Sensing that there was more life in the old dog, Atari then sold the newly designed 2600 as the Atari 2600 Jr for less than 50 dollars, as well as the 7800 that had been gathering dust in storage for over a year. Videogames were, once again, the big thing, and in 1987 Atari released *Jr Pac-Man* and sub-licensed a number of established games from other companies, such as the wonderful *Donkey Kong* – a title that allowed the 2600 to print money. As 1987 had passed, Atari executives realised that the 2600 was coming to the end of its natural shelf life: an astonishing achievement for a gaming machine over ten years old as well as having to compete with more advanced systems. Nolan Bushnell was rehired by Atari, which then manufactured a small number of titles, including *Secret Quest*, as a final swan-song to a console classic and as a way of squeezing the last fistful of cents from the machine. By 1989, the production lines for the 2600 finally ground to a halt as the final units were shipped across the US, although foreign sales and distribution continued for a short period of time. It was time for the 2600 to throw in the towel, retire and look back at what it had achieved through gaming history.

If it wasn't for the 2600 and its impact on the videogame industry, what we take for granted today might have had been very different, especially if Jack Tramiel had his way. The 2600 was a high-quality machine with an incredible range of games to choose from, and all genres were catered for – from educational titles to arcade, puzzle and strategy – and available in spades. And the retro gaming rebellion has sparked new life into the 2600 as hobbyists collect and sell the console and cartridges all over the world as well as Jakks Pacific's fabulous TV Games Atari joystick that features a selection of great games such as *Missile Command* and *Scramble* – and how good is that? And besides, with a modern-day game that comes complete with a manual the size of the Yellow Pages and a learning curve that will consume the best part of your life, you really can't go wrong with the Atari's pick up and play nature.

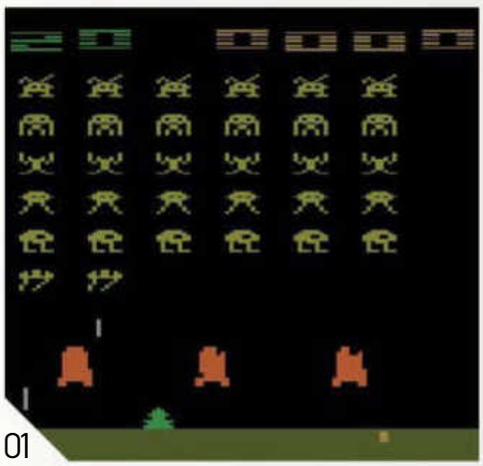
» The Atari 2600 Jr – the company's attempt to flog an ageing machine at a low cost to the masses.

Close but no cigar

Sadly, a number of titles for the 2600 never saw the light of day and were to become a retro gaming myth. The classic hardcore skin flick, *Debbie Does Dallas*, was announced in 1982 by American Multiple Systems but was canned before completion; one can only wonder what the gameplay would have been like but it might have been similar to the *Daley Thompson Decathlon* joystick 'waggle'… The cult comedy movie *Airplane!* was also canned as was *B-52 Bomber*, which might have been given the opportunity to carpet-bomb Iraq and Afghanistan. One game that definitely deserved to have been released was *Attack Of The Baby Seals* – quite possibly a schlock B-movie horror title but one that sounds rather wondrous. Unsurprisingly, movie tie-ins were popular from *Jaws*, *Butch Cassidy And The Sundance Kid*, *MASH*, *Magnum PI* and *Porky's* – the latter an amazing u-turn in gameplay where the movie's narrative was altered so that sex-crazed teenagers were changed to pigs – nice.

PERFECT TEN GAMES

The Atari 2600, or VCS as it was more commonly known, has a huge catalogue of games, and we've had a hard time nailing down just ten of our favourites. Before you write in, though, any top ten is going to be entirely subjective and, of course, open to violent debate, and that's what this handbook is all about: like-minded gamers indulging in sheer nostalgia. Bring it on



01

SPACE INVADERS

- **RELEASED:** 1980
- **PUBLISHED BY:** ATARI
- **CREATED BY:** RICK MAURERER
- **BY THE SAME DEVELOPER:** MAZE CRAZE

01 Don't be fooled by the ancient-looking visuals. *Space Invaders* was one of the earliest 'killer apps' and proved a massive hit when it was first released.

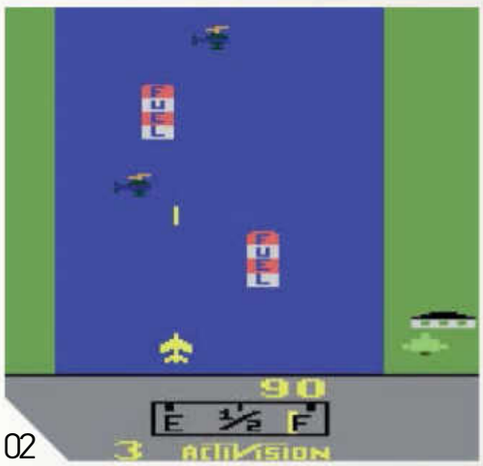
It may not be arcade perfect – there were only 36 on-screen invaders compared to the arcade's 55 – but *Space Invaders* had plenty of different options. 112, in fact, which was a staggering number at the time and greatly enhanced what was already a great game. Moving shields, zig-zagging bombs, invisible invaders, two players on-screen at once, guided missiles… The list was virtually endless. If you don't have a copy of *Space Invaders* in your collection then you're doing your VCS a huge disservice.

RIVER RAID

- **RELEASED:** 1982
- **PUBLISHED BY:** ACTIVISION
- **CREATED BY:** CAROL SHAW
- **BY THE SAME DEVELOPER:** 3D TIC-TAC-TOE, CHECKERS, POLO

02 *River Raid* was a huge departure for Carol Shaw, especially when you consider that the majority of her previous VCS games had been based on simple parlour games.

The never-ending river you flew up was filled with a variety of dangerous hazards, and the further you made it up the river, the more dangerous the challenge became. We didn't mind, though, as it looked amazing. Not only were you up against dangerous opponents, you also had a limited amount of fuel to worry about, which became scarcer and scarcer as the game progressed. A classic shooter no collector should be without.



02

BERSERK

- **RELEASED:** 1982
- **PUBLISHED BY:** ATARI
- **CREATED BY:** DAN HITCHINS
- **BY THE SAME DEVELOPER:** SWORDQUEST: EARTHWORLD

03 Like many 2600 arcade conversions, *Berzerk* wasn't perfect. For starters, the voice synthesis from the arcade game was nowhere to be seen – although this was later added in an enhanced version – and the graphics gave the game a more claustrophobic feel than its arcade parent and the enemies couldn't fire diagonally, thus making it easier to play. Despite these niggles, it remains a great conversion, mainly because of its simplistic gameplay and solid controls. Negotiating the mazes took steady nerves and a fair amount of patience and strategy. If you're a fan of shooters, track this down as quickly as possible.

ADVENTURE

- **RELEASED:** 1980
- **PUBLISHED BY:** ATARI
- **CREATED BY:** WARREN ROBINETT
- **BY THE SAME DEVELOPER:** MAZE, SLOT RACER

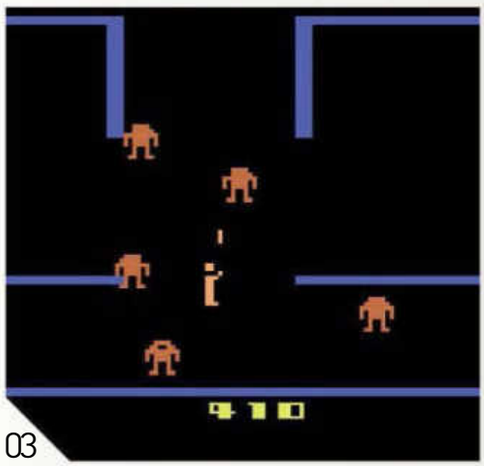
04 *Adventure* is perhaps one of the crudest-looking games on the 2600. Your lead character was nothing more than a simple pixel block, many of the rooms to explore were sparse even by VCS standards, and the less said about the dragons the better…

Nevertheless, it was one of the most involving titles available for Atari's first console. With a simple premise – return a stolen chalice to a castle – and some great gameplay mechanics – several items can be picked up along the way to help your progress – *Adventure* remains a landmark title and an essential addition to your VCS library.

MS PAC-MAN

- **RELEASED:** 1982
- **PUBLISHED BY:** ATARI
- **CREATED BY:** MIKE HOROWITZ, JOSH LITTLEFIELD
- **BY THE SAME DEVELOPER:** NA

05 Even the most avid 2600 owner will tell you that Atari's original *Pac-Man* was an appalling conversion. The game had obviously been rushed, and disgruntled gamers poured scorn upon Atari. Atari had obviously been listening, though, as *Ms Pac-Man* was a huge improvement. While the visuals weren't arcade perfect, they captured the spirit of the original, and this time around the main character actually looked like her arcade counterpart. Add in spot-on controls, faithful sound effects and near perfect gameplay that perfectly mimicked the arcade game and *Ms Pac-Man* success was assured.



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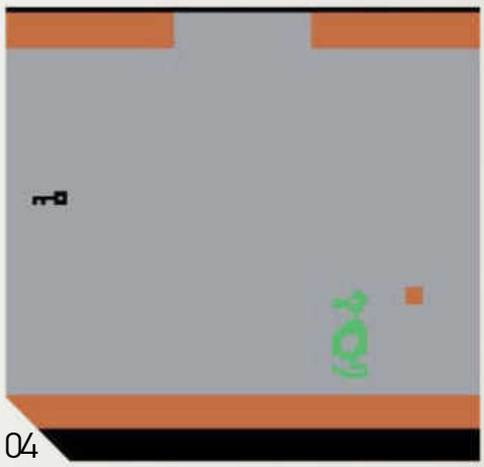

04

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H.E.R.O.

- **RELEASED:** 1984
- **PUBLISHED BY:** ACTIVISION
- **CREATED BY:** JOHN VAN RYZIN
- **BY THE SAME DEVELOPER:** F-18 HORNET, COSMIC COMMUTER

06 **Activision certainly churned out some quality titles for the Atari 2600, and *H.E.R.O.* was no exception.** Taking control of Roderick Hero, the aim was to use your propeller backpack to venture into the 20 dangerous mines and rescue all the miners. *H.E.R.O.* was typical of many Activision titles in that it was very polished and featured some solid gameplay. While there was no actual music to speak of, there are a wealth of impressive effects that really added to the game's atmosphere, and the ever-decreasing power in Roderick's jetpack ensured that every game remained a challenge. Great stuff.

DEFENDER II

- **RELEASED:** 1982
- **PUBLISHED BY:** ATARI
- **CREATED BY:** BILL ASPROMONTE
- **BY THE SAME DEVELOPER:** MILLIPEDE, PENGO

07 ***Defender II* (or *Stargate* as it is also known) is another great arcade conversion for the 2600 and a damn fine shooter to boot.** Unlike the original *Defender*, which was a pretty poor conversion, its sequel got everything correct and featured visuals that were extremely reminiscent of the arcade hit. The action was fast and furious, sprite flickering was kept to a bare minimum, and there were plenty of meaty sound effects to enjoy. Add in the fact that none of the original controls were sacrificed and you have yet another cracking title that certainly deserves a special place in your collection.

PITAFALL! II: LOST CAVERNS

- **RELEASED:** 1984
- **PUBLISHED BY:** ACTIVISION
- **CREATED BY:** DAVID CRANE
- **BY THE SAME DEVELOPER:** CANYON BOMBER, GHOSTBUSTERS

08 **While the original *Pitfall!* is still a fantastic game, we constantly find ourselves returning to its superior sequel whenever we fancy participating in some jungle antics.** Thanks to the cartridge containing its own chipset, the visuals in *Pitfall! II* were very advanced for their time and were complemented by an extremely impressive soundtrack – indeed, technically *Pitfall! II* remains one of the best-looking and sounding games that we've ever played on Atari's console. If you're looking for a tense platformer, *Pitfall! II* should be tracked down at all costs.

09

ICE HOCKEY

- **RELEASED:** 1981
- **PUBLISHED BY:** ACTIVISION
- **CREATED BY:** ALAN MILLER
- **BY THE SAME DEVELOPER:** BASKETBALL, CHASE, ROBOT TANK

09 **There were plenty of sports titles available on the Atari VCS, but few came close to the greatness of Alan Miller's excellent *Ice Hockey*.** It's only two-on-two, and the graphics were rather simplistic to say the least, but none of that matters in the slightest as the all-important gameplay more than delivered. You had a surprising amount of control over both your players, the action was fast and furious and, once you got the hang of it, you could pull off shots from a variety of different angles. It was even possible to check opponents and send them crashing to the floor if you couldn't regain control of the puck. Another great title from Activision that needs to be owned.

THRUST

- **RELEASED:** 2000
- **PUBLISHED BY:** XTYPE
- **CREATED BY:** THOMAS JENTZSCH
- **BY THE SAME DEVELOPER:** JAMMED, STAR FIRE, SWOOPS!

10 **There's an amazing array of homebrew titles currently available for the 2600, but Thomas Jentzsch's *Thrust* remains one of our favourites and shows off just what Atari's console can be capable of in the right hands.** It was a great conversion of the original Commodore 64 classic and featured some very impressive visuals and a real sense of inertia that made it a joy to play. There was some fantastically smooth scrolling on display and the controls themselves were superb, meaning that you'd never blame them when you inevitably crashed into the desolate landscape. Don't turn your nose up at its homebrew status: *Thrust* was a superb title for the 2600 and deserves to be played.

10


MATTEL ELECTRONICS
INTELLIVISION
Intelligent Television

INTELLIVISION

WITH ITS CUTTING-EDGE GRAPHICS AND SOUND, THE INTELLIVISION WAS THE WORLD'S FIRST 16-BIT GAMING CONSOLE AND WORTHY SUCCESSOR TO THE ATARI 2600. ARMED WITH THE GREATEST CONTROLLER EVER, IT TOOK THE WORLD BY STORM, AS FEW DICTATORS COULD HAVE ONLY DREAMED. WE EXPLAIN ITS TURBULENT AND CONVOLUTED HISTORY, THE UPS AND DOWNS, ITS BATTLES WON AND LOST IN A COLOURFUL RETROSPECTIVE DEDICATED TO THE MEMORY OF THE MIGHTY INTELLIVISION

The Intellivision: it epitomised cool elegance and sophistication during the maelstrom days of the videogame revolution in the early Eighties when the gold-disked beauty slogged it out with the mass-marketed Atari 2600.

In a David and Goliath scenario, the Intellivision came armed with more than a slingshot. It was the world's first 16-bit gaming console with a voice synthesizer box and kit allowing it to mutate into a home computer and music studio. It also had a wondrous controller; the best the world has ever seen. Unlike the 2600 with a woefully unresponsive pillbox and daft button as a joystick, the Intellivision came with two keypads that moulded the hand and fingers better than James Wood's bionic-cancer gun in *Videodrome* (1983). Not only did the controller have a number pad and plastic interchangeable overlay, the gaming disc featured 16 positions compared to the 2600's eight. As controllers go, it was sheer gaming nirvana that allowed precise and graceful play.

The majority of the games were light years ahead of the competition: *Utopia* was one of the first 'god' games; *B-17 Bomber* with the Intellivoice offered heart-pounding missions to the heart of the Third Reich, dodging flak and enemy fighters; *Mountain Madness: Super Pro Skiing* was blistering racing where opponents slammed into trees; *Auto Racing* also had a cameo in TV series *Knight Rider*, and *Advanced Dungeons & Dragons: Cloudy Mountain* would see foolhardy adventurers losing their bowels and being ripped to bits. And there were dodgy third-party games such as *The Texas Chainsaw Massacre* and the saucy XXX romp *Custer's Revenge*, for the more adult-oriented gamer. However, such luxury and refinement came at a price when the Intellivision was released in 1980: a hefty £150/$300 (£494/$800 in today's money). But it was worth every cent to have a console with the cutting-edge style and polished power of, say, Alain Delon, compared to the Atari's Vinnie Jones.

The Intellivision's roots stretch back to 1977, when Mattel introduced one of the world's first handheld videogames, and the same year Atari released the VCS, better known as the 2600. In 1978, Mattel began work on the Intellivision in California, and a year later, the console was test-marketed with four games. The response to the Atari's new challenger was promising, and the Intellivision sold throughout the US, with 19 titles reaching sales of 175,000 units. Another competitor to the Intellivision and 2600 was the 8-bit Philips Videopac G7000 that featured an alphabetical keyboard. Despite selling fairly well, shifting over a million units in the US alone throughout the early Eighties, the console was doomed due to a severe lack of third-party support. One of the G7000's better titles was *Satellite Attack*, seen to good effect in the violent cop flick *Order Of Death* (1983), where Harvey Keitel slums it with video junkie and psycho John Lydon aka Johnny Rotten.

©Evan-Amos

SPECS (MASTER COMPONENT):

CPU: General Instruments CP1610: 16-bit processor @ 894 KHz.

Memory: 7k internal ROM, RAM and I/O structures, remaining 64k address space available for external programs/256-by-8 but static RAM chip (147 bytes optimised for gameplay); 1,325 bytes of RAM; 7,168 bytes of ROM.

Controls: Two hand controllers; 12 button numeric keypad, four action keys, 16-direction movement disc.

Sound: Sound generator capable of producing three-part harmony.

Colour: 64 program-defined 8-by-8 images; 160 pixels wide by 196 pixels high.

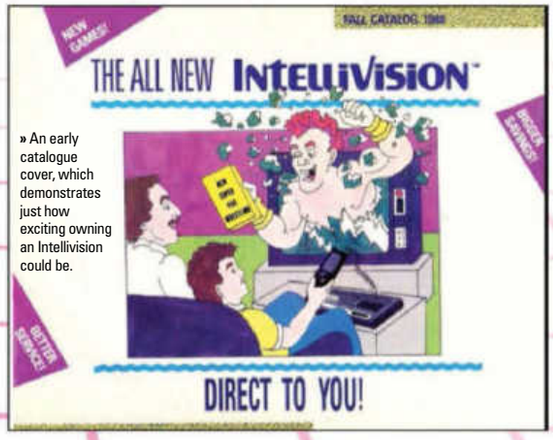
Video Resolution: 192 vertical by 160 horizontal picture elements.

COMMUNITY INTELLIVISION SITES TO WATCH

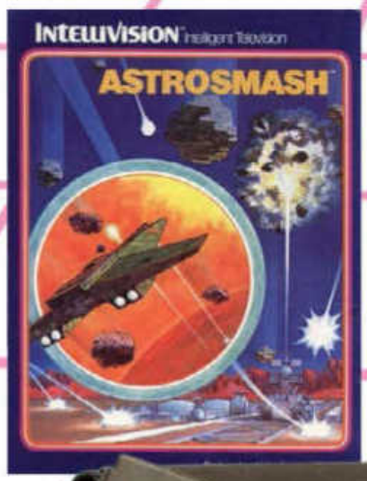
Intellivision Lives
www.intellivisiongames.com
Run by Keith Robinson, who was one of the Blue Sky Rangers and responsible for *Tron: Solar Sailer* and *Shark! Shark!* So he knows his onions. Not only that, the site is lovingly maintained and features lots of facts on the Intellivision. Go look see now.

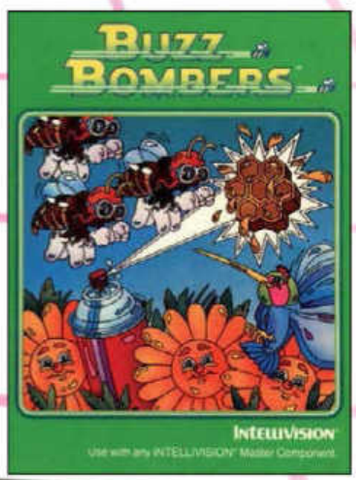
Intellivision World
www.intellivisionworld.com
English and Italian site that has brochures, instructions and emulators. The hardware section is a joy for Intellivision techies, as is the exhaustive rarity and price guide. Apparently one of the more obscure games, *Congo Bongo*, can reach an incredible $839.

Intellivision Gumbo
www.home.earthlink.net/~classic-videogames/intellivision
One that won't win prizes for design, this site has rare and wonderful posters and promotional material from the past. The page on the Intellivision Demonstration Unit – Model 3806 is of interest.



» An early catalogue cover, which demonstrates just how exciting owning an Intellivision could be.





To satisfy demand as well as the R&D of new titles, Mattel hired top programmers who sheltered behind the veil of the Blue Sky Rangers in a bid to stop Atari poaching the cream of its talent. With the Intellivision fortified with the best programmers, artists and the cash cow that was Mattel Electronics, the videogame war with the Atari 2600 was going to get real ugly.

In 1981, Mattel invested $6 million in a national ad campaign in direct competition to Atari that compared the graphic power of the Intellivision to the 2600. For the first time in gaming history, the media was whipped into a frenzy, predicting a bitter war between the two giants, and despite being twice as expensive as the 2600, the Intellivision sold over 850,000 units. In what was to be the Intellivision's finest hour in an industry now valued at $1.5 billion, Mattel announced a staggering $100,000,000 profit in 1982. A number of the most popular gaming cartridges sold over a million units and Activision, Imagic and Atari developed their own software for the system, all eager to get a piece of the action.

With 50 titles to go with the system, the Intellivoice was released with three games: *B-17 Bomber*, *Space Spartans* and *Bomb Squad*. A revolution in videogaming, the Intellivoice orchestrated limited but effective speech sampling that could enhance atmospherics. However, despite positive reviews, the Intellivoice bombed, with only 300,000 units sold, the remainder gathering dust in warehouses. The fourth title, *Tron: Solar Sailer*, only shifted 90,000 copies and other voice-enhanced games in development such as *Space Shuttle*, *Magic Carousel*, *Convoy* and *Quest* – a promising *Dungeons & Dragons* title – rotted in limbo when the Intellivoice was quietly buried in August 1983. With a $20 million ad campaign starring actor Henry Thomas fresh from Steven Spielberg's *E.T.* (1982), Mattel promoted its latest gadget: the computer keyboard.

Released in limited numbers at a whopping $600, it was powered by 64-bit technology and a secondary CPU when most home computers of the period could only muster 4k to 16k of number-crunching power. With a built-in cassette drive and optional connection for a printer, the Intellivision was more than a gaming console – a fully functional home computer. An ambitious but expensive enterprise, the keyboard failed to enthuse the imagination of the public – the keyboard, console and games fetched over $4,000 in a recent eBay auction – and Mattel concentrated on gaming software, hiring over 100 staff. At the end of the year, the console was released in Japan by Bandai and worldwide Christmas sales were strong, despite competition from the new ColecoVision. Sadly, the Intellivision's popularity with the masses was to wane as a gaming depression loomed – the market was saturated with product and there were not enough sales going round for all the companies to survive. The Intellivision's salad days were over.

In 1983, the gold and wood grain Intellivision was superseded by a sleek $150 light grey model in a bid to attract sales – the Intellivision II. Also, the ECS (Entertainment Computer System) hit the shelves. An inexpensive alternative to the computer keyboard, it was limited to a 2k expansion, but the ECS could also be used as a music device with the 49-key synthesizer; gamers could now become budding New Romantics. Yet the ECS was doomed when the Mattel fat cats decided to throw their bucks at gaming software and canned what was a novel piece of equipment. Towards the year's end, 100 Intellivision games were produced and the System Changer module, a cheeky 2600 clone that used the Intellivision for its power, allowed Atari games to be played.

Programmer Ray Kaestner, who originally worked on *Quest*, wrote the code for what is considered a perfect port of the arcade version of *Burger Time* in five months. A gaming device way ahead of its time was the PlayCable, an adapter that plugged in the cartridge slot of the Intellivision. For $5 a month, it allowed up to 20 games to be downloaded via cable and stored on the machine's RAM. Each month, the games would be rotated and overlays and gaming instructions would be sent to subscribers. However, the PlayCable could not store larger games due to its limited memory and, although popular in the areas that provided the service, it was discontinued in 1983. The year also saw the introduction of the Atari 5200 and the Vectrex, and as games flooded the market, the Intellivision's days as the numero uno were numbered. As a consequence of mass product availability and competition coupled with limited market interest, the industry panicked and collapsed. Smaller companies threw in the towel and the big boys tightened their purse strings. The Intellivision II was sold off for $69 and Mattel sacked two-thirds of its programming staff with a record loss of $300 million. Suffice to say, plans for the Intellivision IV Master Component with 3D graphics and modem that let two players engage together over a phone line were canned.

In 1984, Mattel shut the doors on its gaming business and sold the Intellivision to INTV Corp, which continued to flog the console although the videogame industry was at that time presumed dead in the water. As stock dried up, the company produced the INTV System III in 1985, which was, in essence, the original Intellivision, sometimes sold as the Super Pro System. The NES was released in the mid-Eighties and its success convinced INTV to hire former Intellivision staff to complete unfinished Mattel games, as well as republish older but popular titles. With sales of 10,000 to 20,000 units, turnover was low but profitable as INTV was a barebones operation. As the Atari 7800 and the 8-bit Master System sales proved encouraging, INTV announced the INTV System IV, but it was never released. Based on the Intellivision III Master Component from 1983, which was also unreleased, the System IV was rushed into development to compete with the ColecoVision with high-resolution games (320x192 pixels) and a built-in Intellivoice. In 1988, the writing was on the wall for the ageing Intellivision. Stores ceased trading with INTV and the company developed software for the NES, finally filing for bankruptcy in 1990, its remaining stock dumped in cheap stores such as Tandy/Radio Shack.

But the Intellivision refused to die and it lives on. The original Blue Sky Rangers, pioneered by Keith Robinson, formed Intellivision Lives in 1995, and the former Mattel Electronics boffins and programmers obtained exclusive rights to the console and its entire catalogue of games. Due to public demand for retro gaming in an age where modern games are coated in high-gloss graphics but suffocate in a vacuum of zero gameplay, there is a growing trend for Intellivision software from veteran players to noobs alike, attracted to the system's simple yet accessible titles. Thanks to Intellivision Lives, PC and Mac emulated versions of games are marketed, as are games for mobile phones published by THQ Wireless. Direct-to-TV units and greatest hits packages, T-shirts and mugs brandishing the Intellivision logo of choice are available, as is *Intellivision In Hi-Fi*, a CD of the catchiest tunes from the games. So now there's no excuse not to whistle along to the insanely infectious score to *Snafu* while zipping down the motorway.

Indeed, in its three decades of gaming popularity, the Intellivision remains true to its core: intelligent television. With over 125 titles produced and about 3.5 million consoles sold, the Intellivision continues to draw a wealth of gamers attracted to the brand, the games and its components that pushed technological boundaries from a gaming machine to one of an advanced home computer. And where the competition has now been buried under the sands of time, the future of the Intellivision is bright and cheerful. And, as the strap line for the Intellivision Lives website states bold and proud: 'Blocky after all these years.' Yeah, baby. You had better believe it!

» Is it a computer? Is it a console? No, it's the Mattel Keyboard Component.

SPECS (MASTER COMPONENT AND KEYBOARD COMPONENT COMBINED):

Memory: 16k RAM resident (10 bit) words memory can be expanded to more than 1,000 8k pages (8 megabytes).

Keyboard: 60-key typewriter keyboard.

Tape Cassette Drive: Built-in completely computer controlled. Records/plays two digital and two audio tracks in one direction. 30 minutes of program material and data storage.

Video Resolution: Standard: 192 vertical picture by 160 horizontal elements. High-resolution alphanumerics: 24 lines of 40 characters.

Expandability: Two parallel peripheral I/O expansion ports, which allow addition of external memory, peripherals, plus access to CPU bus.

Potential Peripherals: Telephone modem, voice synthesizer and printer.

Credits: Thanks to Keith Robinson and Henry 'E.T.' Thomas; the latter a **Retro Gamer** drinking partner who couldn't be bothered to be associated with the Intellivision now that he's all grown up. Cheers, mate. © Jay Slater/1 July 2008

INTELLIVISION

PERFECT TEN GAMES

Sleek, stylish and with those innovative-looking controllers, Mattel's Intellivision proved more than a match for Atari's 2600. Supported by a host of great games, it was rather tricky choosing our ten favourites…

B-17 BOMBER

- **RELEASED:** 1982
- **PUBLISHED BY:** MATTEL ELECTRONICS
- **CREATED BY:** MATTEL
- **BY THE SAME DEVELOPER:** ASTROSMASH

01 A rather neat little game, this one. B-17 Bomber has you playing the role of a steadfast pilot whose job it is to take out various Nazi targets across mainland Europe by – ironically – waving a black cross over them and pressing a button to release your bombs. Yes, the idea of *B-17 Bomber* might sound silly and a bit simplistic, but the game was pretty innovative for its day, and it doesn't look too shabby either. The most novel aspects of *B-17 Bomber* are the multiple camera angles that could be accessed brilliantly by turning the dial, and the scary inhuman warnings that crackled from the Intellivision's pant-destroying voice box peripheral that warned you of upcoming hazards and targets that you had to eradicate.

01

DINER

- **RELEASED:** 1987
- **PUBLISHED BY:** INTV CORPORATION
- **CREATED BY:** REALTIME
- **BY THE SAME DEVELOPER:** TOWER OF DOOM

02 The Intellivision is renowned for its appetite for tasty arcade conversions, and while Burger Time can stand tall as one of its tastiest looking, feeling and… uh… sounding, *Diner* – it's Intelli-exclusive unofficial sequel – just edges its way onto this list. Smooth-feeling and gorgeous-looking, thanks to its brilliant faux-3D look, *Diner* had you help something that looks like the Pillsbury Doughboy make a sub by kicking things that are referred to as 'Food Balls' into a large roll at the base of the screen. To make sandwich prepping more hazardous, you also had to avoid the deathly touch of frankfurter guys, animated bananas and frothy cappuccinos – or are they ale tankards? – by peppering them with pepper spray.

02

DONKEY KONG JR

- **RELEASED:** 1983
- **PUBLISHED BY:** COLECO
- **CREATED BY:** NINTENDO
- **BY THE SAME DEVELOPER:** DONKEY KONG

03 Given that the Intellivision version of *Donkey Kong* was considered – after first viewing by Mattel – to be an attempt by Coleco to try to sabotage its machine. It wouldn't be unfair to say that there wasn't a lot riding on this game being anything other than another botched assassination attempt. Surpassing the original in every way, *DK Jr* is a colourful and smooth Intelli title that shows what the machine is capable of. So Jumpman looks like a Smurf, Kong like Swamp Thing and DK Jr that 'munkey' from Johnny Vegas's ads, but nonetheless there's still some faithful arcade gameplay to be found .

LOCK 'N' CHASE

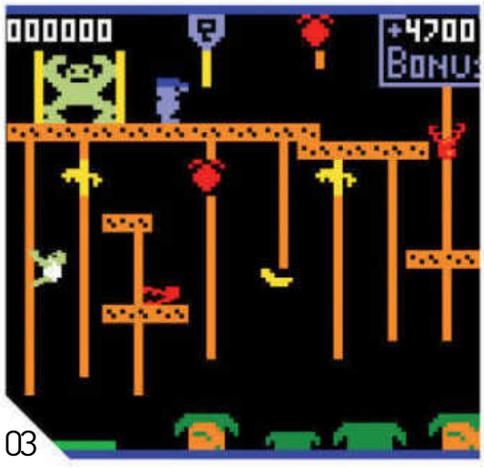
- **RELEASED:** 1982
- **PUBLISHED BY:** MATTEL ELECTRONICS
- **CREATED BY:** MATTEL
- **BY THE SAME DEVELOPER:** ARMOR BATTLE

04 This clone of *Pac-Man* is brilliant, far better than the atrocious 2600 port. Now it's important to mention that *Lock 'N' Chase* isn't necessarily better than *Pac-Man*, but it provides a novel twist on the gameplay ethos and it was native to the machine, too. *Lock 'N' Chase* has you playing a colourful bank-robbing tomato who must avoid capture by a patrolling group of primary-coloured police. It is a little more claustrophobic than *Pac-Man* and feels more frantic, but to make evasion easier you had the advantage of being able to close doors behind you to slow down the law enforcers.

Q*BERT

- **RELEASED:** 1983
- **PUBLISHED BY:** PARKER BROS
- **CREATED BY:** GOTTLIEB
- **BY THE SAME DEVELOPER:** REACTOR

05 For arcade faithfulness this is probably as good as it got for the Intellivision, and there's no shame in that because *Q*bert* is a tour de force for the machine. While it's not without its faults and niggles – like forcing you to press the reset button every time a game ends – what's here looks, feels and plays a lot like the arcade machine. Excelling in the audio and visual department, fans of the arcade will come to appreciate how Parker came to wholesale nearly all of the elements and enemies from the arcade game for this home port while somehow not making the game look like a poorly decorated Christmas tree.



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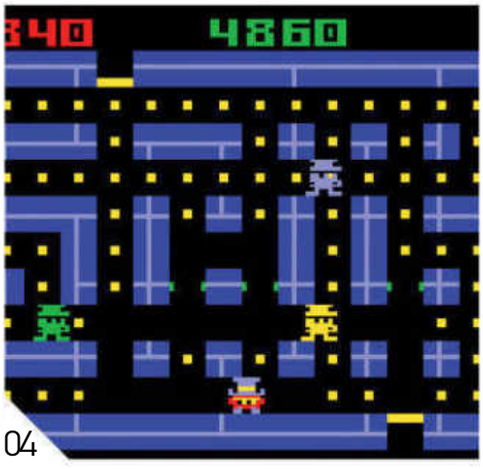

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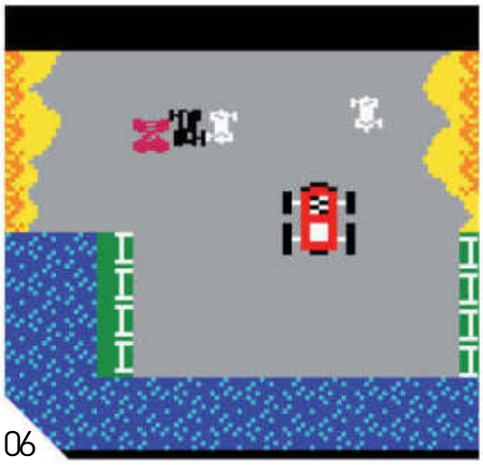
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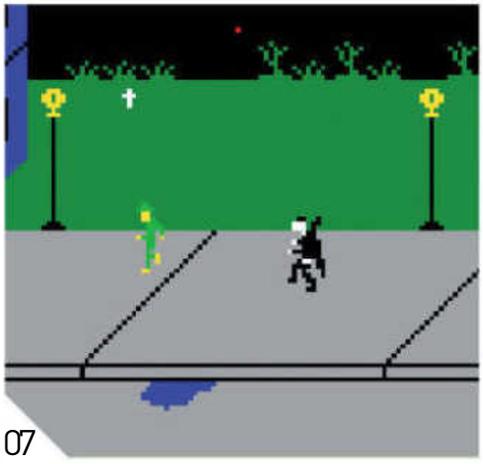
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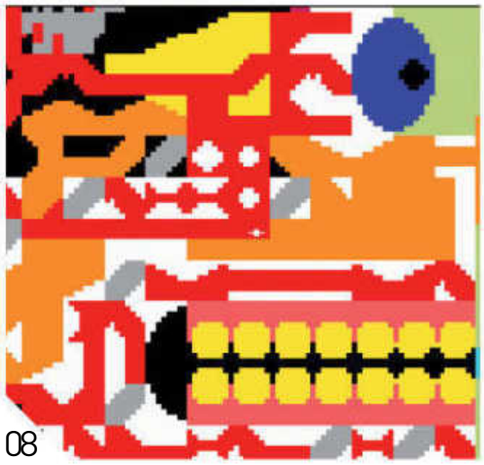

08

BUMP 'N' JUMP

- **RELEASED:** 1982
- **PUBLISHED BY:** MATTEL ELECTRONICS
- **CREATED BY:** DATA EAST
- **BY THE SAME DEVELOPER:** RING KING

06 Another quality arcade conversion that might look a little incredulous, but it somehow remains pretty faithful to the original. Gorgeous-looking and great fun, *Bump 'N' Jump* is a colourful riot of racing.

The game has you bumping and jumping onto opposing cars, clearing overpasses in the track and taking in some incredibly sunny-looking visuals that change with the seasons to rescue your kidnapped gal. The game's music and sound effects are also sublime and suit the look of the game brilliantly. So if you're a fan of Data East's early jostle racer then you'll find a lot to like in this impressive Intelli version.

DRACULA

- **RELEASED:** 1983
- **PUBLISHED BY:** IMAGIC
- **CREATED BY:** IMAGIC
- **BY THE SAME DEVELOPER:** SWORDS AND SERPENTS

07 Okay, here's another game that makes it onto our list because it's well-loved by collectors and is exclusive to the machine. The first thing that strikes you about *Dracula* is how great it looks; the second is how much depth and interaction there is. The idea is simple: you play the titular Prince of Darkness and must avoid a biting by patrolling werewolves and gorge on the necks of townsfolk before sunrise. You could turn yourself into a bat, turn street denizens into zombies – and control them with the second pad – and play knock-door-run and watch the homeowners do all the running. Nothing complicated here, but what there is is presented brilliantly.

MICROSURGEON

- **RELEASED:** 1982
- **PUBLISHED BY:** IMAGIC
- **CREATED BY:** IMAGIC
- **BY THE SAME DEVELOPER:** ICE TREK

08 We admit this isn't one of the best games on the machine, but for its day it was certainly postmodern. This hideous screenshot is how you'd look had you played the part of Jennifer Jason Leigh in *The Hitcher*. It's your internal organs spliced in half and painted in the style of Picasso, and it provided the backdrop for *Microsurgeon*. You play a tiny probe swimming through gastric acid and organs to repel infections, disease and tumours. As you free roam the body, cleverly travelling through the blood stream makes you move quicker. Given its slow pacing, the game itself isn't amazing, but its uniqueness makes it popular among collectors.

09

DEMON ATTACK

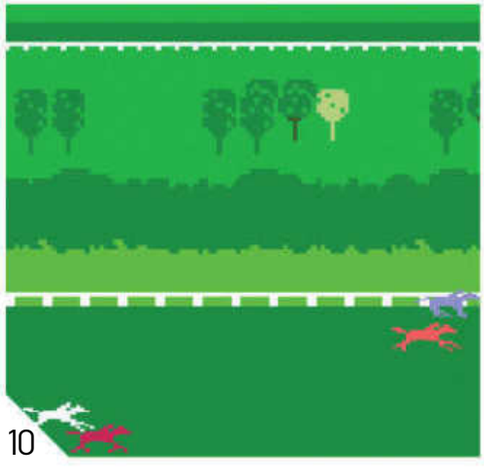
- **RELEASED:** 1982
- **PUBLISHED BY:** IMAGIC
- **CREATED BY:** IMAGIC
- **BY THE SAME DEVELOPER:** SAFECRACKER

09 This was a really difficult decision; it was a toss-up between this and *Defender*. Both are fantastic games, both tear shreds into the Atari ports – especially *Defender*. But, *Demon Attack* just pips it to the post. Why? Well just look at it. It's a beautiful-looking version. It has detailed backdrop graphics of the moon's surface and the Earth in the distance, giving us a nice reminder of what it is we're actually fighting for. The most notable extra the Intellivision port had over the Atari version, however, was the inclusion of the arcade game's impressive mothership; a gargantuan, demonic-looking base that manages to smother half of the screen. It proves an epic foe to topple and looked amazing.

HORSE RACING

- **RELEASED:** 1980
- **PUBLISHED BY:** MATTEL ELECTRONICS
- **CREATED BY:** MATTEL
- **BY THE SAME DEVELOPER:** KOOL-AID MAN

10 A fantastically quirky game, *Horse Racing* does exactly what it promises to do: allow you to bet on horses. And unless you're a betting man (or woman) that might sound as appealing as running into traffic, but like a lot of these Intellivision games we're finding that when you actually scratch at their surface they're usually fantastically well put together, and *Horse Racing* is one such title. At its heart it's probably best appreciated as a multiplayer game. It's essentially one of those Kentucky Derby machines you occasionally see hanging out with the 2p machines in the arcades. You and six pals can have a flutter on the 'gee gees' and even get to try to influence the result with the aid of some severe whip-cracking. Great fun.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GAME & WATCH
DONKEY KONG
GAME & WATCH PANORAMA SCREEN
Nintendo 1983
DONKEY KONG II
TROPICAL FISH™
GAME & WATCH™
Nintendo
TF-104
R-106
GAME & WATCH FIRE RC-04
GAME & WATCH VERMIN MT-03
GAME & WATCH HELMET
MARIO BROS.
POCKETSIZE
GAME & WATCH MULTI SCREEN
GAME & WATCH GOLD
LION

AT THE DAWN OF THE EIGHTIES, NINTENDO WAS ONLY JUST STARTING TO EXPLORE THE INDUSTRY IT WOULD EVENTUALLY DOMINATE. LONG BEFORE THE NES, SNES AND N64 THERE WAS THE GAME & WATCH – THE SERIES OF HANDHELD TITLES THAT WOULD ULTIMATELY SIRE THE ALL-CONQUERING GAME BOY. DAMIEN MCFERRAN EXPLORES THE HISTORY OF POCKET-SIZE GAMING

Year released: 1980 - 1991

Original price: Approx £18.50/$30

Buy it now for: £5+/$8 (depending on model)

Why the Game & Watch range was great… The range offered true portability for the first time in the history of the videogame industry. The units were small, durable, and the cell batteries lasted for ages before they needed to be replaced. Forced to work within the confines of the crude LCD technology, Nintendo succeeded in crafting some truly mesmerising gaming experiences, the vast majority of which stand up to scrutiny even by today's standards

When you look back on the history of videogames it's not uncommon to discover amusing anecdotes regarding defining moments in the industry. For example, rumour has it that Namco's *Pac-Man* was conceived when the game's creator Toru Iwatani glanced at a pizza with one slice missing, and there's an equally famous tale that suggests that Nintendo's renowned Mario was named after the landlord of the company's American offices, who happened to bear an uncanny resemblance to the Italian plumber. Whether or not these stories are actually true is a moot point, but it's impossible to deny that they lend our hobby a sense of wonderment, and it's remarkable to think that these toweringly popular ideas can be born from such humble beginnings.

The genesis of Nintendo's Game & Watch series is recounted in an equally whimsical tale. According to legend, Nintendo engineer Gunpei Yokoi came up with the concept after observing a bored Japanese salary man absent-mindedly fingering his pocket calculator while travelling to work. If the story is true then this seemingly innocuous encounter ultimately gave birth to portable videogaming as we know it today. Yokoi was tragically killed in a roadside accident in 1997, and although he would gain worldwide fame and adoration as the creator of the Game Boy, many view his earlier LCD legacy with the most fondness.

Yokoi started working at Nintendo in 1965, assuming the modest role of an assembly line engineer. The Nintendo of that era was a very different beast to the one that we know today; the main focus of its business was 'Hanafuda' playing cards. According to yet another of those irresistible yarns, Yokoi created an extendable arm in order to amuse himself during the long working hours, and this device happened to catch the eye of company president Hiroshi Yamauchi, who was inspecting the factory at the time. Yamauchi was on the lookout for a product that could turn around Nintendo's fortunes; the playing card market had slumped badly in the mid-Sixties and the president had tried all manner of different tactics to turn a profit.

Yamauchi was instantly intrigued and tasked the young Yokoi with turning his extendable arm into a bestselling product. It was a risky move that was by no means guaranteed to succeed, but the re-christened 'Ultrahand' proved to be a runaway success, shifting more than 1.2 million units worldwide, and would prove to be the first in a long line of popular toys to spring from the mind of Nintendo's new star employee. These novel creations would eventually earn Yokoi his very own department within the company, known as Research and Development 1 Group.

Towards the end of the Seventies, Nintendo started to disregard toys in favour of videogames, and it was during this time that Yokoi had his aforementioned chance meeting with the bored businessman and his calculator. It was ideal timing: LCD technology was cheap and videogames were big business. However, up to this point quality gaming was restricted to either the arcade or the home. Several companies had already produced portable games, but they were usually rudimentary LED-based units with uninspiring gameplay and were too bulky to be deemed truly mobile. Yokoi watched the efforts of companies like Mattel and Tomy with interest; he had his own ideas for the portable gaming industry.

INSTANT EXPERT

The official mascot of the range is Mr Game & Watch, who famously appeared in *Super Smash Bros Brawl* on the Wii.

60 G&W games were released in total, although only 59 of those were ever on sale to the public – the 60th game was limited to 10,000 units and given away free as a prize.

The Silver game *Helmet* was renamed *Headache* in the UK because distributor CGL believed people would be offended by the sexual connotation of the original title.

Micro Vs *Boxing* was re-branded as *Punch-Out!!* in America to tie-in with the popular arcade game.

Game & Watch titles make cameo appearances in the *WarioWare* series.

In the late Nineties several classic Game & Watch titles were re-released as part of the Mini Classics keyring range.

Some Game & Watch titles included battery cover stickers that could be applied to prevent babies from removing the battery cover and swallowing the batteries contained within.

Some *Spitball Sparkey* units were produced with white casing as opposed to the usual silver – understandably, these are worth a few bob these days.

The game *Egg* is identical to *Mickey Mouse* in terms of gameplay. It's rumoured that it was produced for release in territories where Nintendo's licensing deal with Disney didn't exist.

Just like regular games, some of the Game & Watch titles have cheat codes that allow you to start on later levels.

It was during the development of the Game & Watch that Yokoi laid down principles of hardware design that would echo through Nintendo's history right up to the present day, dubbing it 'Lateral Thinking of Withered Technology'. Freelance journalist and all-round Yokoi admirer Lara Crigger explains: "Essentially, Lateral Thinking of Withered Technology boils down to using mature technology in novel or radical applications. At the time of the invention of the Game & Watch, LCD technology was everywhere. It was a well-understood process, and because prices for individual components had dropped so much, integrating LCD into a product was relatively inexpensive. Some people at Nintendo wanted to use fancier technology in the Game & Watch, technology that would have reduced battery life and raised costs, but Yokoi insisted that affordability was key and that the player cared more about fun gameplay over flashy technology." Yokoi would later apply this philosophy to the production of the Game Boy, and Nintendo has taken a similar stance with recent hits such as the DS and Wii.

Yokoi faced a tricky conundrum when it came to deciding upon the best interface for his new product. He quickly decided that a conventional joystick would impede the Game & Watch's portability, so he began looking for solutions that would take up less space. Many of the early machines simply possessed a couple of buttons with which to control the game, usually corresponding to simple actions such as moving left and right or jumping, but 1982's *Donkey Kong Jr* changed all that. Although it was actually four buttons arranged in a cross shape, with each one corresponding to up, down, left and right, it would later evolve into what we now know as the direction pad, or 'D-pad' for short. This was a development of truly seismic proportions, as Crigger acknowledges: "The entire portable games industry wouldn't exist if it weren't for the invention of the D-pad. It was that first, necessary invention that made all portable gaming devices possible. It comes down to basic ergonomics; the D-pad eliminates the need for a joystick, thus streamlining the controller interface and facilitating portability. A controller with a D-pad simply takes up less physical space." Compared to other methods of control available at the time, this new interface presented undeniable advantages. "The D-pad is a more intuitive method of controlling gameplay, compared to the alternatives," continues Crigger. "Look at a joystick: to manipulate it, you have to use the sides of your thumbs and fingers – or in some cases, your palm or whole hand. That takes more manual effort than just pushing buttons with a thumb tip."

There was also an element of convergence with this new range of handhelds. Although it seems like a trifling addition in today's technologically advanced world, the inclusion of a digital clock in each game – therefore giving rise to the name 'Game & Watch' – was a major selling point back in the early Eighties. Although LCD watches were commonly available, they were outside the reach of most children, so the Game & Watch was a useful device as well as a source of entertainment. A handy alarm feature was also available – possibly to wake up the owner after a particularly heavy night of LCD gaming.

Arguably the most vital piece of the hardware puzzle was the choice of power source that would bring these tiny games to life. Yokoi opted for 'button cell' batteries, previously seen in digital watches and calculators. Not only were these cheap to replace, they were also small and therefore fitted snugly within the machines without breaking the sleek, straight lines of the casing or adding any additional weight that might hinder portability. Yokoi's desire to ensure his products would be inexpensive to run and not require a constant supply of fresh batteries played a vital part in ensuring the success of the range – a fact he was sure to remember when he came to create the Game Boy almost a decade later.

But there was much more to the appeal of the Game & Watch range than just mere interface design and long-lasting power. Because LCD technology granted the developers a very limited amount of on-screen real estate in which to place their action-packed gaming experiences, the games themselves tended to be extremely focused. "There was little room for design screw-ups," says Crigger. "If the game mechanic wasn't simple enough, or addictive enough, then the game failed. It couldn't hide behind flashy FMVs or intricate storylines. It was just player and mechanic, and that's it." The experiences offered by the Game & Watch may seem primitive by today's standards, but that very same simplicity was a major factor in the ultimate success of the lineage and it's a testament to the concept that the games are still eminently playable even today. "They're appealing for the very same reason that *Tetris* will never really die: simplicity is addictive," comments Crigger. "People love activities that are easy to learn but hard to master."

The first Game & Watch title was the simplistic *Ball*. Released in 1980, this endearingly basic game showed only faint glimmers of the kind of depth that later Game & Watch titles would possess; the screen was completely blank, the gameplay was unsophisticated and the LCD characters somewhat crude – clearly a case of the developer finding its feet with new technology. Sales weren't astonishing, but the

COUNTERFEIT FIX

As is the case when any product becomes valuable, the Game & Watch market is highly susceptible to fakes. "In the last few months, we've seen a lot of counterfeit items appearing," reveals Cole. "It's mostly boxes and instructions – having a box, especially one in good condition, adds greatly to a game's value."

These high-quality reproductions have caused a serious headache for dedicated collectors. "Most collectors look for mint items and have paid great amounts of money to acquire them," explains Panayiotakis. "Finding original Game & Watch boxes intact isn't an easy task, but if someone started selling perfect counterfeit boxes or games, your collection would be instantly worth one twentieth of what you had paid for it because the market would be flooded with perfect items."

However, at this stage the problem is isolated to boxes and instructions. "To my knowledge, nobody has been able to produce a fake game successfully – yet," says Cole. If fake machines were to appear, Panayiotakis is in no doubt as to what effect it would have on the collecting community. "Perfect counterfeit items would make the task of collecting authentic games very difficult," he says. "I don't think there would be any point in collecting the games after that, if such an event ever occurs."

FROM A TO B

Mindful that each Game & Watch could only offer one game due to the limiting nature of the LCD display, Nintendo decided to include two different difficulty settings for each machine, thereby increasing the long-term appeal of each title. Known as 'Game A' and 'Game B', the player had to press the corresponding button before starting play to decide which challenge they wished to face. Game B was usually faster and more demanding, but there were exceptions – *Flagman*, for example, had two different games and the 'B' variant is generally seen as the more enjoyable. Multi Screen release *Squish* is another and in *Judge*, Game B is actually a two-player version of 'A'. Although it was a neat concept and added hours of playtime to each release, not all titles carried this feature – *Climber* and *Super Mario Bros* do not possess Game B options.

GAME BOY GALLERY

Should splashing out loads of cash on original Game & Watches not appeal to you, then you can always buy one of the excellent compilation packages that were released for Nintendo's Game Boy machines. The series debuted in 1994 in Europe and Australia with *Game Boy Gallery*. The sequel, *Game & Watch Gallery*, followed in 1997 and was granted a global release. The third and fourth games were released on the Game Boy Color in 1998 and 1999 respectively, and a Game Boy Advance instalment hit shelves in 2002. In many cases the games in these collections were visually upgraded variants of the originals. More recently, Nintendo has released two *Game & Watch Collections* for the DS – only to members of Japan's Club Nintendo, – and have released individual Game & Watch titles on the Japanese DSiWare store for just a few Yen each.

COMMUNITY GAME & WATCH SITES TO WATCH

Mike's Nintendo Game & Watch Forum

www.mpanayiotakis.proboards19.com

Mike Panayiotakis's excellent forum is a vibrant hub of Game & Watch activity and is the ideal place to learn about the complexities of starting a collection. A must-have resource for prospective fans.

Andy Cole's Game & Watch Collection

homepage.ntlworld.com/gameandwatch/gw.htm

Cole's G&W page is one of the net's oldest and forms part of a wider site that charts his entire videogame collection. The best part is the GIF animations showing sections of each game.

Parachuter

p-edge.nl/parachuter/

Martin Van Spanje's site is attractive and brilliantly designed – which is no surprise when you consider his current job is a system developer. There are loads of high-quality images to be found here, as well as some Game & Watch ringtones, recorded by Van Spanje himself.

Game & Watch.com

www.gameandwatch.com

Another well-realised site devoted to Nintendo's Game & Watch, having been online for over five years. It's easy to see why the site has been around for so long – it has bags of content and great design. Worth a visit should you crave more knowledge on the G&W series.

game seemed to strike a chord with consumers, and this was enough to persuade Nintendo that it was worth creating further titles. *Ball* marked the first release of the 'Silver' series of Game & Watch titles, so called because of the colour of the metallic faceplate. The next step was the 'Gold' series, which was fundamentally the same machine but with a different faceplate and a smattering of static colour on screen to make the games seem a little more vibrant. This range spawned a mere three titles before it was superseded by the 'Wide Screen' variant in mid-1981. As the name suggests, the display was a whopping 30 per cent larger than the one seen in the Silver and Gold range.

The limitations of the LCD display meant that Nintendo was always looking for ways to innovate, and the next logical step was to add another screen to double the amount of gameplay each title could potentially offer. The Multi Screen series kicked off with *Oil Panic* in 1982, but it was the release of *Donkey Kong* that really cemented the success of the range. Easily the biggest selling of all the Game & Watch titles up to that point, *Donkey Kong* was a startlingly faithful representation of the arcade smash hit. Iconic in design, the Multi Screen range would influence future Nintendo design choices. "It's no secret that the Nintendo DS was based on the original Multi Screen Game & Watch design, and that just shows how far ahead of its time this idea was," comments hardcore collector Mike Panayiotakis.

Released in 1983, the Tabletop series was something of a departure from the norm. It sacrificed portability for more impressive colour visuals and ran on bulky 'C' batteries. Sales of this machine were steady but nowhere near as impressive as its Wide Screen and Multi Screen cousins, and therefore only four Tabletop titles were ever produced. A refinement of the technology resulted in the more mobile 'Panorama' series a few months later, which used a foldout mirror to enhance the vacuum fluorescent display. Nintendo's seemingly insatiable desire for colour gaming culminated in 1984's ill-advised 'Supercolor' range, which was, in fact, just a standard LCD display with a colour overlay. Only two games were ever produced, making this the least successful entry in the Game & Watch canon. Sensing that gaming was also a social pastime, Nintendo decided to publish the 'Micro Vs' series in the same year, which offered simultaneous two-player action thanks to a pair of small detachable controllers.

Also in 1984, the final hardware revision was released in the shape of the legendary 'Crystal Screen' machines. These were more traditional games in keeping with the Wide Screen style, but they possessed a transparent LCD display. Sadly, these screens were highly susceptible to damage. Marketed as a luxury item, the range didn't quite achieve the same kind of fame as the more traditional Wide Screen games, which by this point had been relaunched under the snappy title of 'New Wide Screen'.

Although it's strange to think it now, Nintendo didn't really command much of a presence outside Japan at the time, so worldwide distribution of early Game & Watch machines was handled by other companies. These included Mega (USA), CGL (UK), Ji21 (France), Videopoche (Belgium) and Futuretronics (Australia). Many of these firms would re-package the devices and in some cases remove the Nintendo logo altogether, instead replacing it with their own.

By the mid-Eighties, Nintendo had released the NES home console and the Game & Watch range took a backseat role. As the decade drew to a close, the seemingly vast reserves of innovation began to run dry, but it was ultimately Yokoi himself that would deal the deathblow to his beloved pocket-sized offspring. *Zelda*, the penultimate release in the range, hit shelves in 1989 – the same year as Yokoi's newest pet project: the Game Boy. It was instantly obvious that the writing was on the wall for the videogame and clock combo. The very last entry in the series was a

DIFFERENT VERSIONS

Silver Range
The one that started it all. The Silver range consisted of five different titles and lacked the colourful screen overlays that would be seen in later titles. Five games were produced in low quantities and as a result they're pretty rare these days.

Multi Screen
Predating the DS by over 20 years, the Multi Screen effectively gave twice as much action by adding an additional LCD display. Because the game could be closed when not in use, it made it even more durable. A smaller version that opened sideways was also released.

Tabletop
Bulky, power-hungry and practically un-portable, the Tabletop range was something of a backwards step, recalling memories of the unwieldy electronic games of the late Seventies. Unsurprisingly, the range didn't sell as well as the traditional G&W machines, although in terms of gameplay these are still wonderful machines to own.

Micro Vs
Providing much-needed multiplayer action, the Micro Vs range featured two small joypads that could be stored within the system when not in use. The thin screens were less welcome, however, and the series was not as successful as might have been expected.

loving homage to the game that started it all: 1991's *Mario The Juggler* recycled the gameplay from *Ball* but showcased gorgeous screen artwork. It was the end of an era, but with the new-fangled Nintendo wooing gamers the world over, few seemed to mourn its passing.

Given the durable nature of the Game & Watch range, the appealing design of the casing and the desirable Nintendo branding, it's little surprise that a truly hardcore collecting scene has risen up over the past few years. The reasons for this differ depending on which collector you happen to speak with. "For most of today's collectors, it's simply nostalgia," comments British Game & Watch fanatic Andy Cole. "People now find themselves with the resources to buy the games they lusted after in their childhood, which their meagre pocket money couldn't buy them." Others do it more for the love of the brand, such as Dutch collector Martin Van Spanje. "I have always loved Nintendo games, and the Game & Watch series are basically where it all started for that company," he says. "I want to see them all, and find out how Nintendo made progress."

Whatever the reason, amassing all 60 of these unique devices isn't an easy – or cheap – task.

"Even though many of the games can be found for a fiver, you need lots of cash if you want all 60 of them," explains Van Spanje. "My collection has already cost me around 3,600 euros, and I'm still missing four of the more expensive games. Also, I don't collect mint condition games and I don't care about the packaging and user manuals. If you want all of that as well, you need to at least double your piggy bank." Indeed, boxed specimens in pristine condition can fetch prices well into triple figures and the elusive '60th' game – a special edition of *Super Mario Bros* produced in 1987 – is very hard to locate. "This is the Holy Grail of Game & Watches and remained almost completely unknown in collector's circles for over a decade," explains Cole. "It was produced as a prize for a competition for owners of a NES F1 racing game. 10,000 were given away in Japan only, making this by far the rarest Game & Watch title. Only in the early 21st Century, when collectors in Japan spread the word, did this game become widely recognised. Because of its rarity, its value is higher than that of any other game in the range – expect to pay about £300 just for an unboxed specimen."

Another aspect that makes the range so appealing today is the durability of the games themselves. "As can be seen by the number appearing in auctions and in collections, they are still going strong, thanks mostly to their extremely simple electronics," comments Cole. "They are probably more reliable than a games console of today; I expect that they'll still be around long after the last PS3 is in a landfill." Van Spanje expands on this: "The games were intended for kids and fit inside your pocket. If you keep them safe, they will last forever, even if you play them regularly."

Has our intrepid gang of Game & Watch experts got any advice for prospective collectors? "A potential collector should first set a target," advises Panayiotakis. "There are many things to collect and buying everything isn't an option unless you have unlimited money. Do you wish to collect boxed games? Do you wish to get special versions of the games? Do you wish to get all 60 games? You need to focus on specific items and create a list of things you wish to collect." Cole gives similar guidance: "The answer I always give to this question is to go slowly, as it's possible to get a complete collection of every title in as little as a month or two if you have the money, but where's the fun in that? Decide on a goal before you start. For example, decide if you want loose or boxed games, special or regular editions, then stick to your goal and be patient to wait for the right games to come along. My collection took me about five years to complete but I got some extremely good bargains and that is more satisfying than blowing a few grand all in one go."

Special thanks to Andy Cole for providing exclusive hardware photography for this feature and thanks also to Justyn Chan for additional images.

GAME & WATCH

PERFECT TEN GAMES

The general quality of the 60 games released in the Game & Watch range is very high, but there are a handful of titles that stand out as true classics. We asked our trio of Game & Watch experts to come up with their most memorable titles…

01

DONKEY KONG JR (NEW WIDE SCREEN)

» **RELEASED:** 1982

» **BY THE SAME DEVELOPER:** CRAB GRAB

01 The first 'New' Wide Screen release justifiably possesses a lofty reputation among hardcore collectors. "It has the best playability ever in a Game & Watch release," states Martin Van Spanje – which is high praise indeed when you consider the high quality of most Game & Watch titles. Mike Panayiotakis is in agreement: "This is the only game I owned as a kid and it holds a special place in my heart. It has some great gameplay as well." Assuming the role of Kong's cute offspring, the basic aim is to free your captive father by unlocking the bolts on his cage. It may have crude visuals but they're surprisingly atmospheric. "While none of the Game & Watch titles are exactly realistic, I always thought that this one really made you imagine that you *were* in the jungle," says Andy Cole.

DONKEY KONG II (MULTI SCREEN)

» **RELEASED:** 1983

» **BY THE SAME DEVELOPER:** TROPICAL FISH

02 An early Multi Screen release, *Donkey Kong II* is technically the sequel to *Donkey Kong Jr,* with Kong's plucky offspring once again called upon to save his beloved father – only this time across two hazard-packed screens. "This is a brilliant game," says Van Spanje. "After moving all the way up the second screen you have to work your way down again to set a switch. It's a challenge to play, and fun too, every time you open the cage and free your father." Featuring some lovely case artwork and screen presentation, it's little wonder that *Donkey Kong II* was a roaring success and continues to be fondly remembered by fans even today. Because it was a huge seller, second-hand units are common and cheap, so if you're looking to start a collection then this is well worth investigation.

02

SPITBALL SPARKY (SUPERCOLOR)

» **RELEASED:** 1984

» **BY THE SAME DEVELOPER:** PINBALL

03 One of the two releases in the ill-fated Supercolor range, *Spitball Sparky* is a *Breakout* clone at heart. While it doesn't work as well as you might hope, it remains an intriguing example of Nintendo really trying to push the remit of the Game & Watch range. "It's great because it's an attempt to create bats-'n'-balls type gameplay using crude LCD graphics," says Van Spanje. "It's not altogether successful, but it is great to see Nintendo trying to work around the limitations of the screen and watch the games maturing ahead of the technology." Sadly, the larger units are a lot less portable.

MARIO THE JUGGLER (NEW WIDE SCREEN)

» **RELEASED:** 1991

» **BY THE SAME DEVELOPER:** BLACK JACK

04 This was the last Game & Watch handheld to be made. It's actually a remake of the first title in the lineage rather than a fully fledged release. The crude visuals of *Ball* are updated excellently, with Mario taking centre stage. The screen is also attractively illustrated with scenes from *Super Mario Bros.* "*Mario The Juggler* looks really nice, with a colourful screen background and the game is quite addictive and musical," says Cole. The gameplay isn't as deep as you might want, but it proves that the core concept is strong enough to remain entertaining. It's also quite collectable these days.

ZELDA (MULTI SCREEN)

» **RELEASED:** 1989

» **BY THE SAME DEVELOPER:** SAFEBUSTER

05 The penultimate Game & Watch was released in the same year as the Game Boy and by this point it was clear that the series was on borrowed time. Nevertheless, Nintendo chose to go out with a bang with the release of *Zelda.* "Even though it's nothing like the *Zelda* we now know, it did capture the feel of the world it was played in," says Martin Van Spanje. "It's basically stabbing opponents with a knife, and then defeating the same old dragon over and over again, but it's a piece of *Zelda* history." Although it was a Multi Screen release, the action is confined to the lower screen, with the top display being used solely for statistics and information.

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SUPER MARIO BROS (VARIOUS)

» **RELEASED:** 1986

» **BY THE SAME DEVELOPER:** RAIN SHOWER

06 The first Game & Watch release to feature horizontally scrolling levels, *Super Mario Bros* was incredibly advanced for its time. Although squeezing the addictive gameplay of the NES original into the primitive LCD hardware wasn't really a possibility, this is nevertheless a pretty convincing facsimile and remains one of the most entertaining titles in the range. The visuals are a little basic – this is mainly due to the scrolling levels, which use flat lines to give the impression of movement – but everything else is exceptionally polished. The special edition variant was limited to 10,000 and is very rare, but it has the same gameplay as the other versions.

BALLOON FIGHT (NEW WIDE SCREEN/ CRYSTAL SCREEN)

» **RELEASED:** 1986 (CRYSTAL), 1988 (WIDE)

» **BY THE SAME DEVELOPER:** MARIO'S CEMENT FACTORY

07 First released as part of the coveted Crystal Screen range of Game & Watches, but eventually given a more affordable New Wide Screen outing, *Balloon Fight* is yet another painfully addictive addition to the Game & Watch line-up. Although *Balloon Fight* shares its name with the famous Nintendo arcade game, this brilliant Game & Watch is actually based on the 'Balloon Trip' mode that only appeared in the NES home console release. You play as a young chap with a jet pack and you're tasked with moving through the scrolling levels, collecting balloons and avoiding traps as you go.

CLIMBER (NEW WIDE SCREEN/CRYSTAL SCREEN)

» **RELEASED:** 1986 (CRYSTAL), 1988 (WIDE)

» **BY THE SAME DEVELOPER:** SNOOPY

08 Many collectors view *Climber* as the 'perfect' Game & Watch release in terms of gameplay. "It's a near-perfect implementation of limited LCD graphics and manages to include multiple levels, moving platforms and end-of-level bosses," says Van Spanje. "It should still exist today as a mobile game. If not, someone should make it and re-release it." Like *Super Mario Bros*, the visuals look basic due to the scrolling levels, but *Climber* feels far more vibrant and active than most LCD titles. If you want a solid introduction to the world of Game & Watch, try this.

09

MICKEY MOUSE (WIDE SCREEN)

» **RELEASED:** 1981

» **BY THE SAME DEVELOPER:** MANHOLE

09 It's amazing to think this now, but many of the characters that graced the early Game & Watch titles were licensed from other companies. Nintendo stars like Mario and Donkey Kong only got their chance to shine later. Along with Snoopy and Popeye, Disney's Mickey Mouse featured in several titles, with this Wide Screen outing probably his best. "I love playing the game and just like the look of it," says Van Spanje. The game involves catching eggs and is almost identical to another G&W release entitled *Egg*. It's believed that this other variant exists because Nintendo didn't have worldwide rights to use the *Mickey Mouse* licence. The gameplay is simple but addictive, and it is an interesting example of how Nintendo explored the weird and wonderful world of licensing in its early days.

MARIO'S BOMBS AWAY (PANORAMA)

» **RELEASED:** 1983

» **BY THE SAME DEVELOPER:** GOLDCLIFF

10 It is common knowledge that Mario is a dab hand when it comes to sorting out your troublesome waterworks. But did you know that the plump Italian also has a highly decorated military career to his name? Witness *Mario's Bombs Away*, in which Mario dons his army fatigues and attempts to safely transport a succession of bombs to the enemy camp. Unsurprisingly, this dangerous activity isn't without its risks – one false move and Mario is on the wrong side of a massive explosion. "This is good fun to play and it looks good, as do all the Panorama games," says Cole. The Panorama series may not have been a huge success, but this game is certainly worth your time. Unsurprisingly, Mario seems to have disowned his wartime exploits these days – we can only guess that driving karts is less dangerous.

10

SINCLAIR ZX81

IT'S BEEN SAID THAT THE ONLY DIFFERENCE BETWEEN STUMBLING BLOCKS AND STEPPING STONES IS THE WAY YOU USE THEM. FOR SINCLAIR RESEARCH, THE SHORT-LIVED ZX81 SERVED ITS PURPOSE AS A STEPPING STONE TO THE ZX SPECTRUM SUPERBLY, AND PROVIDED A SOLID PATHWAY INTO THE WONDERFUL NEW WORLD OF HOME COMPUTING FOR A GENERATION OF GAMERS

Processor: Zilog Z80

CPU Speed: 3.5 MHz

RAM: 1K

ROM: 8K

Resolution: 64x48 (24 lines x 32 characters) – also capable of 256x192

Colours: Monochrome

Sound: None

Retail Price: £69.95/$113 ready built (£49.95/$81 in kit form)

Release Date: 1981

Why the ZX81 was great: It was cheap as chips; a physical checklist of fixed problems and subtle tweaks to the ZX80, with 30 quid shaved off the price. "Why not buy a ZX81?" was the motto of bedroom programmers everywhere

It was only on the shelves for two years, but the ZX81 made a significant – if dichotomous – impact between 1981 and 1983, inaugurating a huge number of curious technophiles into the previously prohibitive world of home computing. Without this ostensibly minor upgrade to the ZX80, the extraordinarily prolific 8-bit revolution that quickly followed might well have known a significantly smaller congregation.

When discussing historical relevance it feels somehow trite to reduce matters to monetary concerns, but in the case of the ZX range of computers, the price tag genuinely was a momentous achievement for Sinclair Research. Home computing in the late Seventies and early Eighties presented a monumental financial investment that was entirely supported by a niche customer base. Computers weren't the necessary, easily justifiable home appliance they are today, so anyone wanting to dabble in the new world of amateur code had to dig deep into threadbare pockets to satisfy their curiosity.

While other manufacturers vindicated their product's astronomical costs with impressive, bullet-pointed lists of powerful processing capabilities, Uncle Clive aimed to astonish with a simple, lightweight price tag, and it was this distinctly British philosophy that put the ZX80 – the first machine to crack the £100 price barrier – into so many homes only a year before the ZX81.

All the astute pioneers in the computing and videogaming world during this embryonic phase knew the importance of affordability. Silicon was electronic gold, and if computer designers wanted to reduce costs they had to lighten the loads on their PCBs. At precisely the same time as Sinclair Research was pouring its talents into ridding itself of excessive hardware, across the Atlantic Nolan Bushnell was offering huge incentives to Atari's designers to reduce chip count in new games. It was exactly this line of minimalist thought that had prompted Steve Wozniak to reinvent *Breakout* and to create the Apple computer.

INSTANT EXPERT

Less than a tenth of the cost of the Apple II on its launch, the ZX81 was, proportionally, the most affordable home computer ever produced.

The ZX81 used a proprietary form of BASIC, so costs were reduced as no licence fee went to Microsoft.

Programs and games could be saved and loaded through a standard cassette tape recorder – something the ZX80 was unable to do.

A unique, 'spark' (*not* thermal) printer was available that used black, aluminised paper to zap the text on to. Just like the computer, this was cheap and cheerful.

By cleverly confusing the ZX81, programmers have devised ways to 'trick' the system into providing a high-resolution display of up to 256x192 – even though Clive Sinclair had initially said that it was impossible.

Solder-happy punters could save themselves 20 quid by purchasing the ZX81 in kit form and assembling it themselves.

Third-party developers released additional add-ons, including memory packs up to 63K, and graphics and sound modules.

Although not really reflected by the profits Sinclair Research recorded, the ZX81 sold around 1,000,000 units worldwide. They didn't all work, unfortunately.

A chess program was written that ran comfortably within the limited 1K of RAM – one of the smallest examples of a chess program ever seen.

The ZX81 could multiplex between the display and running a program – solving the ZX80's problem with a flickering screen.

Time For Timex

The US was *the* market for home computers, and Americans were seemingly happy to throw whopping amounts of green around to get the right system. Sinclair got a taste of the transatlantic potential through international mail order, and realised that a local licensee was required. Since American computer giant Timex was already assembling Sinclair machines at its plant in Dundee, it was the natural choice. The first system to bear the Timex/Sinclair hybrid brand was the TS1000: a ZX81 with double the memory: an astronomical 2K! Although the launch was a massive success on paper, selling in numbers that dwarfed Commodore, Apple and Tandy sales figures, posting out the ZX81 to code-hungry Americans had significant drawbacks. The lack of support, gremlin-infested quality control and long, hostile journey meant that only a third of Sinclair's computers actually arrived in operational condition. Reputation meant everything, and Sinclair's was tragically shot when it landed on US shores.

It was no coincidence that those early campaigners made such a massive impact on the future of domestic computing and gaming: they all paid careful consideration to our wallets.

Steve Vickers, designer of the improved ZX81's 8K ROM, vividly remembers just how important this business model was at Sinclair Research, and told us what it was like during those early days around Clive Sinclair's offices.

"It was interesting to see the commercial pressures that drove the products. Launch dates were very important," he begins. "The dates were those of particular exhibitions, and this meant that the deadlines were fixed externally. Hardware design was largely governed by using every possible, and often ingenious, means to reduce chip counts and production costs. Clive himself was exquisitely alert to these issues, and in a sense the nature of the actual product was secondary to him."

This was the real, hidden strength of the ZX81 over its chip-heavy predecessor, and the reason it was an admittedly underpowered, yet highly accessible computing warhorse. While the ZX80 housed over 20 different ICs under its thin plastic skin, the ZX81's brainpan was emptied of all but four vital chips, one of which was a custom IC compiling the majority of the ancillary functions into one slab of silicon. Of those four digital workhorses, the ROM was perhaps the only one that remained almost completely unaltered, though its development continued with a doubling of capacity up to a whopping 8K. As the man behind the re-engineering of the ZX81's nervous system, Steve explains not only the advancements of the ROM, but its intricate similarities to its parent's.

"AS THE US VIDEOGAME MARKET DISAPPEARED UP ITS OWN… CARTRIDGE SLOT, BRITISH CODERS SIMPLY CHOSE THEIR NEW WEAPON OF CHOICE: SPECTRUM, COMMODORE OR AMSTRAD"

"John Grant's 4K BASIC for the ZX80 was a miracle of compaction," he says. "As far as possible I left its design and code intact and added the new ZX81 features to it in a modular way. I started by learning the Z80 assembler, which I'd never used before. The first task was adding a floating point maths package, which was big but fairly self-contained. I had to do some research into the Chebyshev polynomials I used for calculating functions, and devised a stack-based internal language to describe the algorithms. This was both compact and easy to program compared with raw assembler code. That was when I had to begin to understand the old system better in order to see how it needed modifying to integrate it with the old ZX80 system."

While Steve might speak a language better understood by an EPROM burner, it's easy to decipher that Sinclair Research had found precisely the right man to increase the capabilities of this new system. Indeed, Steve rather astutely approached the augmentation of the ZX franchise precisely as Clive intended to sell it – by way of upgrade and home industry.

It's fair to say the ZX81 was an upgrade, rather than a successor. This isn't the criticism it appears to be, however, since that was precisely the design brief Sinclair Research had drawn up. After all, it'd go completely against the economic nature of the ZX range to ask people to replace a 12-month-old computer. Steve told us about the ZX81's ROM design process that was carried over into the marketplace.

"One design remit was that the ZX81 ROM should also work as an upgrade in the ZX80 hardware. In essence, the brief was to make a cheaper ZX80 with display *and* computing capabilities and floating point maths. Other additions included more versatile graphics for printing and plotting at specified places on screen, multi-dimensional and string arrays, substring operations, software to drive the Sinclair printer, miscellaneous enhancements to the BASIC and anything else useful that would go in the extra 4K of ROM," says Steve.

Sinclair's already happy punters could buy the massive new 8K ROM along with the slightly altered replacement keyboard membrane. While it didn't solve all the shortcomings of Sinclair's first ZX computer, the upgrade option was well received, and worked particularly well, since the ZX81 had been deliberately designed to operate this way.

"To test the code I'd blow it into EPROMs and plug it into the hardware. Eventually we used the ZX81 hardware as it reached a working level of its development, but initially we used a ZX80 to test the new ROM out," Steve explains.

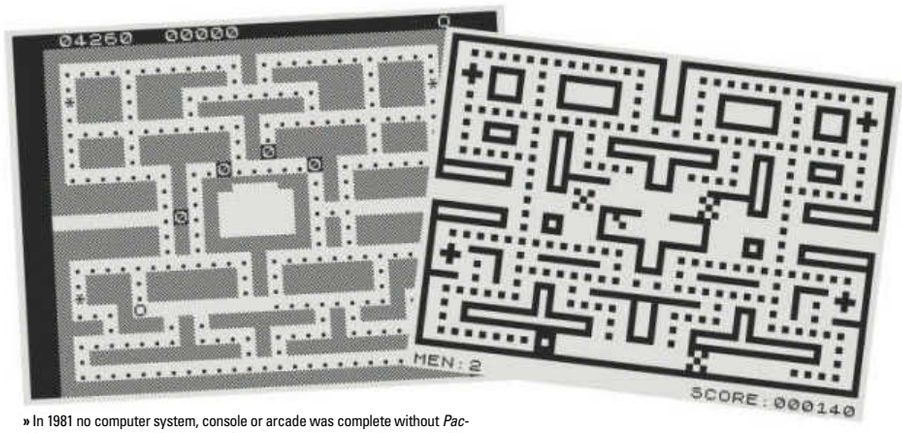
Unfortunately, this upgrade didn't solve the ZX80's issue with simultaneous computing and displaying. Or lack of it, to be more precise – causing a screen flicker every time the laboured processor took an input or ran a program. The ZX81 managed a suitable workaround of the problem by allowing programs to run during the frame return period when the display – being your old Bakelite telly – was refreshing, and also during the blank top and bottom 'borders' phase of the display driver. While this essentially didn't fix the problem, it did prove to be an ingenious method of multiplexing the industrious Z80 processor and giving users the illusion of simultaneous display and computing without the seizure-inducing screen blanking that made its predecessor so 'special'.

Naturally, this resource sharing slowed the processor quite considerably, despite making the monochromatic screen look a lot better during use. The ZX81 was a limited system even by 1981's standards, so gaming was never really an intended function and full programmer access took greater priority than entertaining casual users. Therefore, it was reasonably concluded that hackers should have a choice as to pretty displays and full processing power, so the ZX81 incorporated two methods of operation – esoterically named FAST and SLOW.

FAST put the Z80 processor to use in the same method as the ZX80 – blanking the display so it could dedicate itself to calculating, while SLOW multiplexed the required operations between video and software. While it eased the eye strain of regular coders, this wasn't a particularly significant modification to the ZX lineage, though the inherent reason for including this option *was* significant. Few computers have been made that allowed such unrestricted access to every single function as the ZX81, and inspired programmers soon found alternative use for many of the machine's processes.

The ZX81 had no audio capabilities, though it's unwise to add a full stop after that 'fact'. Early in its life, some surgical code boffin realised that by switching rapidly between FAST and SLOW modes, tones could be induced into the television signal, creating a basic sound synthesiser. Essentially, this was controlled interference, but it became the primary use of the two processing modes.

In hindsight it's not entirely obvious what Sinclair Research wanted to achieve with the ZX81. It might not have reached the lofty



» In 1981 no computer system, console or arcade was complete without *Pac-Man*, although the unofficial clone, *Glooper*, was a better rendition on the ZX81.

COMMUNITY – THE BEST ZX81 WEBSITES

Planet Sinclair
www.nvg.ntnu.no/sinclair/
Not only a great place to learn more about the ZX series of computers, their peripherals and localised alternatives, Planet Sinclair is also a well-presented repository of all things to do with Uncle Clive; from calculators and mini-TVs to electric bikes and the man himself.

A Profound Journey
www.apj.co.uk/zx81/zx81.asp
Although not specifically a Sinclair website, a reprint of a 1981 article from *Personal Computing World* can be found here. The magazine article features an in-depth test and review of Clive's new machine that provides a superb window to what people expected of the ZX81 on its release.

Open Directory Project
www.dmoz.org/Computers/Systems/Sinclair/ZX81/
Although it's tempting to make more specific mention of the websites here, it'd be a lot more useful to post this links list for anyone wanting to uncover the ZX81's presence on the web. Some links aren't maintained, but you should still start here.

ZX81 Stuff
www.zx81stuff.org.uk
Simon Holdsworth's neat website is his own personal shrine to Sinclair's machine and features a great many items from his very own collection. If that wasn't enough, it's even possible to play a great many games using a Java-based emulator, just like on World of Spectrum.

The ZX81 +2
What good is a home computer without the vital add-ons that made the machine live up to the inevitably optimistic hype of its own adverts, and to the end, the ZX81 had a particularly indispensible accoutrement.

While the infamous 16K RAM pack expanded the horizons of the ZX81 exponentially, the physical presence of the memory unit caused significant brain-ache for users. With easily corroded, solder-coated contacts and no other physical support, the slightest nudge could cause a poor connection and loss of work – and even a blown motherboard. Sinclair's own product support suggested the use of Blu-Tack or electrical tape as an official fix.

market penetration of the consoles of the day, but for a product that saw a limited sales push and equally limited after-sales support, it begins to draw a picture of a machine that provided a learning curve stanchion rather than a culmination of computer development.

As Steve Vickers still vividly remembers, Clive Sinclair boasted far-reaching vision and wasn't a man to dedicate himself to chasing pound notes. "At first I was shocked to discover that Clive had no interest at all in being able to use the Sinclair computers himself. 'I don't know how to drive one of those things,' he'd say. But that was how the company worked. He relied on being able to gather other people who could take care of those issues," says Steve.

Sinclair Research had always skirted around the circumference of colossal success; never quite achieving the kind of corporate enormity that other, usually US-based, computer companies had managed. Therefore, each product was a test of promise and risk in equal measure, and the slow start of the ZX81 suggested no indication of triggering a home computing craze. Launch sales proved the computer to be a worthwhile experiment, but its long-term value was certainly debatable.

"Commercially, the ZX81 worked as a way to earn money on the learning curve to the Spectrum," says Steve, as he recalls the time when Uncle Clive's third computer hit the shelves. "The ZX81 still had obvious deficiencies – the picture was black and white with very blocky pixels, it was slow if it had to compute while displaying, and the 1K RAM was tiny even by the standards of the day – so I don't think it was ever seen as a long-term product."

Steve makes an excellent point, and essentially captures the essence of what made the ZX81 so great. It *wasn't* a particularly impressive computer, but it did epitomise the forthcoming technology revolution. Despite a less than extraordinary specification, the very reasonable price tag and alluring system accessibility made it an easy and risk-free introduction to programming for the inquisitive technophile. By 1982, this simple appeal of low-cost experimentation had increased Sinclair Research's profits eightfold but, far more importantly, it was also proving to be the vital education for both the manufacturer and the user that would launch the next phase in home computing.

"If you wanted to write letters and do accounts on a computer, the ZX81 was not your best buy. But as something really cheap that would let you play with programming – a kind of software version of a Meccano set – there was nothing to touch it. I personally found it really useful for numerical calculations that I needed to do while working on the Spectrum ROM," Steve explains to us. "So I suppose I found it good for what computers were invented for: numerical work."

As the US videogame market disappeared up its own… cartridge slot, the British code junkies shrugged their shoulders without concern. Consoles were dead, but we now had affordable, accessible home computing to fall back on, so we simply and organically chose our new weapon of choice; be it Spectrum, Commodore or Amstrad. For those of us looking to play with a bit of code and enjoy a bit of gaming on the side, it really was as simple and casual as that.

But it is thanks to stalwart, unsung heroes like the ZX81 and its pioneering developers that home computing had already moved beyond novelty to become an integral part of working-class life, so show a little respect next time you need to wedge a door open and use an Atari 2600 instead, eh?

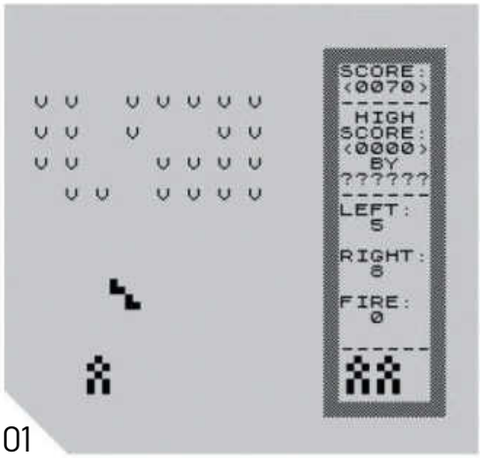
» Picking up commercial games for the ZX81 wasn't easy, but there was a ton of programming books that played to the real purpose of Clive's awesome little machine.

» Although the ZX80 had its charms, the black ABS casing of the ZX81 was a big hit among design-conscious technophiles of the day.

SINCLAIR ZX81

PERFECT TEN GAMES

Be it ever so humble, there was nothing quite like the ZX81. So, to celebrate this early home computer, we've chosen ten of its greatest games for you to enjoy



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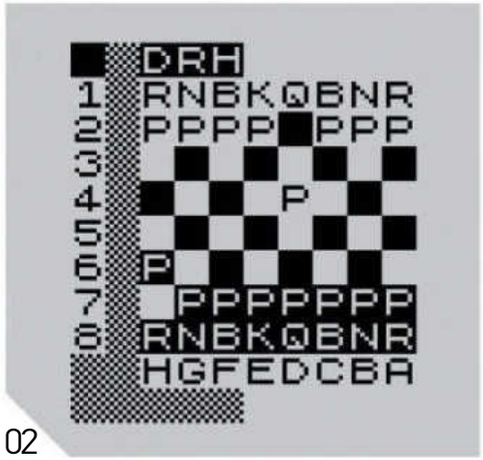

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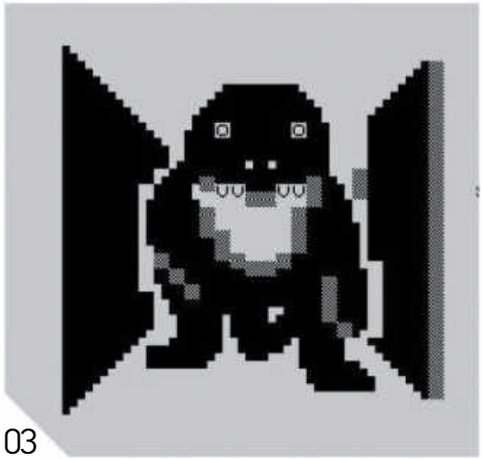
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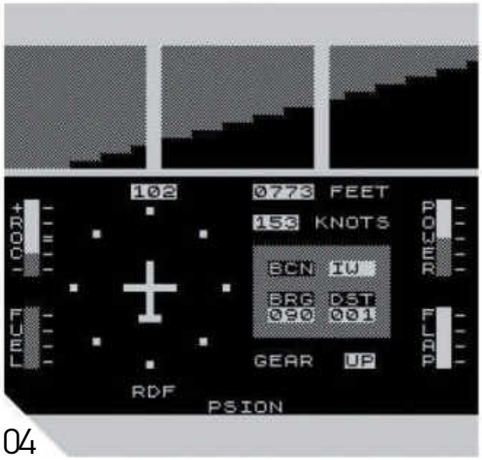


04

GALAXIANS

- **RELEASED:** 1982
- **PUBLISHED BY:** ARTIC
- **CREATED BY:** WILLIAM J WRAY
- **BY THE SAME DEVELOPER:** GALAXY WARRIOR

01 There's a slew of *Space Invaders* and *Galaxian* clones available on the ZX81 – hardly surprising when you consider the massive popularity of them – but this conversion of *Galaxian* by Artic is easily one of our favourites. The action is absolutely relentless and you'll have your hands full dodging the many flying enemies and the hail of bullets they constantly bombard you with.

Granted, it lacks the same attack patterns from the original game, but, in a way, the complete randomness of the alien attacks simply adds to the excitement, as you never quite know what to expect. This is a superb clone of the hit coin-op and is definitely worth tracking down if you love a good blaster.

1K ZX CHESS

- **RELEASED:** 1983
- **PUBLISHED BY:** ARTIC
- **CREATED BY:** DAVID HORNE
- **BY THE SAME DEVELOPER:** ESPIONAGE ISLAND

02 Considering the sheer number of potential moves available in chess, we're amazed to find it so well replicated on the ZX81. Created with less than 1K of RAM, you can play it without the need for a RAM pack. Okay, so certain rules – queening, castling and en passant capture – didn't make the cut, but this is still a resoundingly solid effort and proves just how talented early coders – in this case, David Horne – actually were.

The computer AI takes a fair amount of time to plan all of its moves, but the actual game itself plays a pretty good game of chess, so you can forgive it for the lengthy pauses. A solid adaptation of the classic strategy game.

3D MONSTER MAZE

- **RELEASED:** 1981
- **PUBLISHED BY:** JK GREYE
- **CREATED BY:** MALCOLM EVANS
- **BY THE SAME DEVELOPER:** CATACOMBS

03 Survival horror may have been a phrase first coined by *Resident Evil*, but it could have easily applied to Malcolm Evans' massive hit. Boasting sensational visuals and an incredibly slick maze, traversing the huge labyrinth was truly terrifying and scared a generation of gamers.

It may have sported a paltry 16K of RAM and no sound, but *3D Monster Maze* remained an amazingly atmospheric title, which, in a way, was elevated by its clumsy control system that saw all the arrow keys laid out on a single row. An instant classic that, even today, remains a mind-blowing experience. Perfect proof that you don't need state of the art visuals to create a truly great game.

FLIGHT SIMULATION

- **RELEASED:** 1982
- **PUBLISHED BY:** SINCLAIR RESEARCH
- **CREATED BY:** PSION
- **BY THE SAME DEVELOPER:** CITY PATROL

04 Ask people about their favourite ZX81 game and *Flight Simulation* almost always charts highly – usually in the number one spot.

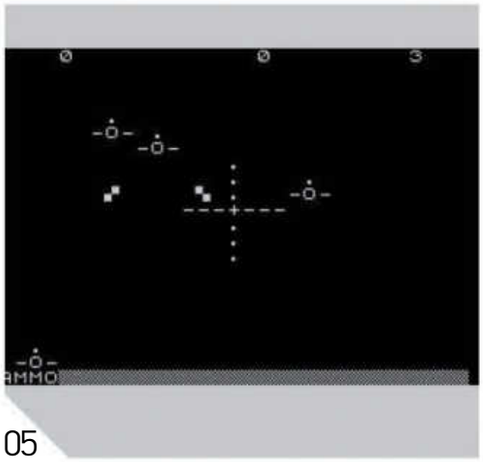
Maybe it's because you'd sit there making engine noises as your plane flew towards its landing strip, but we'd say that it was mainly due to the fact that it simply looked astonishing on a machine that normally required you to guide an asterisk through a simple-looking maze. While it was possible to just play the exhilarating final approach, it was just as fun to simply take to the skies – you could add wind for an extra challenge – and fly around to your heart's content.

NIGHT GUNNER

- **RELEASED:** 1982
- **PUBLISHED BY:** SOFTSYNCH
- **CREATED BY:** DIGITAL INTEGRATION
- **BY THE SAME DEVELOPER:** ALIEN INVASION

05 Who would have thought that a game made entirely of '–' and '0' signs could turn into one of the ZX81's most enjoyable games? No, we wouldn't have thought so either, but replaying the wonderful *Night Gunner* reaffirms that this is exactly the case.

Moving at a very impressive speed, you fly through the air taking out as many enemy planes as you can before your ammo runs out. Like many ZX81 games it's incredibly simplistic to look at, but our active imaginations easily saw those basic characters as magnificent planes plummeting earthwards as we filled them full of lead. A solid shooter that gave you plenty of bang for your buck – even if you couldn't hear the bangs.



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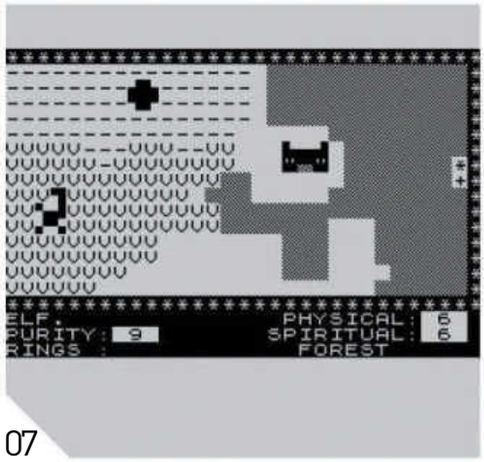

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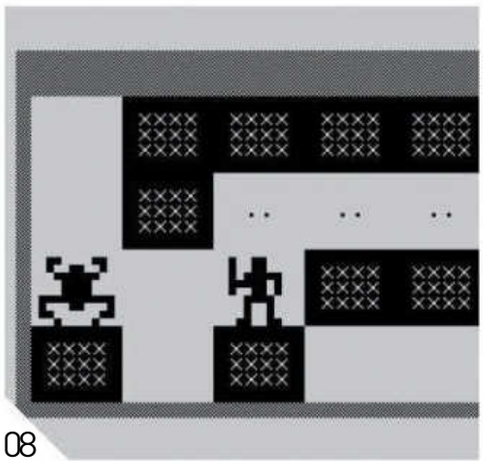

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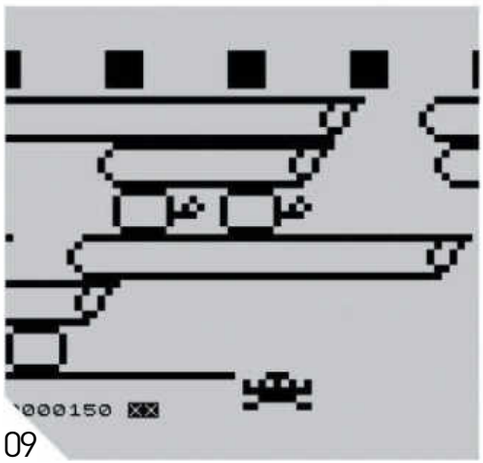

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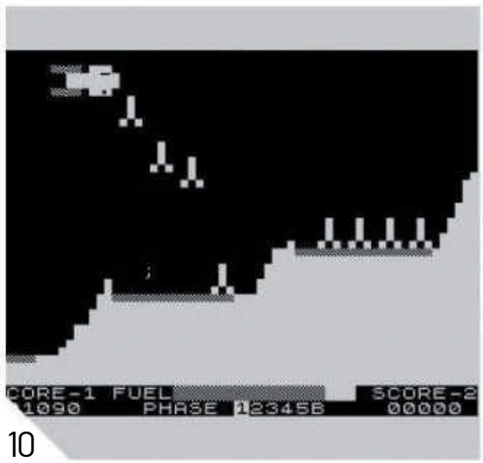

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3D DEFENDER

- **RELEASED:** 1981
- **PUBLISHED BY:** JK GREYE
- **CREATED BY:** JK GREYE SOFTWARE
- **BY THE SAME DEVELOPER:** BREAKOUT

06 Like *Night Gunner*, *3D Defender* has you controlling a pair of crosshairs and trying to gun down as many enemies as possible. Unlike *Night Gunner*, however, *3D Defender* is set in space and features some absolutely massive UFOs that really do scare the absolute bejesus out of you as they zoom in and out of your view.

It's certainly a lot trickier to control than *Night Gunner* – you'll spend your first few goes crashing into the ground at every opportunity, and the collision detection is rather iffy – but once everything clicks you'll discover a title that's just as much fun and a hell of a lot slicker. And you really have to see those UFOs. Fantastic stuff.

BLACK CRYSTAL

- **RELEASED:** 1982
- **PUBLISHED BY:** CARNELL
- **CREATED BY:** CARNELL
- **BY THE SAME DEVELOPER:** VOLCANIC DUNGEON

07 Not to be confused with the Jim Henson movie starring ugly puppets, *Black Crystal* is a great graphic adventure that sees you traversing a variety of different environments to destroy the gem of the title. Spread across six impressive-looking maps, you're given a variety of tasks ranging from retrieving keys to fighting dragons.

It's a very entertaining romp that plays up well to the strengths of the ZX81 and delivers an immersive experience that many other adventures on the machine simply can't match. It's a little fiddly in places, and it's all too easy to die, but the gripping gameplay will constantly push you forward for one more go.

MAZOGS

- **RELEASED:** 1982
- **PUBLISHED BY:** BUG BYTE
- **CREATED BY:** DON PRIESTLEY
- **BY THE SAME DEVELOPER:** MANIC MINER

08 When Don Priestley's *Mazogs* appeared on the ZX81, it's fair to say that its arrival was something of a revelation. Featuring absolutely huge characters and set in a massive maze, it was an incredibly slick release that made virtually all its peers look absolutely archaic.

With so many maze games featuring dollar signs being chased by asterisks, the huge sprites of *Mazogs*, created by the Sinclair's Sugar Cube Graphics, certainly left an impression on people. Luckily the game was just as good as its visuals, and many ZX81 owners will, no doubt, fondly remember hurtling through the huge mazes, picking up treasures and using their sword to battle the evil Mazogs.

FROGGER

- **RELEASED:** 1981
- **PUBLISHED BY:** CORNSOFT
- **CREATED BY:** CORNSOFT/SEGA
- **BY THE SAME DEVELOPER:** N/A

09 We've raved about this early arcade conversion of *Frogger* in the past, but here's another reminder as to why it's so great. First released in 1981, *Frogger* is not only an incredibly faithful conversion of the popular coin-op, but it also pelts along at a fair old speed.

Honestly, you'd be forgiven for thinking it's running on another, far more technically capable machine. Granted, the original arcade screen has been split into two – the first section has you crossing the road, while the second sees you hopping across the water to your pad – but this is otherwise a fantastic conversion that proves just what feats were possible on the humble home micro.

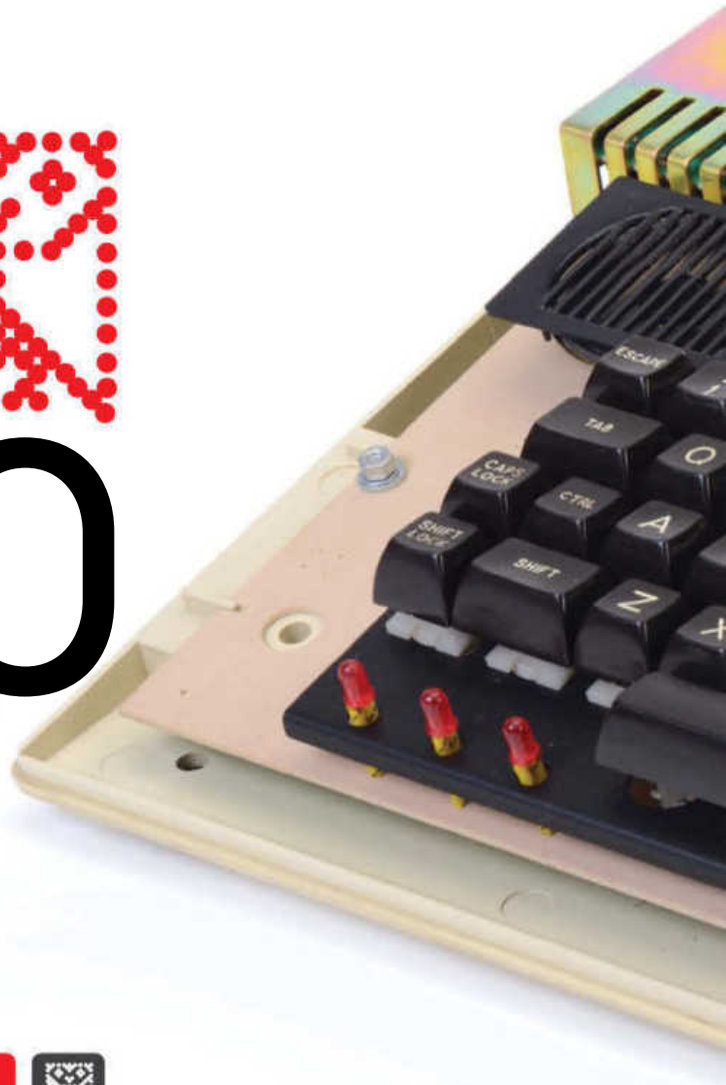
THE GAUNTLET

- **RELEASED:** 1982
- **PUBLISHED BY:** COLOURMATIC
- **CREATED BY:** COLOURMATIC
- **BY THE SAME DEVELOPER:** N/A

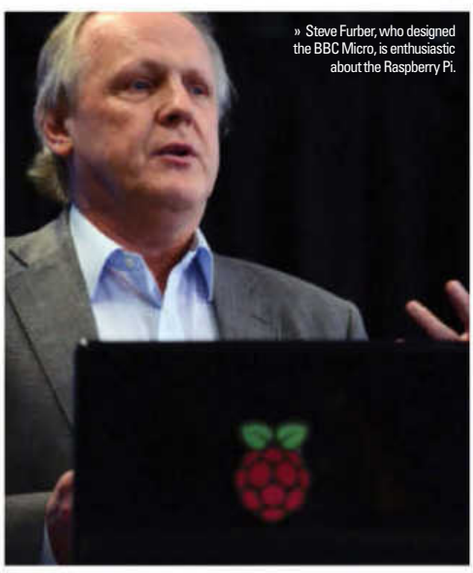
10 Considering the rather flaky processor beating away inside the heart of the ZX81, it has churned out a fair few nippy shoot-'em-ups in its time. *The Gauntlet* is a perfect example, and while it's nothing we've not seen before – it's basically a clone of Konami's excellent *Scramble* – it is a very slick product that manages to push all the right buttons.

It certainly takes quite a while to get used to the huge size of your spaceship, but once you've worked out all of the controls you'll soon be shooting and bombing enemy emplacements with ease. It does get ridiculously tough as the game progresses, but if you're looking for a classy blaster you'll be hard-pressed to find anything better than *The Gauntlet*.

BBC MICRO



It was the computer that inspired a generation of programmers and introduced scores of children to computing. David Crookes talks to BBC Micro designer Steve Furber about how the iconic machine was made



» Steve Furber, who designed the BBC Micro, is enthusiastic about the Raspberry Pi.

The phone rings and Steve Furber picks it up. He listens to what the person on the other end has to say; he begins to feel uneasy. But the caller, Hermann Hauser, is desperate. As the co-founder of Acorn he is about to receive a visit from the BBC, which wants to create a new computer. Acorn is in the running to make it. But time is tight. He wants Steve Furber and his colleague Sophie Wilson to produce a functioning machine in less than a week.

"Can you have a processor like this for Friday?" Hauser asks, but Steve is clear. "No," he answers. He calls Wilson and gets the same answer. But in both cases, he pulls a trick. "He told us both that the other had said yes so we felt we had to agree," laughs Steve. "We were then committed." The BBC Micro was about to be born.

Many people have fond memories of the BBC Micro. It was the machine used in countless schools up and down Britain, the red keys and black/beige combination being an exciting pointer to the future. Steve, however, did not have the pleasure of playing around with computers when he was at Manchester Grammar School in the 1960s. Nor did he have a bank of machines available to him when he moved on to study the Mathematical Tripos at St John's College, Cambridge.

Steve was interested in the emerging technology, however, and while he was working on his PhD, he began to find the idea of computers rather fascinating. He decided he wanted to write his thesis electronically and in order to be able to do so, there was just one option available to him. He had to build his own machine. "In those days if you wanted to write a thesis electronically you had to build a computer and then you had to write a text editor. Then you could start writing the thesis. That's the way it was," he explains.

He found designing computers to be a lot of fun. In 1978, he was appointed the Rolls-Royce Research Fellow in Aerodynamics at Emmanuel College, Cambridge, which gave him even more of an excuse to play around: suddenly it made it a practical thing for him to do. Steve was also a member of

his university's processor group, which was full of many other students who built computers for the hell of it.

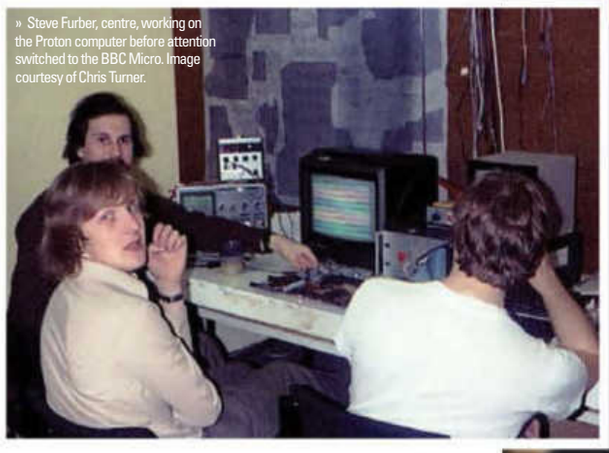
"I ended up with what was a hobbyist machine," he says with fond recollection. "It used a 6502 processor and it was built in a subrack. It had this little 160mm by 100mm Eurocard [the European standard format for PCB cards] and I hand-wired the components to connect them. The machine had a memory card and a display card and the key principle of operation was that the machine was designed so that the processor and the display had shared access to the memory."

In 1978, Acorn Computing was formed, rather handily, in Cambridge and Steve worked there on a casual basis before becoming an employee in 1980. The timing could not have been better because the BBC was about to embark on an ambitious project – one that Steve would prove to be an integral part of.

IN THE KNOW

LAUNCH DATE: 1 December 1981
LAUNCH PRICE: £235/£381 (Model A)
DIMENSIONS: 41x34.5x6.5cm
WEIGHT: 3.7kg
PROCESSOR:
2MHz MOS Technology 6502
RAM: 16KB **ROM:** 32KB

ON-BOARD LANGUAGE: BASIC
DISPLAY:
640 x 256 (2 colours), 320 x 256 (4 colours) or 160 x 256 (16 colours)
COLOURS: 16 colours in total
SOUND: Texas Instruments SN76489, four channels, mono
ASSOCIATED MAGAZINES:
BBC Micro User (later *The Micro User*), *Beebug*, *Your Computer*



» Steve Furber, centre, working on the Proton computer before attention switched to the BBC Micro. Image courtesy of Chris Turner.

» The BBC Micro had plenty of outputs, making it extremely versatile.

BBC VARIANTS

Later models of the popular home computer and how they differed

MODEL A

■ Costing £299, which was a whopping amount in 1981, the BBC's Model A machine may have been the cheapest version but was firmly in the territory of rich parents (or at least those who were inspired by seeing the machine in schools). It has a 6502A processor, 2MHz speed, 16KB RAM expandable to 32, 32K ROM and three-channel sound.

MODEL B

■ With Model A having seen off competition from the likes of Sinclair Research to bag the BBC Micro contract, Model B was a small enhancement, allowing its 32KB of RAM to expand to 64K. Whereas Model A was made to run with a tape recorder, however, B could use a 5.25-inch floppy drive and it could also use software made to run on the disk operating system CP/M.

MASTER 128

■ In 1986, Acorn devised the Micro's successor, the BBC Master 128. As the name suggests, it has 128KB of RAM. Although it promised backwards compatibility, it wasn't as smooth as the makers would have liked, but it was a speedier machine and there were two cartridge slots above the new numerical keyboard. It ditched the 6502 CPU in favour of the 65SC12.

MASTER COMPACT

■ A more unusual machine than the rest, the Compact had a keyboard with a motherboard built in, together with a second unit on which the monitor sat, containing a power supply and a 3.5-inch drive (the smaller floppies being seen as standard at this point). There were no cartridge slots and it cost a strange £451.25. The keyboard used a rubber-plastic moulding membrane.

In 1981, The BBC had a couple of television channels, four national radio stations and lots of regional presenters around the country to provide local content. BBC Online did not exist. Radio 5 Live was years away. As for the digital TV channels, well even Sky hadn't launched in the UK at this stage.

But broadcasting wasn't the only thing on the mind of BBC executives. What was concerning the BBC more than anything was computing. The broadcaster sensed that there was a growing interest in technology of this kind, with children becoming turned on to arcades, electronic games proving popular and a range of build-your-own computer kits being all the rage with the dads. So it began to put out feelers for a new computer that it wanted to lend its name to.

Many companies were approached by the BBC. The idea was that the new machine would be at the centre of a series of television programmes based on the rise of the microprocessor and the fact they were becoming increasingly important. The programmes would be practical and hands on, encouraging viewers to go away and reproduce what they saw. To do this properly, the BBC felt the series would need to be based on a particular machine.

"The BBC had a spec for the computer and they went around a number of UK companies basically seeing who wanted to build it," says Steve. "It was a competitive process, the details of which I'm not familiar with."

At the time, Acorn had been designing a machine that was going to be called Proton. This was to be the successor to the Atom computer that was in production, selling quite well and leading to a desire for a follow-up machine. "We sketched the Proton," says Steve. "We sketched it based on the machine I had designed at university. It was designed as a dual processor. We realised that 16-bit processors were coming and we wanted to use the 8-bit processor as an I/O front end and have a second processor attached to a generic interface. So there was a sketch but no more than a sketch, and certainly not a diagram."

When the BBC Computer Literacy Project began asking for companies to bid for the rights to manufacture the new machine, it was decided that the Proton would be used as the base. The focus swiftly moved towards producing something that would impress the BBC when they came calling and as well as designing the innards, attention was also paid to what was going to wrap around it.

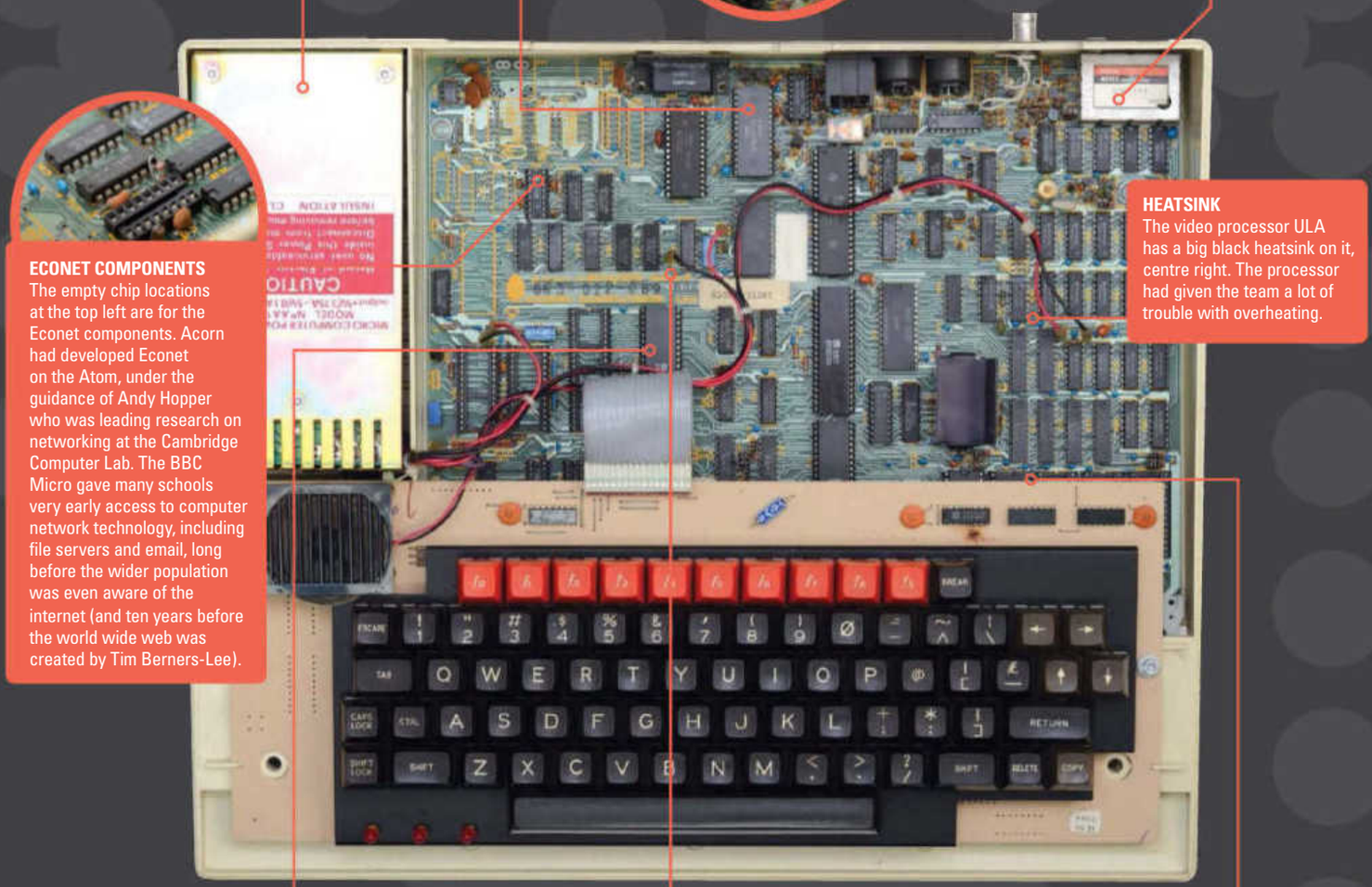
Step forward industrial designer Alan Boothroyd who designed the casing. This was produced in the same week that the prototype innards were being created. It was important for Acorn to be able to show off not only what was inside but what it would look like on the outside too. "When the BBC were due to come that Friday, we wanted to have the model of the case on one desk giving an idea of the design and on the other desk we wanted a working, wired circuit board so we could say this is what it will work like," says Steve.

Progress was fast on the latter. "First we had the detailed circuit diagram, then we got Ramanuj Banerjee from the Cambridge University Computer Lab in to wire-wrap the circuit," remembers Steve. "At this point, we had to debug the machine to make it work and what we had on that Friday was not the final BBC Micro circuit but it was pretty close. It was strongly based on my machine which had become the Proton, as I've said. For cost reasons the BBC Micro was just the front end of the dual processes we conceived, although of course the BBC Micro gained second processors."

The BBC Micro went from a sketch to a functioning machine in less than a week, which was a major triumph for the team. Acorn emerged as the winner. It was asked to build and design the BBC Micro to a spec that would be agreed with the BBC. "I think one of the things that influenced them into choosing Acorn was the fact we could move so fast," says Steve. "They'd been dealing with other companies who had made less progress in a year than we made in a week, so, who knows, that's my impression of it." As for the external design, the red keys of the keyboard that was showcased that day became the BBC trademark and they remained across many Acorn products with a BBC link.

BBC MICRO: HOW IT WORKS

The inside of a BBC Micro may not be as recognisable as the red-keyed casing on the outside, but this is what it looked like…



POWER SUPPLY
The wider shot also shows the Astec switch-mode power supply and the keyboard.

SERIAL PROCESSOR
The custom chip at the top-centre is a Ferranti ULA. It is the serial processor, handling the RS232 and audio cassette interfaces.

TV CONNECTION
The silver 'ASTEC' box is a UHF modulator, which enables the BBC Micro's display output to be connected directly into the aerial socket on an analogue TV.

ECONET COMPONENTS
The empty chip locations at the top left are for the Econet components. Acorn had developed Econet on the Atom, under the guidance of Andy Hopper who was leading research on networking at the Cambridge Computer Lab. The BBC Micro gave many schools very early access to computer network technology, including file servers and email, long before the wider population was even aware of the internet (and ten years before the world wide web was created by Tim Berners-Lee).

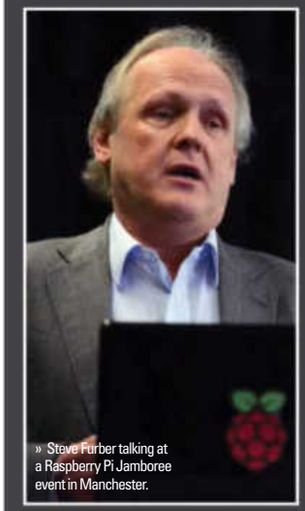
HEATSINK
The video processor ULA has a big black heatsink on it, centre right. The processor had given the team a lot of trouble with overheating.

SPEECH CHIP SOCKETS
The two large sockets at centre left are for the speech chips – the BBC Micro had a canned Kenneth Kendall speech synthesis system, to give it an authoritative BBC voice.

MANUFACTURER
The sticker here shows that the BBC Micro was made by a company called ICL. This firm was the major British mainframe computer manufacturer and it was bought by Fujitsu in the 1990s.

ROM SOCKETS
The row of five sockets at the bottom right are for the ROMs. This machine has a DFS – Disk Filing System – ROM in addition to the BBC MOS and BASIC ROM.

STEVE **FURBER ON** DAVID **BRABEN**



» Steve Furber talking at a Raspberry Pi Jamboree event in Manchester.

■ Although David Braben is perhaps the best-known gaming 'celebrity' for the BBC Micro, his sterling work on *Elite* with Ian Bell proving to be of real lasting value, Steve Furber and David Braben did not meet for a long time, and certainly not prior to the game's launch.

"I think we have been in the same room at some point, but my first knowledge of David Braben was when *Elite* came out on the BBC Micro, which was the most spectacular game we've ever seen."

Not that Steve rates the space trading game – which some claim to be the best slice of interactive entertainment ever made – as the one title he would prefer to play on the system. "My favourite game is actually *Aviator* because my profession was aerodynamics. I was always very interested in aeroplanes as a boy and *Aviator* gave me the opportunity to fly my own aeroplane on BBC Micro. There was a dynamic with aeroplanes and a dynamic with spaceships, so *Aviator* was the key application for me. That was the fulfilment of why I started playing with computers. I thought of them as a way to do a flight simulator."

With the BBC convinced Acorn could deliver, it was time to start turning the prototype into a manufacturable machine. Steve's design for the Proton was not the BBC's starting spec and there was much discussion as to what the final spec should be. But the effort, Acorn felt, was more than worth it. The BBC was confident that 12,000 machines would be sold on the back of the TV programmes. "We now know that was a huge underestimate," says Steve. "Nobody foresaw the rising interest and the huge volume of interest in developing computers in the early Eighties. The 12,000 became 1.5 million machines in about five years."

First of all, though, they had to move on from the prototype. "The prototype was around April… in 1981 and the machine was launched… far less than a year later," Steve says. "We'd decided to reduce the number of chips by using the ULAs in a couple of functions. We created the video ULA which divided the 16MHz master clock into lower frequencies for use by other integrated circuits and serialised the display memory into an RGB video signal."

The ULA was an Uncommitted Logic Array, a Ferranti product that allowed a number of logic gates to be configured to implement a bespoke function on a single chip. In the process of making the BBC Micro, the number of chips needed was reduced by "10 or 20" Steve reckons, adding that there were still 102 chips left on the BBC Micro board. "A lot of effort went into cleaning up schematics, getting the circuit board PCB and ULAs inside and implemented, and of course building the software," he recalls.

"That was at least as big a job as getting hardware out. My involvement was mainly hardware, though."

BBC BASIC was written by Sophie Wilson and Paul Bond, who led the development of the OS. "There were a lot of people involved in getting the machine ready to sail in January, where ready is a relative term," adds Steve. "The initial machines were shipped with poor power supplies – they got too hot. They were linear and were rapidly replaced with switching power supplies that did not get hot and were very reliable. But there is a problem if you have a BBC Micro today: the electrolytic capacitors in those switching supplies are drying out, so they need replacing. Then again, the machines are 30 years old."

While the team worked on producing the BBC Micro, the broadcaster's learning arm remained close to the project. "It was a collaboration because the BBC kept a stern grip of what's happening and all specification issues had to be agreed with the BBC," says Steve. "So yes, they were very firmly involved. The badge was not just a brand – [it] represented a lot of technical input from [the] BBC."

One big concern was the pressure to keep the costs down while not compromising quality or reliability. It was a struggle. "I think the realisation that there was a huge education market came a little bit later, once the machine was underway," reveals Steve. "One of the criticisms of the machine was it was a bit too expensive, though. Of course we didn't engineer it with a view to the cost running away, but we did engineer it to be good and to be robust and high quality and that pushed the price up. The BBC Micro keyboard would really take a hammering and it was expensive because the only way you could build a robust keyboard then was expensive."

He says the BBC wanted to go even further and its key input was to come up with ideas of the sorts of things they wanted: to retain the second processor capability; and to be able to add floppy disk drives later, even though they were phenomenally expensive. "They wanted to add a Prestel receiver. This is before the days of

BBC MICRO EXCLUSIVES

If you're picking up a Micro, these are the games you need to own

STRYKER'S RUN

■ Designed by Chris Roberts and Philip Mellor, this colourful 2D side-scroller was released for the BBC Micro and BBC Master. It was part of a prolific run by Superior Software on the Beeb machines and this was arguably one of its biggest hits as players took control of Commander John Stryker, blasting enemies on a mission to deliver vital intelligence.

MAGIC MUSHROOMS

■ As a single-screen platformer with nine levels, *Magic Mushrooms* wasn't quite as trippy as the name would suggest but still a fine, sanitised clone of *Manic Miner*. The difficulty level was quite high, though – it was hard not to mistime jumps, get frustrated by moving platforms or be forever climbing the same ladders on the way to collect lots of mushrooms.

FELIX MEETS THE EVIL WEEVILS

■ The final part of the *Felix* trilogy was a standard platform game with the obligatory collectables. The hero had to put up with some Evil Weevils that had not only managed to get themselves into the factory but were out to kill. A little piece of trivia: the game was originally going to be called *Felix Meets The Weevils*.

» The cute owl symbol soon became iconic with owners.

» Ports allowed you to connect the BBC Micro up to a variety of different devices, including printers and similar peripherals.

the internet," says Steve. "And they were keen to have ways of distributing software to go with their programmes so we built a system that would pick up unused lines from Prestel, which is the old digital information overlaid on the analogue TV transmission. The unused spare lines could be used for delivering software to the machine. That was a box you could buy. The BBC Micro wasn't cheap, but you could pick up free software off the air."

The BBC wanted a lot of input-output devices. "One of the things that made the BBC Micro so useful was the number of things you could plug in – joysticks, analogue things, a wide range of peripherals. You could almost fill a desk with BBC Micro peripherals if you plugged them all in at once. That did seem to push the budget a bit," laughs Steve. But it sold. As we have seen, it shifted hundreds of thousands of units and Steve says everyone was surprised although there were some early indicators. "In 1982 we agreed to do a seminar at the Institution of Electrical Engineers in London, now the Institution of Engineering and Technology. They often run seminars and get 200 or 300 people there. At the BBC Micro seminar people booked coach trips from Birmingham, and three times the number of people arrived than could fit in the room. They had to send two-thirds of the people home because they couldn't fit them in because of health and safety. So we ended up doing the seminar two more times but, yes, that told us this machine was going to be big." Today, he says the legacy continues. Although Britain doesn't produce boxed computers today, the UK remains hugely influential in the global computer business. One of the spin-offs from Acorn was ARM, which is now responsible for powering 75 per cent of the devices connected to the internet. ARM is a huge global force.

> **The BBC Micro keyboard would really take a hammering**
> STEVE FURBER

"Last year more ARM processors shipped than Intel had shipped in its entire 45-year history. Cambridge Silicon Radio has a very strong position in Bluetooth too and there are several British companies that are highly influential in this game."

Things have also turned full circle for Steve. He is excited by the Raspberry Pi which has the backing of David Braben, the creator of the BBC Micro's most famous game, *Elite*. Like the BBC Micro, the Pi is being delivered to schools to help children to learn. Steve believes things went off track when children were "locked out" of computing by graphical user interfaces. "The major use of computers is in business for people to use for work, so that's why we don't expect people to get their hands dirty with code on a day-to-day basis," he notes. "But with the BBC Micro, you could turn the machine on and be in a programming environment. I still meet people who tell me that the Beeb was a career-changing event for them. That's what they used to started programming… The graphical user interfaces were not bad – not everybody wants to program… or [has] the mindset required to be reasonable programmers, so you have to deliver machines to different levels. But at the moment, too many people who would otherwise find programming very engaging are being turned off by PowerPoint and all of those other apps schools teach children to learn."

In the end, nine BBC branded computers were produced. The BBC Micro is considered as the catch-all term for the Model A, B, B+64, B+128, Master 128, and Master Compact. Subsequent models are considered as part of Acorn's Archimedes series.

"They were hugely exciting times," says Steve. "It was the first point in history where you could really start putting computers into everybody's hands. It was a great time to be involved."

BEYOND INFINITY – CUTE TO KILL

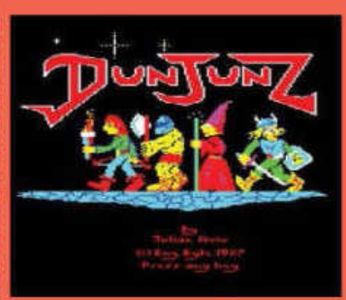
■ With a brilliant pulsating soundtrack, this game was Spectrum-like in appearance: the monochrome graphics didn't really do the BBC Micro justice even if they were well drawn. And yet get beyond that and into the realms of this single-player sci-fi shoot-'em-up platformer and you found you had a great game on your hands.

COSMIC CAMOUFLAGE

■ It is a clone of *Asteroids*, but *Meteors* sequel *Cosmic Camouflage* is an example of a solid release from Acornsoft. It was highly praised by *Electron User* magazine and it was bundled on a compilation with *Play It Again Sam 4*, *Frak!*, *Spellbinder* and *Grand Prix Construction Set*. Lots of spot effects pierce the eardrums as your red ship's ammo eats into yellow rock.

GALAFORCE

■ Superior Software's *Galaforce* by Kevin Edwards was a shmup that threw you straight into the action, your ship flailing left and right as you hammered the fire button to ward off invaders. You would get a brief respite of mere seconds before waves of more pink and green nasties came your way. Carnage and beauty and a relentless noise of fire to annoy the teachers.



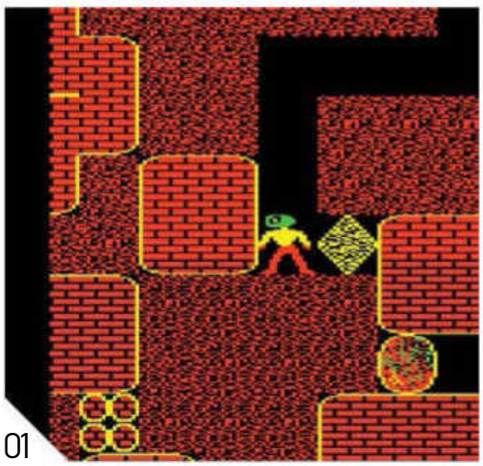
DUNJUNZ

■ Bug Byte's *Dunjunz* was a clone of *Gauntlet*, but it had real depth. Allowing up to four players, this was an action adventure involving a Ranger, Wizard, Barbarian and Warrior searching for the Chalice. The characters had their own quirks and use and this helped to notch up the gameplay from mere button bashing. A sterling effort by programmer Julian Avis.

BBC COMPUTER

PERFECT TEN GAMES

It may have sat proudly in schools around the country, but Acorn's BBC wasn't just an edutainment machine. There were plenty of amazing games available for it, as the following two pages prove



01

REPTON

» **RELEASED:** 1985
» **PUBLISHED BY:** SUPERIOR SOFTWARE
» **BY THE SAME PUBLISHER:** STRYKER'S RUN

01 *Repton* was a brilliant take on *Boulder Dash*, although it's far too methodical to be considered a true clone, that still remains as fresh as a day-old daisy. All the more impressive when you consider that it was put together by a 15-year-old coder. It's amazing to think that the classic *Repton* is now a staggering 29 years old. It seems like only yesterday that we were taking the mickey out of Chris Talbot because his parents had bought him a computer that the rest of us only used at school, while we all played on our Spectrums, CPCs and C64s. Still, Chris had the last laugh, as *Repton* was a great little puzzle game ideally suited to the BBC. It also proved rather popular, selling 125,000 copies between 1985 and 1990.

GRANNY'S GARDEN

» **RELEASED:** 1983
» **PUBLISHED BY:** 4MATION
» **BY THE SAME PUBLISHER:** FLOWERS OF CRYSTAL

02 It may have been seen as a simple educational title, designed to help children become accustomed to using computers. However, in retrospect, *Granny's Garden* was so much more than that. "Ha ha! Now I've got you! I will send you home at once." If you've never heard the previous chilling phrase, then you've obviously never experienced the terrors of *Granny's Garden*. Yes, the abrupt endings to your journey are as frustrating now as they were back in 1983. And those annoying dragons are still the bane of your life, but no other education title on the Beeb has been able to pair learning and fun so successfully. An utterly charming adventure gaming experience.

02

IMOGEN

» **RELEASED:** 1986
» **DEVELOPED BY:** MICRO POWER
» **BY THE SAME PUBLISHER:** KILLER GORILLA

03 *Imogen* is easily one of the BBC's most ambitious games, along with *Elite*, *Citadel* and *Exile*. It proved that 8-bit titles could have massive amounts of depth. Although it starts off looking like just another simple platformer, you soon discover that *Imogen* is littered with ingenious game design and extremely clever puzzles. You are rewarded with immense satisfaction once you've finally worked them out too. A simple icon system was also in place to handle specific tasks such as talking, while your wizard's ability to change into two distinct forms – a cat and a monkey – enhanced the clever puzzles no end and continually opened up the immense game world.

CYLON ATTACK

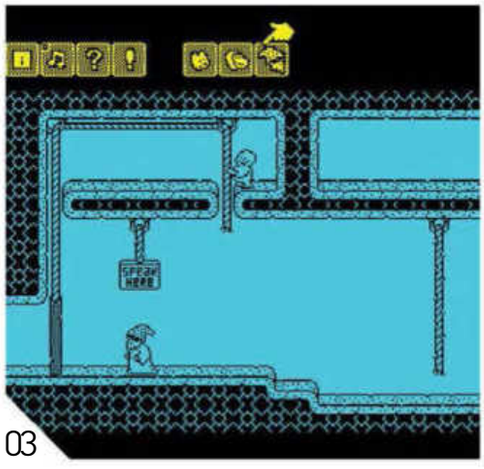
» **RELEASED:** 1983
» **PUBLISHED BY:** A&F SOFTWARE
» **BY THE SAME PUBLISHER:** CHUCKIE EGG

04 Few space shooters on the BBC – and there are plenty – match the majesty of this offering from A&F Software. *Cylon Attack* required you to fly through space, shooting down a set number of aliens, which looked suspiciously like some of the spaceships from *Battlestar Galactica*. Initially, docking at the end of each stage to refuel was sufficient. However, later levels would become so intense that extra trips to the filling station were required in order to withstand the vicious onslaught. Unfortunately, it lacks the huge level of depth that's found in *Elite*, but if you're all about the blasting, then *Cylon Attack* offers a far more suitable alternative.

MR EE

» **RELEASED:** 1984
» **PUBLISHED BY:** MICRO POWER
» **BY THE SAME PUBLISHER:** ADVENTURE

05 There have been countless conversions of the classic *Mr Do!* on a variety of systems, ranging from the SNES to the Neo Geo. But hardly any of them have managed to capture the magic of the original arcade game. Amazingly, though, Adrian Stephens did it successfully when he created *Mr Ee*. His clone is a scarily accurate version of Universal's original. Armed with no more than a power ball, Mr Do… sorry, Mr Ee… must scuttle around the mazes either collecting a set number of cherries or killing all the monsters to continue. It's not arcade perfect, but it's arguably the greatest conversion of the game that's available.



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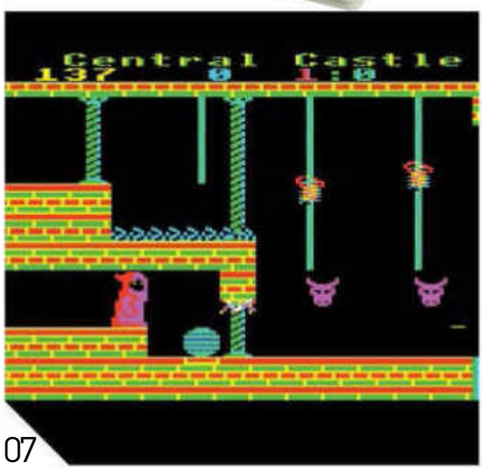

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08

EXILE

» **RELEASED:** 1988
» **PUBLISHED BY:** SUPERIOR SOFTWARE
» **BY THE SAME PUBLISHER:** CODENAME: DROID

06 When we consider the amount of scorn that the BBC receives on the Retro Gamer forum, it makes us wonder if the haters have ever actually played on one outside of school. Even the briefest play of *Exile* is enough to know that it's something very special. And as your spaceman infiltrates the planet Phoebus, it continues to impress, mainly due to its superb physics, massive game world and clever game mechanics. With its beautiful looking visuals, masterful use of sound and those aforementioned physics, *Exile* is quite possibly one of the most complex adventures that the BBC ever received. A true classic.

CITADEL

» **RELEASED:** 1985
» **PUBLISHED BY:** SUPERIOR SOFTWARE
» **BY THE SAME PUBLISHER:** PALACE OF MAGIC

07 Similar to *Imogen, Citadel* proves that first looks can definitely be deceiving. Again, it is a title that appears to be nothing more than a simple platformer. While there are plenty of platforms and objects to jump on and over, *Citadel* is actually a sprawling – it's over 100 screens in size – graphical adventure. Featuring plenty of devious puzzles that require a fair amount of head-scratching in order to solve them, it'll certainly keep you intrigued. With its bold, bright visuals, pre-game digitised speech and the opportunity to play as either a girl or boy, *Citadel* stands proudly apart from its BBC peers and remains one of the machine's greatest moments.

PLANETOID

» **RELEASED:** 1982
» **PUBLISHED BY:** ACORNSOFT
» **BY THE SAME PUBLISHER:** SNAPPER

08 Another great clone. If you're unable to tell by looking at the accompanying screenshot – why are you even reading this? – *Planetoid* was Acornsoft's answer to Eugene Jarvis's *Defender,* and pretty good it was too. Faster than an amphetamine-fuelled cheetah, *Planetoid* was an intense conversion that looked the business and boasted the gameplay to match. It was Acornsoft's second arcade conversion and instantly proved a hit thanks to those fast-moving visuals and its challenging gameplay. It was originally called *Defender,* but the name was dropped due to legal reasons. Thankfully the same thing didn't happen to the actual game…

09

LORDS OF TIME

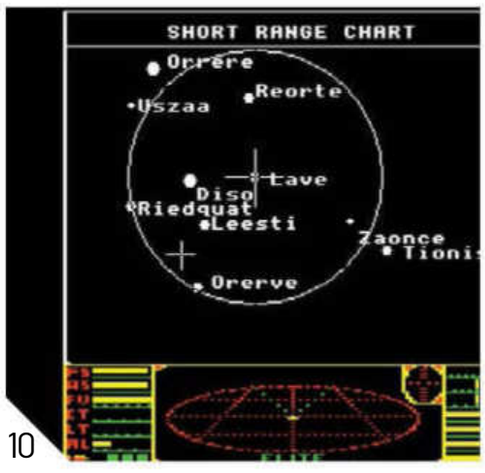
» **RELEASED:** 1983
» **PUBLISHED BY:** LEVEL 9
» **BY THE SAME PUBLISHER:** DUNGEON ADVENTURE

09 There are a large number of brilliant text adventures on the BBC, but this is arguably one of the best. It features a band of evil time lords – no relation to *Doctor Who* – who are doing their best to alter and change history, so Father Time has asked you to stop them. Set across a variety of different time periods, *Lords Of Time* is a compelling adventure game that will cause your brain to go into overload as you try to follow the constantly twisting plot and solve its intricately designed puzzles. With its well-written story, clever parser and crafty puzzles, *Lords Of Time* is a wonderful example, proving that you don't need elaborate visuals to tell an entertaining story. If you do plan on picking it up, then, make sure that you track down Level 9's *Time And Magik* compilation, as it also features *Red Moon* and *The Price Of Magik*.

ELITE

» **RELEASED:** 1984
» **PUBLISHED BY:** ACORNSOFT
» **BY THE SAME PUBLISHER:** LABYRINTH

10 Oh, come on! Did you really think we'd do a BBC top ten and not include the mighty *Elite*? We'd have been hung up and lynched by BBC owners everywhere. Created by David Braben and Ian Bell – at the time, two undergraduates from Jesus College in Cambridge – *Elite* is still seen by many as the definitive space trading game, a title it arguably deserves. Braben and Bell's game is absolutely huge in scope, and its open-ended gameplay and advanced-looking visuals soon meant that it was ported to a staggering variety of home systems and consoles. Even now, homebrew updates continue to get made, and Braben is insistent that an *Elite IV* is definitely on the way. Until that actually happens, though, you'll just have to make do with one of the greatest games to ever appear on Acorn's humble machine.



10

Year Released: 1982

Original Price: £125/$202 (£175/$285 48k)

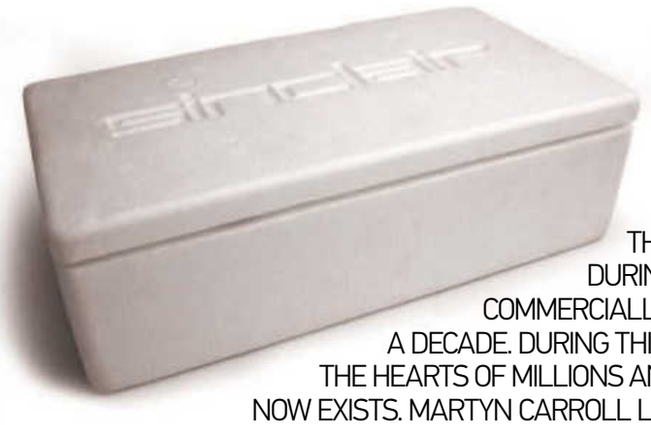
Buy it now for: £10+/$16.20

Associated Magazines: *Crash*, *Your Sinclair*, *Sinclair User*, *Sinclair Programs*, *Sinclair Answers*, *ZX Computing*

Why the Spectrum was great… Owning a Spectrum was like being part of a secret club. Like-minded gamers who knew what it meant to type out hundred-line pokes, wait ten minutes for *The Hobbit* to load, and had mastered the art of tape-to-tape copying

sinclair

ZX SPECTRUM



THE HUMBLE SINCLAIR SPECTRUM WAS SMALL AND UNASSUMING, YET IT MANAGED TO CONQUER THE UK COMPUTER MARKET DURING THE EIGHTIES AND WAS COMMERCIALLY VIABLE FOR MORE THAN A DECADE. DURING THIS TIME THE MACHINE WON THE HEARTS OF MILLIONS AND A THRIVING FAN SCENE NOW EXISTS. MARTYN CARROLL LOOKS BACK AT THE LITTLE COMPUTER THAT OVERCAME THE ODDS AND MADE IT BIG

Having made a name for himself in the electronics field, releasing everything from pocket calculators to tiny televisions, Sir Clive Sinclair turned his entrepreneurial gaze toward computers, and in 1978 he launched the MK14. It was sold in kit form and proved to be little more than a programmable calculator, but sales of over 50,000 convinced Sir Clive that there was a hunger for computers aimed at hobbyists.

In early 1980, Sinclair released the ZX80, a diminutive home computer with a touch-sensitive membrane keyboard and just 1K of memory. It, too, was sold in kit form for £79, but crucially a pre-built version was available for £99, opening up the world of computers to more general home users who weren't prepared to whip out a soldering iron and start bolting bits together. However, it was the ZX80's successor, the enhanced and improved ZX81, that really kick-started the home-computing craze in the UK. Released in March 1981 and available for either £49 (kit form) or £69 (pre-built), the ZX81 clocked up sales of more than 400,000 in a little over 12 months. Sinclair had devised the ultimate entry-level computer and the British public were buying into it.

But Sir Clive wasn't about to stand idly by, counting the cheques and postal orders that were pouring into his hectic mail order department. The industry he'd had a hand in creating was moving fast, very fast, and competitors were queuing up for a piece of the pie. To compound matters, the cost of components and memory was tumbling all the time, allowing more manufacturers to tap into the low-cost computer market that belonged almost exclusively to Sinclair. Plus, there was the small matter of Acorn beating Sinclair to a lucrative BBC contract that would ultimately see Acorn computers installed in classrooms up and down the country. It was time for Sir Clive to dig in and fight his corner.

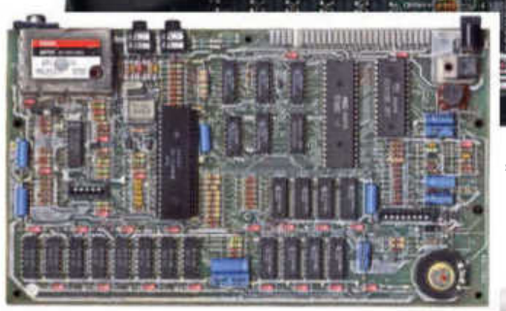
To this end, Sinclair began to mastermind the ZX82 and ZX83 models. The former would supersede the ZX81, adding sound capabilities, colour graphics and a moving keyboard to the mix, while the latter was hoped to seize control of the small business market.

The eventual fortunes of the two machines couldn't be more different. The ZX82 was renamed the ZX Spectrum and went on to

Tech specs

A trusty Zilog Z80A chip running at 3.54MHz powered the Spectrum. The machine was available with either 16K or 48K of RAM, and Sinclair BASIC was provided on a 16K ROM chip. The video display could output a total of 24 lines of text with 32 character positions and 192x256 pixels for high-resolution graphics. The Spectrum had very few external connectors. There was TV out, ear and mic ports to connect a tape recorder, as well as a 28-pin expansion slot for connecting a wide range of peripherals, including joystick interfaces, printers and Sinclair's very own Microdrive storage system.

Sinclair's Richard Altwasser, who had previously helped develop the ZX81, designed the Spectrum's hardware. The ROM code was written almost entirely by Steve Vickers of Nine Tiles Information Handling Ltd – a small portion was adapted from the original ZX80 ROM code written by John Grant – while Sinclair designer Rick Dickinson created the casing and infamous 'dead flesh' keyboard.



» The Spectrum was a fairly simple machine, with no dedicated graphics hardware and limited expansion options. (photo: Bill Bertram)

» Released in April 1982, the Spectrum went on to become the UK's bestselling home computer.

become Britain's bestselling home computer. The ZX83, meanwhile, was launched as the Sinclair QL (Quantum Leap) in 1984 and failed to make an impression as a business machine. The QL is now regarded as an embarrassing footnote in the Sinclair story, second only to the disastrous C5 motorised tricycle – although, to be honest, the C5 is probably more of an epitaph than a footnote.

RAINBOW BRIGHT

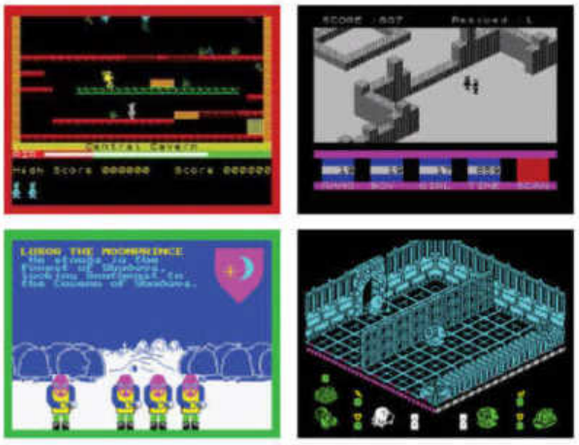
In April 1982, long before the QL and C5 tarnished Sir Clive's name, the Spectrum was launched in a blaze of publicity at the Earls Court Computer Show. Shortly after its unveiling, an advert for the new computer began to appear in specialist computer magazines. It was typically text-heavy and very Sinclair, hammering home each of the machine's 'astonishing' new features. Topping the list of key features was the Spectrum's high-resolution colour graphic capabilities. Whereas the ZX80/81 were monochrome machines, the Spectrum lived up to its name by outputting seven colours plus black. Sound support was also included, with the new BEEP command allowing you to control pitch and duration. The advert went on to reveal details of a full-size moving keyboard that would replace the plastic membrane used on the ZX80/81. To seal the deal, the Spectrum came with a very generous amount of RAM: 16K as standard, with an expanded 48K version also available.

But what about the price? Would Sir Clive be able to continue his noble aim of delivering affordable computers to the masses? The answer was a resounding yes. The 16K model was available for just £125/$202, and for £50/$81 more you could take home the 48K version. Compare that to the Commodore 64, which launched in the UK at £299/$484. Or even better, the BBC Model B, which would lighten your pockets by £399/$646. Sinclair had soundly undercut the competition and looked to have sewn up the market once again.

The advert posed a problem, however, as the Spectrum simply sounded too good to be true. All those features for such a competitive price? There had to be a catch. But before anyone could see the machine and make up their own minds, they had to suffer Sinclair's famously unreliable mail order department. Customers were advised to allow up to 28 days for delivery and yet those who'd placed their orders early typically had to wait between 12 and 16 weeks for their shiny new machines to arrive. During the latter half of 1982 Sinclair was reportedly manufacturing 20,000 Spectrums a month and was still unable to meet the huge demand. It didn't help that a quantity of machines were earmarked for overseas markets following a steady European roll out. Things did ease somewhat by early 1983, mainly because the Spectrum was made available though WHSmith and other high street chains.

RUBBER SOUL

The advert flagged the Spectrum as a "powerful professional's computer", but in several respects the new computer was very similar



» Great games that made a splash on the Speccy. From left to right: *Manic Miner, Ant Attack, Lords Of Midnight* and *Head Over Heels.*

to its more primitive forebears. It's believed that this was intentional on Sir Clive's part as a means of speeding up production and keeping costs down.

At first glance it was obvious that Sinclair had performed another miracle of miniaturisation. The Spectrum was just 23cm wide, 14cm long and 3cm deep. The most noticeable new addition was the small rubber keys that poked through the sleek black casing. A single sheet of spongy rubber was used and by pressing down on a key, the contact underneath was closed and then the key sprung back to its original position. It was preferable to the ZX81's touch-sensitive keyboard – and probably just as cost effective – but to call it a 'full-size, moving-key keyboard' was a little optimistic.

The actual keyboard layout was almost identical to the one that debuted on the ZX80. There were 40 keys in total, compared to an average of 60-70 keys found on computers with proper typewriter-style keyboards. The updated Sinclair BASIC retained its one-touch keyword entry system, where a typical key could be used to enter five different commands depending on which shift keys it was pressed in conjunction with. This input method baffled beginners and proved far too restrictive for more seasoned users. To complicate matters, a number of new BASIC commands were introduced, taking the total number of keyboard functions to a finger-bending 193. In some cases it would be quicker to manually type the command than press the required series of keys. Again, the advert was slightly wide of the mark with its "one-touch" keyword entry claims.

What about the new colour capabilities? Well, Sinclair actually undersold the Spectrum in this respect. There were eight basic colours, yet the BRIGHT command could be applied to every colour except black, making 15 in total. Coupled with the surprisingly high screen resolution (256x192 pixels), the Spectrum's display capabilities could rival machines retailing at twice the price. There was a drawback, however: to save memory, each 8x8 pixel square could only display a foreground and background colour. As a result, in games where a character sprite of one colour passed over a background of a different colour, the colour of the sprite would bleed into the background. This so-called colour clash effect was unique to the Spectrum, much to the amusement of Commodore 64 and Amstrad CPC owners. We can now look back and say that colour clash gave Speccy games a certain charm, but back in the day such wistful reasoning would never have settled those playground spats.

Rather than blast sound through your TV set, the Spectrum featured a small internal speaker. It was affectionately known as the 'beeper' because it… well, beeped, and that was about it. You could control the length and tone of the beep but not the volume, which was a shame because the speaker was barely audible in the first batch of models off the production line – later versions corrected this problem to some extent. Worse still, the speaker would temporarily freeze the processor while it played a sound. Considering what they had to work with, it's amazing that programmers managed to add sound effects and music to games at all. Even more remarkable is that musicians like Martin Galway and Tim Follin developed routines that simulated multiple sound channels. It was also possible to play sampled speech through the speaker, albeit in very crude fashion.

PLAY THE GAME

Despite these technical shortcomings, the Spectrum quickly generated a huge range of independent software. Games were incredibly popular and unofficial versions of arcade classics such as *Space Invaders, Pac-Man* and *Breakout* quickly flooded the market. Software houses that had sprung up to support the ZX81 were drawn to the new machine, attracted by its colour graphics, relatively huge memory – the 48K version, at least – and rapidly growing user base.

Bug-Byte, Mikro-Gen, Quicksilva, Imagine, Ocean and dozens of other developers made a name – and a small fortune – for themselves during these early years, but one company in particular stood out from the crowd. Ashby Computer and Graphics Ltd, then operating under the trade name Ultimate Play the Game – now known as Rare – set the whole scene alight with a series of stunning Spectrum games. Its first four releases – *Jetpac, Pssst, Cookie* and *Tranz Am* – became bestselling classics that other developers could only dream of, and yet they all ran on a standard 16K Spectrum. Ultimate's 48K games were bigger and better, with titles like *Atic Atac, Sabre Wulf* and *Knight Lore* whipping the computer press into a dribbling frenzy. Other groundbreaking games that debuted on the Spectrum before being ported to different machines included Matthew Smith's *Manic Miner*, Sandy White's *Ant Attack*, Mike Singleton's *Lords Of Midnight* and Jon Ritman's *Head Over Heels*, among many others. The Spectrum really was home to an embarrassing number of great games.

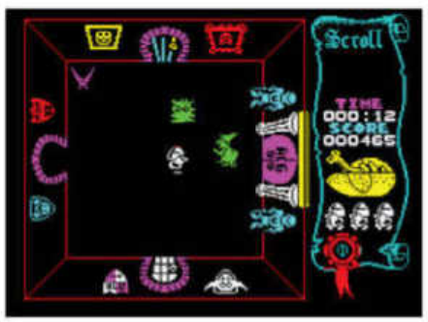
It was this catalogue of games, as wide as it was deep, that pushed sales of the Spectrum through the roof. In the run-up to Christmas 1983, over 50,000 machines were sold every month in the UK. As the cost of components fell, Sinclair fuelled demand further by slashing the price of the Spectrum. The 16K model was reduced to just £99, nestling just under the psychological price barrier of £100/$162, and the 48K version retailed at a very attractive £129/$209.

This was the Spectrum's golden period, but sadly it didn't last much beyond 1984. In October of that year Sinclair released the Spectrum+, which, rather than the souped-up Speccy that buyers and retailers had hoped for, merely added a moving QL-style keyboard. Similarly, the long-awaited Spectrum 128, which received a low-key UK launch in February 1986, was essentially a Spectrum+ with 128K memory, a new three-channel sound chip and an updated version of Sinclair BASIC. These updates were cautious, lazy even, perhaps because by this time, Sinclair's focus and finances had shifted almost exclusively to the doomed C5 project. In summer 1986 Amstrad acquired Sinclair's computing arm and went on to create Spectrum-based clones of its popular CPC range. Amstrad's +2 and +3 models were marketed as games machines and certainly attracted new buyers, but those who'd fallen in love with the ZX line would sadly never see a true successor to the Spectrum. Perhaps if Sinclair had continued to attack the competition as aggressively as it had done during the early Eighties, then a 16-bit computer capable of undercutting the Commodore Amiga and Atari ST might have been a distinct possibility. Nevertheless, a place in computing history is unreservedly set aside for the not-so-humble Sinclair Spectrum.

The wonderful World of Spectrum

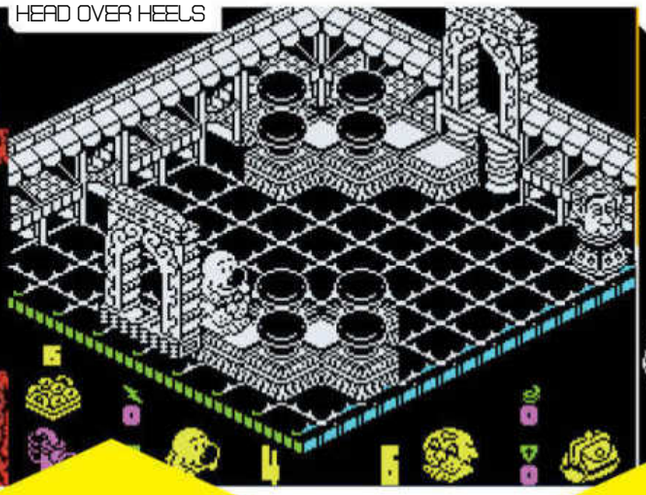
Speccy fans are fortunate in that one of the web's best retro sites is dedicated to the machine. World of Spectrum (**www.worldofspectrum.org**) contains information on more than 12,500 games, with screenshots, links to reviews and, in the vast majority of cases, downloadable ROMs that can be played on modern platforms via emulation. Don't let the presence of ROMs deter you, though: webmaster Martijn van der Heide actively seeks permission from publishers to offer the games freely on the site, and will remove games if it's requested by an IP owner.

We spoke to Martijn back at the end of 2005 as World of Spectrum celebrated its 10th birthday and, at the time, we asked if he was planning to celebrate the anniversary. "Well, I've added a smallish new section to the site, covering the Timex versions of the Spectrum," he replied in typically modest fashion. But what about the long-term future of WoS? "It will take several more years to update the databases, so I hope to provide a more complete history over time. Other than that, we are aiming to provide many more screenshots. And when more people have broadband internet we'll shift to a more glossy, interactive environment." Nearly 10 years later, World of Spectrum is still one of the best Speccy sites on the web.



PERFECT TEN GAMES


STARQUAKE


HEAD OVER HEELS


ATIC ATAC

STARQUAKE

» **RELEASED:** 1985
» **PUBLISHED BY:** BUBBLEBUS SOFTWARE
» **CREATED BY:** STEVE CROW
» **BY THE SAME AUTHOR:** FIRELORD, WIZARD'S LAIR

Steve Crow's unbelievably addictive flick-screen platformer mixes pure playability with crisp sci-fi graphics and frantic puzzle solving. It's one of those games where every aspect has been polished to gleaming perfection, whether it's the mini-Mastercards that open any doors (geddit), the ability to summon temporary platforms beneath you at will or the handy passworded teleporters that make light work of navigating the immense caverns. However, it's the sheer speed of the thing that makes *Starquake* such an exhilarating experience on the Spectrum. Crow's devious mazes require serious cunning to traverse, and it's all kept at a feverish pace thanks to a constant supply of energy-sapping enemies. A must for every Spectrum aficionado, *Starquake* is pure 48K bliss.

ANT ATTACK

» **RELEASED:** 1983
» **PUBLISHED BY:** QUICKSILVA
» **CREATED BY:** SANDY WHITE
» **BY THE SAME AUTHOR:** I OF THE MASK, ZOMBIE ZOMBIE

Few games in the early Eighties were as atmospheric and downright terrifying as *Ant Attack*, the first real home videogame to be viewed from an isometric perspective. The ghostly monotone graphics only served to intensify the desolation of the abandoned walled city of Antescher and made the sudden appearance of the titular arthropods even more shocking. Typical games are spent tear-arsing around the tomb-like structures, desperately following the green or red signals from your scanner to locate each lost soul. Sudden ant attacks are agile and persistent and require a dash to high ground or a well-aimed grenade to avoid. One of the few games to actually allow you to choose your sex, *Ant Attack* is still a prime example of a simple concept well implemented and burnt into the minds of a generation of gamers.

HEAD OVER HEELS

» **RELEASED:** 1987
» **PUBLISHED BY:** OCEAN SOFTWARE
» **CREATED BY:** JON RITMAN, BERNIE DRUMMOND
» **BY THE SAME AUTHOR:** NAMTIR RAIDERS, BATMAN, MATCHDAY I & II, MONSTER MAX

Pre-1987, Ritman and Drummond had toyed with the likes of the similarly isometric *Batman*. But it was with *Head Over Heels* that the duo truly achieved greatness. It's difficult to describe the impact this game had when it was released; surpassing every other 3D platformer in an instant with its relentless assault of clever ideas, kitsch graphics and surefooted game design. Ritman is a master of Rubik's Cube-style puzzles and nearly every room requires lateral thinking and more than a dash of fingertip dexterity. Dividing the *Head Over Heels* characters' abilities, so that they can only progress so far as separate entities and must literally join forces to complete the game, is a masterstroke and typical of the ingenuity that seeps from the game's every pore.

THE GREAT ESCAPE

» **RELEASED:** 1986
» **PUBLISHED BY:** OCEAN SOFTWARE
» **CREATED BY:** DENTON DESIGNS
» **BY THE SAME AUTHOR:** ENIGMA FORCE, SHADOWFIRE, WHERE TIME STOOD STILL, COSMIC WARTOAD

In the year of the Space Shuttle Challenger disaster, Spectrum owners were treated to one of the finest isometric adventures ever to appear on Sir Clive's rubber marvel. *The Great Escape* is set in a Colditz-style POW camp during WWII and the objective is to escape before your morale is crushed and without alerting the guards and getting thrown in the cooler. What makes the game so compelling is the attention to detail and a real sense of confinement. The graphics are finely crafted, and clever little touches like the morale flag, the searchlights at night, the hidden tunnels, and the way you default to the camp routine if you stop playing make the game a true classic. Just look at it.

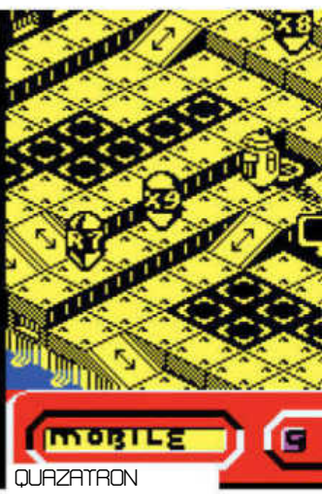
ATIC ATAC

» **RELEASED:** 1983
» **PUBLISHED BY:** ULTIMATE
» **CREATED BY:** TIM STAMPER, CHRIS STAMPER
» **BY THE SAME AUTHOR:** LUNAR JETMAN, SABRE WULF, ALIEN 8, GUNFRIGHT, KNIGHTLORE

No 'perfect ten' list for the Spectrum would be complete without a solid showing from the Stamper brothers and their superb Ultimate label. *Atic Atac* makes it into the list by a narrow margin – so many Ultimate games are outright classics – because it set the scene for Ultimate to dominate the Spectrum. Playing as Knight, Wizard or Serf, *Atic Atac* is an overhead perspective arcade adventure set over 200+ rooms in a gothic castle populated by endless minions, as well as Frankenstein, Quasimodo, the Mummy and, of course, Dracula. It's fast, it's challenging, and even today it provides hours of entertainment.

ANT ATTACK

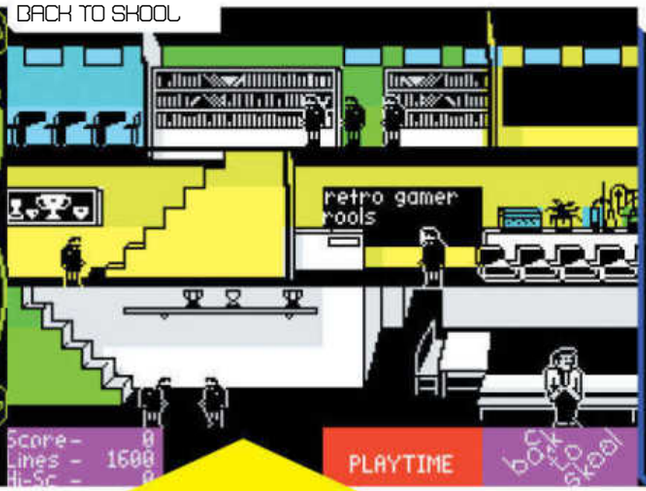
THE GREAT ESCAPE



QUAZATRON

sinclair
ZX Spectrum

A magnificent machine like the Speccy deserves a well-thought-out and balanced appreciation of the ten best games. Any top ten is going to be entirely subjective and, of course, open to passionate debate, and that's what we are all about: like-minded gamers indulging in sheer nostalgia. Bring it on



BACK TO SKOOL

REBEL STAR

QUAZATRON

- **RELEASED:** 1986
- **PUBLISHED BY:** HEWSON CONSULTANTS
- **CREATED BY:** STEVE TURNER
- **BY THE SAME AUTHOR:** SPACE WARS 3D, AVALON, DRAGONTORC, RANA RAMA, ZYNAPS

We're going out on a bit of a limb here because Steve Turner's *Quazatron* is not generally considered one of the top ten Spectrum games, but hey, it's our list, right? So what if it stole C64 *Paradroid's* innovative 'grappling' system, and the lifts to other levels are kinda similar? *Quazatron* certainly carved a niche for itself. You can't deny the clever use of colour, the detail on the droids and the *Marble Madness*-inspired gameplay. Where *Quazatron* scores highly is the player's desire to battle and strip the best parts from your fellow robots, boost their own abilities and then wipe each level clean before descending to the next. An undeniably magnificent game.

BACK TO SKOOL

- **RELEASED:** 1985
- **PUBLISHED BY:** MICROSPHERE
- **CREATED BY:** DAVID REEDY
- **BY THE SAME AUTHOR:** SKOOL DAZE, WHEELIE, CONTACT SAM CRUISE

Together with the original *Skool Daze, Back To Skool* represents bedroom programming at its best – quintessentially British, packed with detail and eminently playable, how could this game fail to appeal to its audience of rowdy teenagers? Allowing the player to individually name the cast of characters was Reedy's masterstroke because it meant your could personalise and relate to them instantly. What makes *Back To Skool* such a great Spectrum game, though, is the way it plays and the *St Trinian's*-esque details, like riding the bike through the school, shooting water pistols, releasing the mouse to make the girls jump, and, of course, avoiding the cane of the sinister Mr Whacker. Fond, fond memories…

JET SET WILLY

- **RELEASED:** 1984
- **PUBLISHED BY:** SOFTWARE PROJECTS
- **CREATED BY:** MATTHEW SMITH
- **BY THE SAME AUTHOR:** MANIC MINER

The follow-up to *Manic Miner* is set in a sprawling mansion – bought with the profits from mining, no doubt – and is both exciting and infuriating in equal measure. Gaming legend Matthew Smith showers you with extra lives to help you collect the 83 flashing objects – and you need them, as the difficulty level in rooms like the Banyan Tree, Out on a Limb, and the Forgotten Abbey is insane! Smith's *Python*-inspired characters and unforgiving gameplay has sealed *JSW's* place in Spectrum history and led to hundreds of clones, the best of which is probably Elite's *Rollercoaster.*

REBEL STAR

- **RELEASED:** 1986
- **PUBLISHED BY:** FIREBIRD
- **CREATED BY:** JULIAN GOLLOP
- **BY THE SAME AUTHOR:** CHAOS, LASER SQUAD, REBEL STAR 2, REBEL STAR RAIDERS

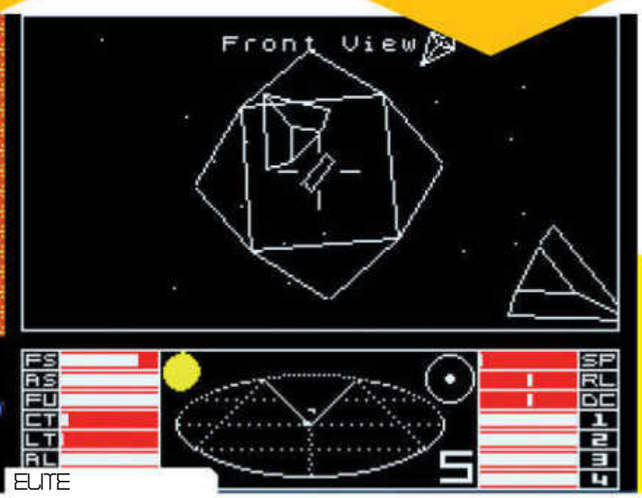
Just pipping Gollop's earlier masterpiece, *Chaos,* into our top ten, *Rebel Star* is a turn-based sci-fi strategy game in which you control either of two opposing forces in a moonbase battle. There was also a two-player game on the flip-side of the tape, and all for £1.99! What seals *Rebel Star's* greatness is the pure strategy and cunning that must be employed to succeed; making the best of your forces' abilities and different armaments. Julian Gollop, where are you now?

ELITE

- **RELEASED:** 1985
- **PUBLISHED BY:** FIREBIRD
- **CREATED BY:** TORUS
- **BY THE SAME AUTHOR:** GYRON

No top ten could be complete without the obligatory conversion of the ultimate space trading game, and this Torus version remains faithful to Bell and Braben's original vision while at the same time adding some enhancements. That's if you could actually play the damn thing, though. *Elite* was the first ever game to utilise the Lenslock anti-piracy thingy, which managed to frustrate legitimate customers and pirates in almost equal measures. Fortunately *Elite* was worth it, with an ultra-smooth and flicker-free frame rate, impressive magenta explosions, and, for the 128K, at least, three special missions.

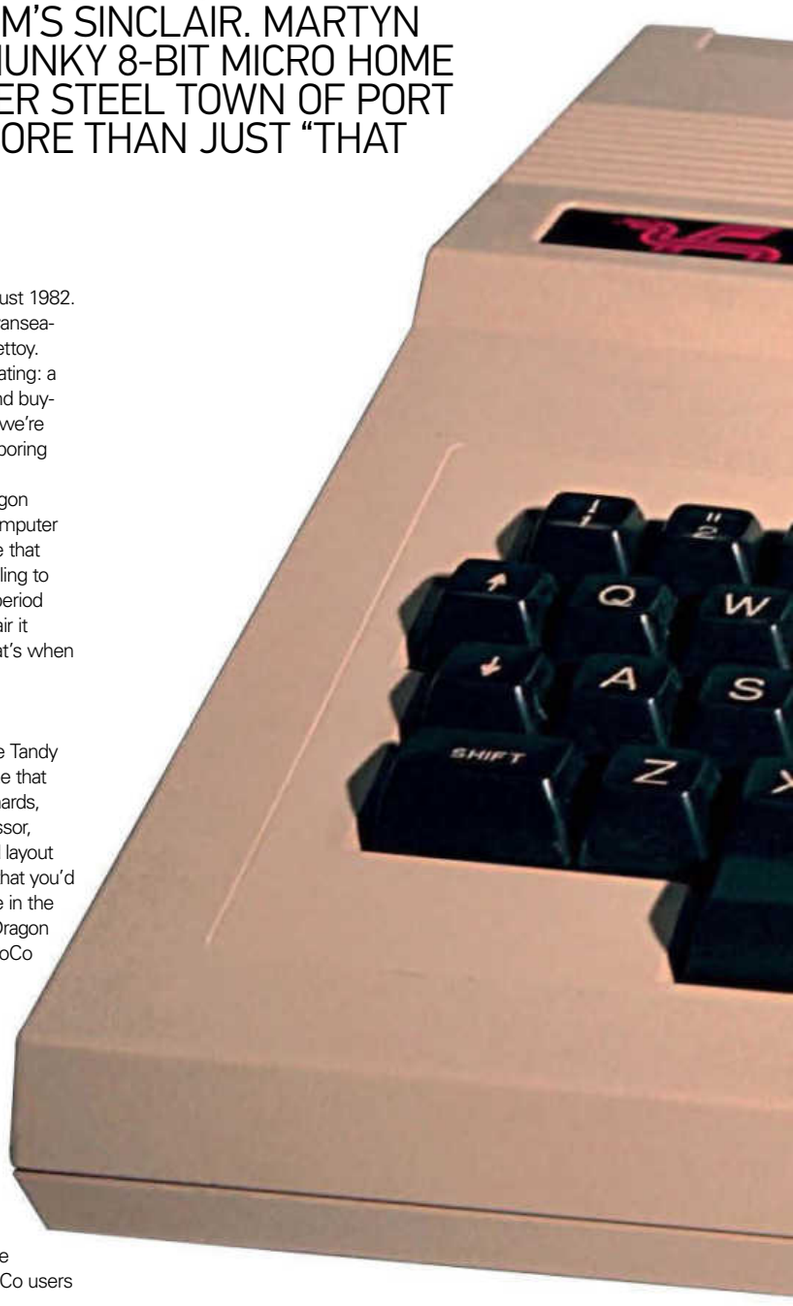
JET SET WILLY



ELITE

DRAGON 32

NOT JUST A COMPUTER TO PLAY GAMES ON, THE PROFFESIONAL-LOOKING DRAGON 32, COMPLETE WITH THE BEST VERSION OF MICROSOFT BASIC, WAS TO RIVAL SPECTRUM'S SINCLAIR. MARTYN CARROLL CHARTS THE HISTORY OF THIS CHUNKY 8-BIT MICRO HOME COMPUTER, MANUFACTURED IN THE FORMER STEEL TOWN OF PORT TALBOT, AND DISCOVERS WHY IT'S MUCH MORE THAN JUST "THAT WELSH COMPUTER"...



DRAGON DISCOURSE

A sure-fire way of pulling computer users together and creating a community is with a dedicated magazine, and for Dragon users there was, well, *Dragon User.* Published by Sunshine Publications and launched in April 1983, the monthly magazine featured a healthy mix of news, product reviews, regular columns, features, technical help and – that publishing phenomenon – type-in listings. The magazine also interviewed key people, including Dragon managing directors Tony Clarke and Brian Moore, but being an independent title it never felt the need to pay lip service to the company. With no direct competition, *Dragon User* was a popular magazine with average monthly sales of 36,000 during its first two years. Not surprisingly, however, the readership slipped and in June 1986 Sunshine announced that the magazine would only be available on a subscription basis. It was finally dropped in May 1988, only for Dragon software publisher Bob Harris to pick up the reins and personally oversee seven more issues. It was finally laid to rest in January 1989, having served the Dragon community for the best part of six years.

The Dragon 32 made its UK debut in August 1982. It was a product of Dragon Data, the Swansea-based subsidiary of toy manufacturer Mettoy. The rise and fall of Dragon Data is fascinating: a story of success and struggle, buy-ins and buy-outs. Our focus is the machine itself, so we're not going to get bogged down in all the boring corporate details.

In short, Mettoy was struggling financially and formed Dragon Data to diversify its business. It realised that the UK home computer market was about to explode and was shrewd enough to see that Sinclair, Acorn, Oric and the other manufacturers were struggling to meet the huge demand. Christmas 1982 would be a critical period and if Mettoy wanted to wrestle the market share from Sinclair it needed to act fast and have a challenger waiting ringside. That's when it came up with a cunning plan.

ANOTHER CUP OF COCO

It's reasonably well known that the Dragon 32 is a clone of the Tandy Color Computer (or CoCo as it's commonly known), a machine that achieved success in the US. They share most of the same innards, being based around the Motorola 6809 family of chips (processor, video circuitry and memory management). Even the keyboard layout and various ports are essentially the same. They're so similar that you'd assume Dragon Data simply licensed the CoCo design for use in the UK – but you'd be wrong. What actually happened was that Dragon 'borrowed' the Motorola chipset configuration on which the CoCo was based and then made a few tweaks to differentiate the Dragon 32.

The changes made not only prevented the Dragon 32 from being a complete clone of the CoCo, but rather audaciously they served to improve on Tandy's two-year-old machine. Early CoCos shipped with as little as 4KB of RAM, whereas the Dragon 32 came with 32KB of RAM as standard (hence the name). This allowed Dragon to licence Microsoft Extended Color Basic – the out-of-the-box CoCo made do with Microsoft's standard Color Basic interpreter. The serial port of the CoCo was replaced with a parallel interface for speedy, standardised printing. And externally, the Dragon 32 featured a deluxe fully moving keyboard while CoCo users had to cope with a cheap calculator-style keyboard.

"THE CHANGES MADE NOT ONLY PREVENTED THE DRAGON 32 FROM BEING A COMPLETE CLONE OF THE COCO, BUT THEY SERVED TO IMPROVE ON TANDY'S TWO-YEAR-OLD MACHINE"

DRAGON 32

Year released: 1982

Original price: £175/$283

Buy it now for: £5-£10/$16 loose, £20-£30/$48 complete

Associated magazines: *Dragon User, The Rainbow (CoCo)*

Why the Dragon 32 was great… The Dragon was an excellent general-purpose machine that catered for different types of user. Beginners were offered an excellent introduction to programming thanks to the inclusion of Microsoft BASIC, while serious users could purchase a wide range of utility and productivity software. Johnny Gamer, meanwhile, had access to hundreds of arcade and adventure titles. The Dragon could pretty much do it all

DRAGON 32

» Written by Richard Wadman, Dragon's marketing director, the programming manual was easy to follow and genuinely useful.

So the Dragon soundly out crafted its US cousin, but how did it compare with the other 8-bits that were clamouring for UK market share? We can ignore the Commodore 64 for the time being, because while it was released at the same time as the Dragon, its initial retail price was £299/$485. The Dragon's battleground was the cutthroat sub-£200/$324 sector, which, in late-1982, was firmly under Sinclair's control. The Spectrum 48K and the Dragon initially retailed for the same price (around the £175/$284 mark), but stick them side by side and it's hard not to smile – the Speccy really does look like a child's plaything next to the Dragon, with its robust cream case and professional typewriter style keyboard. Drop a Dragon on your foot and it would hurt, whereas a Spectrum would probably bounce right off. Not only did the Dragon look like a proper computer, but it had all the ports and connectors you'd expect. In addition to the parallel printer interface there was a colour monitor socket, twin joystick ports and a slot for plugging in cartridge software. Like the Spectrum, the vast majority of software was available on cassette and loaded via a third-party tape player, although an official Dragon 5.25-inch disk drive was launched in 1983.

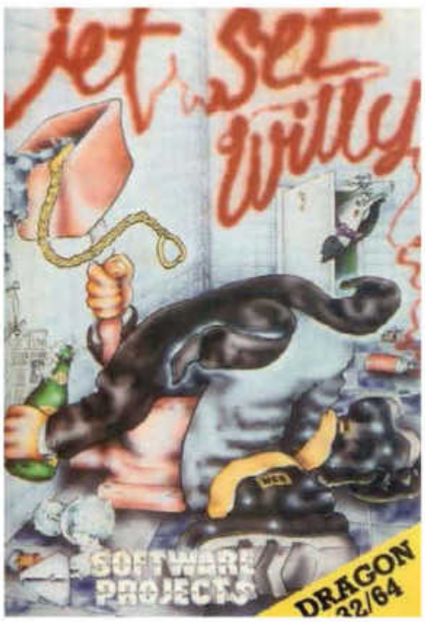
While the Dragon couldn't match Spectrum's generous 48K memory, it boasted one of the best versions of BASIC available. Microsoft BASIC was quick, command rich, user friendly and perfect for beginners. It was clearly superior to the Spectrum's non-standard, nonsensical one-touch BASIC system, and was perhaps only bettered by BBC BASIC. Programming tasks were also aided by the Dragon's CPU, the Motorola 6809E. The 8-bit processor exhibited some 16-bit traits and could reasonably out-power the popular Zilog Z80 and MOS 6502 CPUs that were inside almost every other machine available at the time. However, it was the 6809's individuality – promoted as a unique selling point – that would ultimately clip the Dragon's wings.

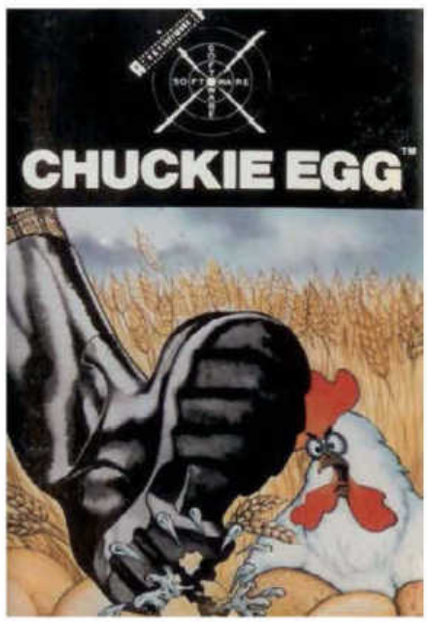
PLAY THE GAME

Now, despite what the stuffier computer magazines of the day claimed, most of us weren't buying computers to spin data on a spreadsheet or drive a home business database. The entertainment market was massive and more often than not it was the quality and quantity of available games that prompted buying decisions. In particular, the acid test was how accurately a home computer could mimic the latest arcade titles.

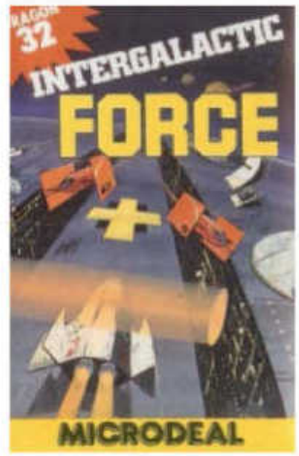
The Dragon 32 was a capable games machine, but no amount of customisation could hide the fact that the core CoCo technology was already two years old. The sound capabilities were fine – a single square-wave oscillator could be controlled using simple commands – but the graphics were lacking. The Dragon had seven levels of resolution – two lo-res text modes and five hi-res graphics modes. Nine colours in total were available, but there was a trade-off between colour and resolution. For example, at the highest possible resolution (256x192) it could only display two colours (in this case black-and-white or black-and-green). A further frustration was that the text and graphics modes could not be mixed, so in games it wasn't possible to easily print legends on screen like "score" or "status".

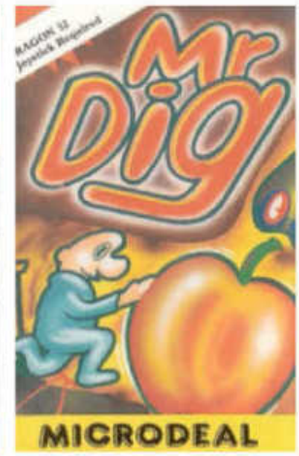
To compound matters, UK software houses did not throw support behind the Dragon because its programmers had little or no prior knowledge of the 6809. By 1983 it was clear that for



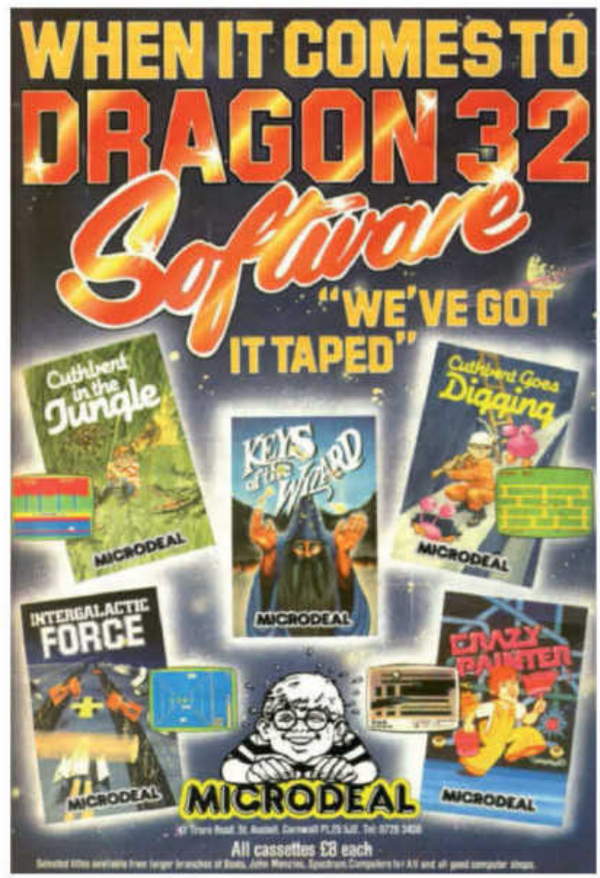


» Two of the most popular 8-bit platformers appeared on the Dragon, and easily held their own against other versions.





» The industry may have been more innocent back then, but when it came to copying the latest coin-op hits, most publishers were guilty as hell.



» Microdeal must have spent Cuthbert's inheritance on advertising – full-page colour ads for its games appeared in most issues of *Dragon User*.

SIMON HARDY Q&A

In putting together this article, Simon Hardy of **www.dragon-archive.co.uk** offered invaluable help and assistance. As a way of saying thanks, we invited Simon to tell us a bit about himself and publicise his excellent resource…

When was the very first time you used a Dragon computer?
When I was ten I received a Dragon 32 for my birthday and I fondly remember sitting with my parents playing *Quest* or *Horse Race*. It didn't take me long to start learning to program thanks to the excellent manual that came with the Dragon 32.

What do you think are its main assets?
I loved that fact that it had a proper keyboard, it could be modified and expanded easily (disk drives, modems, HAM radio, digital I/O boards, memory upgrades and so on) and was more than just a machine to play games on. Serious software such as Forth, word processors and even a simple DTP package quickly appeared.

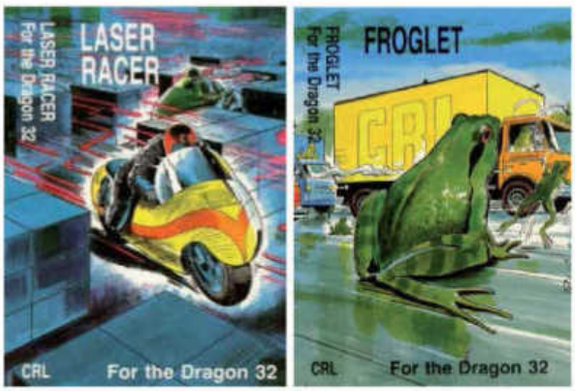
The National Dragon Users Group was a great source of humour, support and information about what else you could do with your Dragon when you got bored of just playing the games.

Could you outline the history of the Dragon Archive?
The archive was founded by myself some years ago to try to collate and preserve information and software relating to the Dragon range of computers. A number of people provided valuable input and material – notable contributors include Ross Hamilton for the content of his defunct Dragon Software Archive and Richard Harding for details of all the prototype machines. Since then a community has grown up around it, with many members contributing to the growing collection of software, books and information. We now have around 40 per cent of all advertised Dragon software archived along with tools to allow collectors to restore damaged tapes and disks. The community is made up of a small number of people who have usually grown up with the Dragon as their first machine and wish to continue the memory. This includes collectors and archivists, emulator authors, and programmers of some of the original games from the Eighties.

What plans do you have for the site in the future?
More of the same. My time is limited so I have to be careful about priorities when it comes to additions to the site. I am currently in the process of uploading every issue of *Dragon User* magazine and would like to see the information section grow in content.

How can Dragon users help you with the site?
I know there are lots of retro collectors out there and some of them may have Dragon software tucked away. I'm always on the lookout for any tapes or disks that the archive doesn't currently have, and I can provide assistance and instructions for the entire process of preserving software.

Would you like to see more homebrew software developed for the Dragon?
Yes, the Dragon is an excellent machine to code for. Whether or not it's possible to launch commercial homebrew as currently occurs on other platforms remains to be seen, but I'd love for people to release homebrew into the community. I can even set up a section on the website if people are interested.

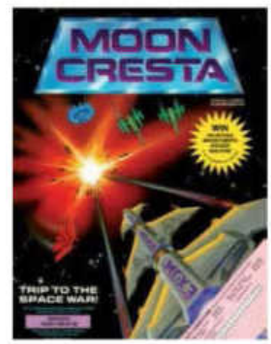


» Most publishers have some skeletons in the closet. For CRL it was probably these low-rent arcade rip-offs.

DRAGON'S BANE

Initial sales of the Dragon 32 were impressive. In the first six months around 40,000 machines were sold, many of these in the Boots chains of chemist. The decision to partner with a high-street store was clever, because it meant that potential buyers could see the computer, test drive it and then take one home if they desired. Compare this to Sinclair's notorious mail-order department, which left customers waiting months for their machines.

Strong sales saw other high-street names clear space for Dragon stock. Manufacturing was moved to a large factory in Port Talbot and production was ramped up to meet demand. However, Dragon failed to consider that sales would naturally fall off during the spring and summer, and the stock began to pile up. It can't have helped either that the competition had become fiercer than ever. The plucky Oric-1 launched in January 1983, and in the summer Sinclair famously slashed the price of its Spectrum, with the 16K model nestling just under the £100 mark.



» Popular software house Incentive supported the Dragon for several years, releasing both arcade games and more involved adventure titles.

"IT WAS THE PROCESSOR'S INDIVIDUALITY – PROMOTED AS A UNIQUE SELLING POINT – THAT WOULD ULTIMATELY CLIP THE DRAGON'S WINGS"

a game to be a commercial success it had to be released on as many platforms as possible and this was usually done by porting the code between machines with the same processors. The Dragon, however, was effectively outcast because of its unique CPU. To write for the Dragon meant starting from scratch and many developers couldn't justify the time and cost.

There were a few exceptions. Well known UK software houses such as Ocean, Imagine, Beyond and Software Projects all dabbled with the Dragon, while CRL and Incentive released a number of quality titles for the computer. In addition there was a small amount of homegrown software, but it was nowhere near enough to satisfy starved Dragon owners. To fill the gap, Dragon Data once again looked to the US market. Over there, a good amount of decent CoCo software had built up and Dragon Data set about licensing it for sale in the UK. Due to the fact that the BASIC ROM was arranged slightly differently on the Dragon, most CoCo cassette software would not load, but they could be fixed using a fairly simple conversion process. Cornish software house Microdeal also began to convert CoCo software for sale on these shores and quickly grew to become the Dragon's most prolific publisher, releasing over 200 games between 1982 and 1988. It's best remembered for its fast-paced arcade games, particularly those starring bespectacled company mascot Cuthbert.

After a number of delays, November witnessed the UK launch of the Dragon 64. As the name suggests, this was basically a standard machine with double the amount of memory. But at £225/$365, the upgraded model wasn't attractive enough to tempt the Dragon 32 faithful into upgrading (despite a generous trade-in offer and the impending release of the OS9 operating system). Dragon Data's response was to announce two new models – the Dragon 128 (aka 'Beta') and the Dragon Professional (aka 'Alpha') – but in July 1984, before either machine could materialise, the cash-strapped firm was forced to call in the receivers. As a postscript, a Spanish company called Eurohard acquired the Dragon assets and trundled along for a couple of years, releasing the Dragon 200 (essentially a Dragon 64 with a Spanish keyboard), before it too fizzled out.

The Dragon was dead – or maybe not quite. As news of Dragon Data's demise spread, stores quickly began to offload their Dragon stock at bargain prices. Generous bundles were available for as little as £80/$130, and Dixons slashed the price of the Dragon disk drive to £100/$162 (it launched at £275/$446 less than a year earlier). Punters who either didn't know or didn't care about the parent company's collapse snapped up the stock, swelling the user base. And what did it really matter that Dragon Data was no more? It had done its job – the hardware was in the hands of users and software support would continue for years to come.

REBORN IN THE USA

In 1983 Dragon Data decided to try to break into the US market. This was an unexpected twist, seeing as it would put the Dragon into direct competition with its non-identical twin, the Tandy Color Computer. Following negotiations with several companies, Dragon set up a partnership with the US-based Tano Corporation who would manufacturer and distribute the machine in America. It was decided that the Dragon 64 would fare better in the US, so in August the machine was launched Stateside as 'Dragon by Tano'. Dragon was so keen to assail the American market that the machine was released there two months before the UK Dragon 64 launch. According to Dragon MD Brian Moore, the machine was "very well received in the US", although Tano stopped supporting the Dragon in late 1984, suggesting quite the opposite. The entire stock was later purchased by California Digital (**www.cadigital.com**) who can still sell you a brand new shrink-wrapped Tano Dragon for $35 plus tax and shipping.

DRAGON 32
PERFECT TEN GAMES

There were hundreds of games that were released for the Dragon 32, including a few familiar titles and lots of system exclusives. Here are ten of our personal favourites, in no particular order

01

CHUCKIE EGG

- **RELEASED:** 1983
- **PUBLISHED BY:** A&F SOFTWARE
- **CREATED BY:** MIKE WEBB
- **BY THE SAME DEVELOPER:** SCREAMING ABDABS

01 The Dragon version of this classic platformer was not an afterthought; it was developed in tandem with the more famous Spectrum and BBC Micro editions. And despite what Beeb fans might say, *Chuckie Egg* on the Dragon just about nicks it as the best incarnation of the game. It's vibrant (as you'd expect, seeing as it uses that classic Dragon colour set of green, yellow, blue and red), fast paced, bucket loads of fun to play and it also represents a serious long-term challenge, although we still have no idea whether or not it features the full selection of levels – mainly because our skills in the chicken shed are sadly lacking these days.

JET SET WILLY

- **RELEASED:** 1985
- **PUBLISHED BY:** SOFTWARE PROJECTS
- **CREATED BY:** ROY COATES
- **BY THE SAME DEVELOPER:** MANIC MINER

02 This is something of a curiosity in the *Jet Set Willy* canon, and not just because it's the only monochrome version (the only way of successfully re-creating the game was in high-resolution mode). As a way of compensating Dragon owners for the absence of colour, programmer Roy Coates added 13 extra rooms to Miner Willy's already ridiculously oversized mansion. Part of the fun is in finding the additional rooms – you'll probably want to revisit the beach and explore the forgotten abbey. Coates obviously had a fine sense of humour as one of his additional rooms is entitled 'Matthew's Next Game', and it's completely empty.

02

DONKEY KING

- **RELEASED:** 1983
- **PUBLISHED BY:** MICRODEAL
- **CREATED BY:** TOM MIX SOFTWARE
- **BY THE SAME DEVELOPER:** KATERPILLAR ATTACK

03 The Dragon was home to hundreds of coin-op clones, which was only to be expected in those heady days of the early-Eighties. Of them all, *Donkey King* is the most blatant – not to mention the best. It's almost a carbon copy of Nintendo's original, only with everything viewed in lurid Dragon-o-vision. All four levels are featured, Mario and Kong are there, and the manic gameplay is exactly the same. In fact, we'd go as far as saying that it's better than many of the official home conversions. Realising that it was sailing a little too close to the wind, Microdeal later changed the title to 'The King.'

DEVIL ASSAULT

- **RELEASED:** 1983
- **PUBLISHED BY:** MICRODEAL
- **CREATED BY:** TOM MIX SOFTWARE
- **BY THE SAME DEVELOPER:** CUTHBERT IN THE JUNGLE

04 *Devil Assault* is a clone of Imagic's *Demon Attack* – see what they did with the name? If you're unfamiliar with the original, it's basically a trippy version of *Space Invaders*, with the player having to shoot down a number of fast-moving enemies. *Devil Assault* retains the original's speed and silenced any accusations that the Dragon could only cope with slow-paced platformers and maze games. A unique feature is that, once fired, your shot follows the path of your ship so you're able to effectively home in on enemies. It's as hectic as hell and one of the best arcade shooters on the machine.

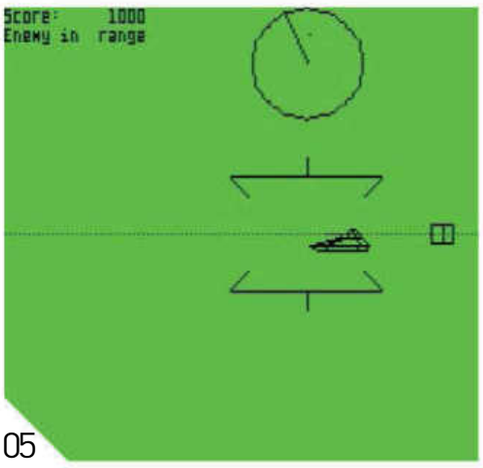
ROMMEL'S REVENGE

- **RELEASED:** 1984
- **PUBLISHED BY:** DESIGN-DESIGN
- **CREATED BY:** RAINBOW SOFTWARE
- **BY THE SAME DEVELOPER:** DARK STAR

05 This deserves special mention because of how it imitates a vector graphic display. Naturally, it makes use of the Dragon's highest resolution mode, but the black-on-green display works much better than the plain black and white. Unlike many vector conversions from back in the day. *Rommel's Revenge* is genuinely a joy to play thanks to the speed and smoothness of the graphics. The gameplay is also great, nicely re-creating the atmosphere and tension of the arcade original. Shooting enemy tanks and watching them explode in a shower of vector shapes is as enjoyable as ever.


03

04



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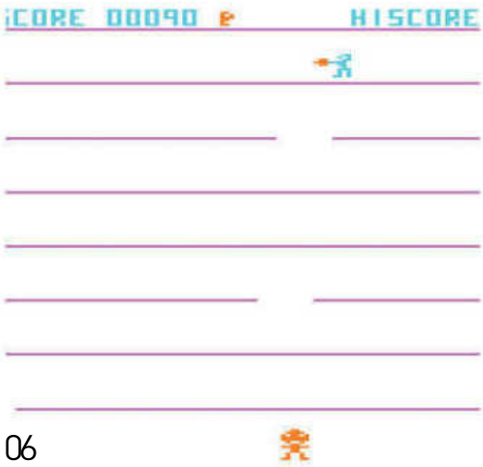

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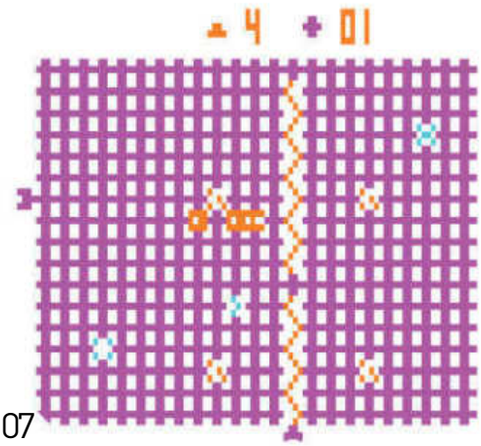

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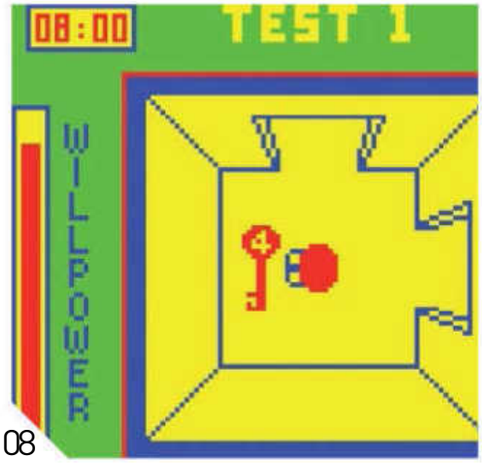


08

LEGGIT

- **RELEASED:** 1983
- **PUBLISHED BY:** IMAGINE SOFTWARE
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** PEDRO

06 Anyone who has played *Jumping Jack* on the Spectrum will be familiar with this: it's the same game only with a different name, for reasons we can't quite grasp. *Leggit* is often overlooked due to its basic graphics and blip-blip sound effects, but to ignore it on these ground would be madness. The basic premise is to reach the top of each screen by jumping through the gaps in the moving platforms. However, if you bang your head or clash with an enemy it's very likely that you'll get bumped down to the bottom of the screen. So it's try, try and try again. Brilliantly simple and simply brilliant.

GRIDRUNNER

- **RELEASED:** 1983
- **PUBLISHED BY:** SALAMANDER
- **CREATED BY:** JEFF MINTER
- **BY THE SAME DEVELOPER:** LAZER ZONE

07 Jeff Minter's *Centipede* remix is a very welcome addition to the Dragon's software catalogue. There's nothing unique about this particular version of the game – the graphics are nice and chunky, looking a lot like the Vic-20 version – but the core gameplay lifts it above many of the competing shooters on the Dragon. Having to blast the space worms that attack from the top of the screen while dodging the debris and avoiding the laser fire from the side and rear, still makes for an intense gaming experience today. For Dragon-owning Yak fans, Salamander also released *Lazer Zone* for the system.

BACKTRACK

- **RELEASED:** 1985
- **PUBLISHED BY:** INCENTIVE
- **CREATED BY:** C M ANDREW
- **BY THE SAME DEVELOPER:** MOON CRESTA

08 This little-known maze game is one of the most refreshing titles available for the Dragon. Guide the main character through a warren of interconnecting rooms, searching for the series of keys that are needed to unlock the exit. To complicate matters, the keys must be collected in the correct order, and the first one you need will usually be the last one you find – hence the backtracking of the title. There are also snakes, spiders and other nasties to avoid, and your constantly draining willpower forces you to find food. The presentation is excellent, with a psuedo-3D effect representing the movement between rooms.

09

THE KET TRILOGY

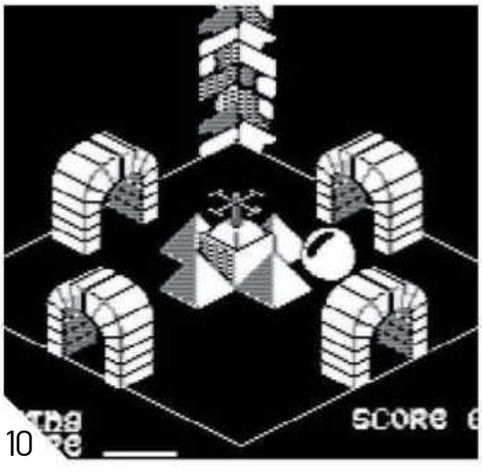
- **RELEASED:** 1985
- **PUBLISHED BY:** INCENTIVE
- **CREATED BY:** J MARTIN AND R MCCORMACK
- **BY THE SAME DEVELOPER:** BACKTRACK

09 The Dragon wasn't the best platform for text adventures. There was no lower-case font for a start, so everything was capped up, and because of the resolution limitations, developers couldn't easily add location graphics to text descriptions. For adventure game fans, *The Ket Trilogy* was probably the best bet as it contained three challenging, well-written adventures for one very nice price (it was especially good value when you considered that the three different parts were released separately as full-price games for the Spectrum). To round off this quality release, the inlay was adorned with some typically heroic Oli Frey artwork.

AIRBALL

- **RELEASED:** 1987
- **PUBLISHED BY:** MICRODEAL
- **CREATED BY:** ED SCIO
- **BY THE SAME DEVELOPER:** ARMOUR-GEDDON (AMIGA/ST)

10 Released in 1987, *Airball* proved that there was still a market for quality Dragon software. This isometric adventure sees you rolling a ball around a series of tricky 3D levels, trying to find a mysterious spell book (or something like that – we were always too busy gawping at the graphics to try and figure out what the hell was actually going on). You need only to compare this to any game released on the Dragon in 1982 or 1983 to release what a giant leap forward it represented. It was later ported to several superior systems, including the Amiga, Atari ST, PC and (unofficially) the Game Boy Advance.



10

COMMODORE 64

The Guinness Book of World Records lists the Commodore 64 as the best-selling home computer of all time. Andrew Fisher talks to the people who worked with the C64 and continue to love it

Commodore's C64 was a surprise when it first appeared at the Winter CES in 1982. The VIC-20 was still selling, but the new machine would be bigger and better in many ways. Jack Tramiel was gambling on the drawing power of 64K of memory, more than the Atari 800 and Apple II, hoping chip prices would quickly fall. While the £370/$599 price tag at launch in August 1982 was much lower than expected, the small unit cost made it very profitable for Commodore.

A number of aggressive marketing techniques, such as rapid price drops and a scheme where rival machines could be traded in for a discount also helped sell the C64 over the first few years of its release. "I did not get it in 1982, because the price was too high. I have my receipt some place in the house. I think it was 4 August 1983," says American fan Robert Bernardo. "I went to Federated Electronics in Stockton and bought it there when the price went to $199.95."

Many got their first machine as a present. "I think it was around Christmas 1984, I was fully expecting to get a Spectrum – luckily my Mum and Dad thought a proper keyboard would be better," says Dan Phillips, programmer of *Armalyte*, while artist Steve Day got his for his birthday in 1985. "The two reasons for me having one were *Way Of The Exploding Fist* and *Elite*."

Programmer Simon Pick was on summer holiday from school in 1984 when Visions Software Factory sent him a C64, enabling him to convert his BBC Micro game *Dare Devil Dennis*. Tony Crowther, on the other hand, worked in a software shop and showed his boss a 3D maze game for the VIC-20, called *Amazing*. "He said if I wrote him some games on the C64, he would give it to me. So that was how I started. I wrote six games, and I got my C64 and a cheque."

As many of us did, John and Steve Rowlands worked all summer to earn theirs. "As much as we enjoyed playing games on the C64, the drive to develop our own software is what kept us up at night," says John. Programmer Andrew Braybrook was working with Steve Turner at Graftgold. "We first got a C64 in early 1984, with the 'house-brick' 5.25" disk drive and the 'soap-dish' tape deck. I had been playing games on the C64 for over a year, mainly *Attack Of The Mutant Camels* and *Matrix*, and wanted to see what I could do."

J'ADORE MON COMMODORE SOIXANTE QUATRE

The C64 was a worldwide hit, selling 17 million units. It remained relatively expensive, compared to UK rivals the ZX Spectrum and Amstrad CPC. The C64's sprites and sound often proved decisive in playground arguments; in fact, *Sprites & Sound* was the working title for the Newsfield magazine that became *Zzap!64* and gave readers honest reviews. Disk drives were expensive, meaning that most UK users made do with the tape deck and long loading times. In American classrooms, the battle was with the Apple II, prompting Commodore to launch the Educator 64 in a sturdy metal case.

American companies including Activision and Epyx dominated C64 games at first, before the balance of power shifted to the UK. Piracy helped boost popularity in Europe. The latest games spread via the post and bulletin boards, the crackers breaking copy protection, adding cheats and colourful intros. These evolved into the demo scene, pushing the hardware further. The Netherlands was a key market, as collector Richard Lagendijk explains.

"Commodore was the market leader in the Netherlands. There were people with an Atari, and schools often opted for the budget Sinclair Spectrum, but the best selling computer was the C64. I got my C64 on 5 December 1983. If you were a good child all year, you got a present from Sinterklaas. I must have been very good because the present was incredible. I played with it all evening. I still have my first C64 and Datasette including the original boxes." Richard's massive collection is displayed at his Commodore Information Page website.

Inside the C64 were the two reasons it was good for games: the sound and graphic chips, known as SID and VIC respectively. "It was the only decent sound chip in any of the home computers," musician Rob Hubbard says, in praise of the SID chip. "It was similar to a simple analogue synth that I was used to working with." Three independent sound channels had programmable waveforms and envelopes to create sounds, and the analogue filter was a feature only found on expensive keyboards. Sound sampling and speech synthesis (on games like *Impossible Mission*) was really impressive. "The sound chip was awesome; probably never quite matched by any other machine," agrees Simon Pick. "I'm the voice that says 'I, Ball' in the classic Firebird game, so I guess I can claim to have worked with Rob Hubbard!"

THE HOMEBREW HERO

James Monkman

Owner and publisher, RGCD

www.rgcd.co.uk

When did you first get your Commodore 64?
I actually got my first C64 in 2006. The fact that the machine still sees new releases on a near-daily basis was the main appeal. It was Aleksi Eeben's *Greenrunner* with amazing sampled speech and frantic gameplay that finally enticed me to make the brave move from PC-based emulation to actual hardware.

Why publish cartridges?
When I was a kid I just thought of them as magic little boxes and had no idea how they worked. Unlike unreliable floppy disk and tape media, you know that you'll be able to pull out a game from a box, plug it in and away you go, no additional peripherals required and instant loading. Cartridges are cute and quirky little chunks of plastic that, for me, embody everything retro about the golden era of videogames. After releasing a few homebrew games on the GBA through RGCD, I discovered that it was possible to create your own C64 cartridges using a kit available over eBay. I contacted the seller, Tim Harris, and started a friendship and working relationship that continues today.

Which game are you proudest of?
C64anabalt, although it's not the best game in our catalogue – that accolade goes to *Soulless*, our collaborative project with Psytronik Software. However, because of its indie scene roots *C64anabalt* brought in a lot of interest from outside the C64 scene. It was great to work with Paulko64, Encore and indie-gaming hero Adam Atomic on this, who also provided the amazing box artwork.

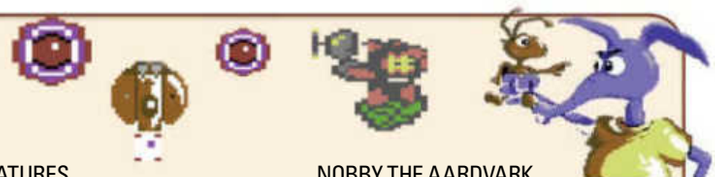
Has the development competition achieved its aims?
I was amazed by the quality of the results last year and have already received a lot of interest regarding this year's competition. Having seen a couple of the entries with months of development time left, I can pretty much guarantee that C64 owners will have a very nice Christmas gift this year.

Are you impressed by the new games still being developed?
Out of all the 8- and 16-bit platforms, there is no doubt that the C64 has the most active scene, and I'm very proud to be a part of it. It's a great time to be a C64 owner.

» New homebrew projects like *C64anabalt* prove that the C64 still has plenty of life in it.

The Thalamus Classics

Thalamus, founded by magazine publisher Newsfield, had an attitude of 'it's released when it's finished'



QUEDEX

Stavros Fasoulas had wowed the crowds with shoot-'em-ups *Sanxion* and *Delta*. But his third game would prove somewhat different. In their 'Quest For Ultimate Dexterity', the player had to guide a large grey sphere around puzzling environments. Each of the ten levels had different rules and reasoning required to complete them, from smashing down blocks to colouring in all the squares. An impressive Matt Gray title tune and sharp sound effects complemented the shiny graphics.

HUNTER'S MOON

Martin Walker's C64 output contains some unsung classics, including *Citadel* and *Chameleon*. *Hunter's Moon* mixed puzzle elements with a shoot-'em-up, the player having to work hard to find the four starcells needed to complete each level. Indeed, each level map 'draws' itself at the start of play. Unusual sound effects that many people say sound like speech accompany the detailed Hunter sprite. It was a real challenge to see the hidden reward sequence of the Hunter returning home.

CREATURES

John and Steve Rowlands had a short but excellent track record, culminating in the outstanding *Mayhem In Monsterland*. The cute graphics of *Creatures* were offset by blood, as the demons kidnapped and tortured Fuzzies. It was up to hero Clyde Radcliffe to storm through huge scrolling platform levels, fighting demons, before solving the tricky torture screens to rescue his friends. Praise also for rock hard shoot-'em-up *Retrograde*, released by Thalamus, and *Cyberdyne Warrior* on the *4th Dimension* compilation.

NOBBY THE AARDVARK

Inspired by the Blue Aardvark in *The Pink Panther Show*, the last release from Thalamus was a time-travelling epic, mixing platform and maze sections. The amazing intro animation shows Nobby finding out about Antopia from an ant, and the game follows his journey to reach it. Riding a mine cart, diving in a submarine and exploring Atlantis all stand in the way of Nobby's noble quest to destroy and eat the ant village. Beautiful cartoon graphics and sweet music make this a real pleasure to play.

The VIC chip had a large palette of 16 colours, three of which were shades of grey. However, to create multiple colours, the horizontal resolution was halved. This gave rise to the accusation of blockiness levelled at C64 games, though the sprites could move over background graphics without erasing them, which was useful for writing games. Hardware tricks relied on the chip's ability to read the position of the raster beam that created the screen image.

"I really enjoyed hacking the machine and seeing what we could make it do," says Tony Crowther. "All the way though my time on the C64, I was trying to push it that little bit further. 48 sprites on screen, sprites in the borders, audio samples, playing music while loading… It was brilliant, seeing new tech evolve."

ARE YOU KEEPING UP WITH THE COMMODORE?

The Commodore 64 changed form several times. The portable SX-64 was heavy for a laptop, but had an excellent five inch colour display. The Commodore 128 had a C64 mode for backward compatibility, as well as the native 128 mode (home to just a few games) and CP/M mode for businesses.

In 1987, the C64C model launched with a sleek wedge shape. The revised motherboard was cheaper to produce, but the 8580 sound chip made samples sound quieter. Commodore regularly changed the games bundled with the various machines in an effort to earn more sales. The final change was into the C64GS (Games System) console. The C64 always had the ability to load software from ROM cartridge; early hits on the 16K cartridge included *International Soccer* and *Jack Attack*. The new GS cartridges had larger memory through bank switching, but also worked on the standard machine.

The console sold just 10,000 units, despite the development of fantastic titles including the *Shadow Of The Beast* conversion. "[Commodore] really didn't have the resources or experience to compete in the cartridge-based industry, where the hardware manufacturer not only dictated the standards but usually set the standards with their own games," comments Gregg Barnett. Even with the powerful Amiga and ST around, the C64 held its own with many original titles, and other 16-bit games made a successful transition, including *Defender Of The Crown* and *Lemmings*.

As the games industry grew, the strong sense of community and respect influenced the programmers. "I was very interested in whatever Jeff Minter or Andrew Braybrook were working on," says Tony Crowther. Andrew Braybrook himself says, "Jeff Minter's games were what motivated me to get into C64 games in the first place. Archer MacLean was also someone I admired: I loved playing *Dropzone*. *Wizball* was another game I played a lot." Braybrook puts *Elite* at the top of his games list. "Up until 1987, I had resisted buying a C64 of my own, after all, one doesn't need to take one's work home, and I could play games at lunch-time. But it was *Elite* that made me buy my own as I could see it taking a long time to reach Elite status. I never got there, I only got as far as Dangerous."

Archer MacLean also admired *Elite*. "Like thousands of other players, I had my mind expanded when discovering the extent of the 3D-wireframe universe conjured up by *Elite*. I think the fondest memories of games were the ones that got me hooked early on – *Leaderboard*, platformers like *Bounty Bob*, various chain reaction games like *Boulderdash*, not forgetting *Way Of The Exploding Fist* – I played that with friends until the sun came up or the joysticks broke! For technical reasons I remember being amazed that *Rescue On Fractalus* worked on the C64, albeit at a really slow 3fps."

"Dave Collier and John Twiddy," says Steve Day. "Both of them for the 'What are they going to make the C64 do next?' factor." His list of artists he admires includes Bob Stevenson, Matt Sneap and Paul Docherty. "One other artist I always liked was Karen Davies at Special FX. However, at the time I didn't know whose work it was, because she never signed her screens and it wasn't until the internet era that I could put a name to these unsigned images."

The Sensible Software Classics

A thoroughly British success story

PARALLAX

After working for other people, school friends Jon Hare and Chris Yates set up Sensible Software with a government enterprise grant. Ocean signed up *Parallax*, a hybrid of multidirectional scrolling shoot-'em-up and arcade adventure. Stranded on a planet run by a giant computer, the spaceship Ibis and its plucky pilot must find the codes to explore the five levels and eventually shut down the machine to escape. The sense of humour is evident, with the player drugging scientists to make them reveal a code letter, and it is technically very smooth, with polished graphics topped off with Martin Galway's epic and psychedelic title tune.

WIZBALL

Zzap!64 voted it the game of the decade, and deservedly so. The story tells of Zark draining the colour from the land, and the wizard getting into his ball to colour it back in. With the help of his catellite – a cat in a smaller ball – the player collects droplets of colour to mix in a cauldron. Many found the early stages difficult, where the ball is bouncing, but collecting green pearls to upgrade the ball soon turns it into a smooth shoot-'em-up with varied enemies and a rock-hard difficulty level. Martin Galway's music added so much atmosphere, with Chris's guitar solo for game over and Jon's bass riffs for the bonus section helping him out.

INSECTS IN SPACE

Budget game *Galaxibirds* coupled bizarre sprites with a *Galaga*-style level system. But it was this game, originally written for budget label Rack-It, which eventually appeared on Hewson's *4th Dimension* compilation that really tested gamers. With elements of *Stargate* and *Defender*, Saint Helen must defend the babies of the Rhineland from invading space insects. The twin landscapes and swarms of enemies make it tough, but a magic dust cloud can either warp Saint Helen to a baby in peril, or swap collected babies for power-ups. From the droning bees of Galway's title music to the acid smiley if you take too long, this is another polished gem.

MICROPROSE SOCCER

In an interview with Zzap!, the Sensible team revealed that they were thinking about a football game, prompted by Jon's love of *Tehkan World Cup* with its trackball. A plea for a publisher saw MicroProse step in and produce a lavish box, complete with a history of the World Cup and two separate games on one tape or disk. The 11-a-side outdoor game featured thunder and lightning and a full World Cup competition. The American six-a-side indoor game had frantic action in a walled arena. Clever action replays, swerving banana kicks, a variety of Martin Galway tunes, detailed player sprites and the smooth-scrolling overhead pitch make this one of the best C64 football games.

» Richard Lagendijk's personal museum of Commodore computers includes this row of C64 variants.

The Firebird Classics

British Telecom's software labels published many hits

ELITE

Firebird won the rights to convert the BBC classic to other 8-bit micros, and produced the *Gold Edition* box with a sci-fi novella and spaceship chart. David Braben and Ian Bell worked on the C64 conversion. This was an homage to *Star Trek*, featuring cute creatures known as Trumbles that threatened to overrun the ship. Although the wireframe graphics were slower, it retained the depth and playability of the original.

THE SENTINEL

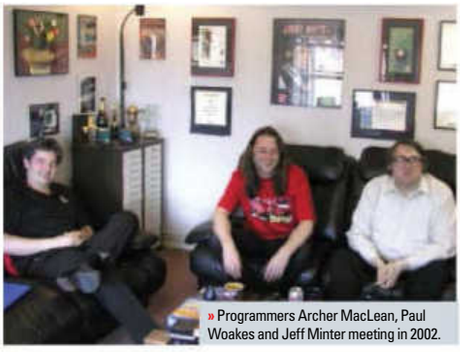
Geoff Crammond was a master at programming 3D on an 8-bit machine; the sci-fi setting of *The Sentinel* was superb. 10,000 mathematically generated landscapes awaited, with the Sentinel standing atop the highest point. A game of nerves saw the player's robot accrue the necessary energy to climb its way to the top. The slow movement didn't hamper the atmosphere as the Sentinel scanned the landscape for you…

THRUST

Jeremy Smith's *Thrust* owed a lot to arcade game *Gravitar*, with the player trying to rescue a powerful orb from each tricky cavern. Gravity was the name of the game thanks to the elastic towrope, with the need to find extra fuel and the nasty guns lying in wait. Later levels saw the gravity reverse and the landscape become invisible. Add in a Rob Hubbard soundtrack and it was a budget bargain.

GUILD OF THIEVES

The Rainbird label – mostly for Amiga and Atari ST games – put out its games in large blue boxes, often filled with extras. The Magnetic Scrolls adventures did just that, and *Guild Of Thieves* wowed the critics with its detailed graphic scenes and advanced parser. This allowed multiple and complex commands to be carried out. The copy of *What Burglar* magazine included in the box contained clues for those who found it tricky.



» Programmers Archer MacLean, Paul Woakes and Jeff Minter meeting in 2002.

> "It was the only decent sound chip in any of the home computers"
>
> – ROB HUBBARD, ON THE C64'S SID CHIP

THE MAGAZINE EDITOR

Julian Rignall

Former editor, *Zzap!64*

When was it that you first got to play on a Commodore 64? Did you own one yourself?

I was invited to a videogame tournament at *Personal Computer Games* magazine in 1984. I hadn't seen one before, although I owned an Atari 400 at the time, which had a lot of the same games. When I started working at *Zzap!*, I still didn't own one, but Newsfield eventually gave me one I could use at home, since I was at the office late most nights reviewing games.

What was it about the Commodore 64 that you think made it a good machine for games?

It definitely packed some serious technology for its day, but for me it was all about the development community. The people who made games were all playing a bigger game: who could push the C64 the furthest. The creativity and competitiveness was insane, and that led to some amazing achievements. Particularly in Europe, I think the C64 was pushed way beyond what was ever expected of it.

Was it a big responsibility recommending or rejecting games, influencing what people bought?

I was only 18 when I joined *Zzap!*. All I wanted to do was to help people buy great games, and I didn't think any further than that. It was only later when I began to see the bigger picture that I understand that sometimes a bad review from us could put a company out of business. And yes, that did happen. But our job was to help people find the right game for them, so we played everything and tried to sift the good from the bad.

We'd argue endlessly about scores, and I think we were right more times than we were wrong. If we weren't, people would have quickly stopped using us as a trusted source and bought another magazine instead.

What are your best and worst memories of being at *Zzap!*?

Getting to play everything first was just awesome. I'm a hardcore gamer, and never got bored of the endless supply of new games – especially in an era where gaming was evolving from a back-room pastime into a fully-fledged entertainment industry. The worst memory was stress: putting together a magazine that big every month with so few people. That was very, very hard work indeed.

Which games would you say are essential for people to play?

This could go on all day. *Dropzone* – best game ever – *Koronis Rift, The Sentinel, Ballblazer, Impossible Mission*, the Epyx Games series, *Boulderdash, Elite, Gribbly's Day Out, Paradroid*, any Minter game that doesn't have Minter-being-self-indulgent controls, *International Football* – the hacked one with the players in wheelchairs – *Fort Apocalypse, Wizball, IK+, Mercenary, Little Computer People.*

Which people and companies did you admire the most in the industry?

Probably the same people as everyone else: the programming 'stars' of the period, and the companies who made consistently good games. It was an era of surprises too – a lot of first-time developers came out of nowhere with amazing games. All well and good having expectations from a person or company, but when we'd get something amazing out of the blue like *The Sentinel* or *Koronis Rift*, that'd just blow me away.

What are your thoughts on Commodore's bankruptcy?

At the point Commodore went bankrupt, I was far too interested in the machines that made them go out of business to even notice.

The arcades were a fertile source of ideas and from them came many great conversions. Considered among the best were Elite's *Buggy Boy* and Software Creations' work on Capcom's *Bionic Commando* and *Ghouls 'N Ghosts*, both backed with magnificent music by Tim Follin. There were also unfortunately many misses as arcade hardware grew more sophisticated – the much-hyped *Golden Axe* disappointed with only one opponent onscreen, *Double Dragon* by Melbourne House blamed the C64 hardware for "splits" in its fighters, and the 3D action of *Afterburner* became a lousy C64 game.

But Dan Phillips and Cyberdyne Systems turned an obsession with *Salamander* into the incredible *Armalyte*, optimising the code to make huge bosses and masses of enemies onscreen possible. Robin Levy's graphical polish was accompanied by atmospheric sounds and music from Martin Walker, himself a great programmer. Giving him inspiration, John Rowlands regularly played cute arcade platform games *Wardner* and *Midnight Wanderers*, and their influence can be seen in *Creatures*. But he drew on the work of other programmers as well.

"We have always been fans of Jeff Minter, more so than any other developer, I think. We couldn't fail to be inspired by his off-the-wall graphics and humour, combined with a great technical mastery of any machine he was working on. Other developers we admired include Sensible Software (*Wizball* is probably our favourite C64 title), Cyberdyne Systems (*Armalyte*) and Tony Crowther (*Blagger* was the first C64 game we bought). And we'd always check out any game that featured a Rob Hubbard soundtrack."

By the Nineties, many that worked magic on the C64 had moved on. "I remember playing on an Amiga all night at Jeff Minter's house. I didn't want to leave it. So I spent all my spare cash, and bought an Amiga 1000," recalls Tony Crowther. Crowther's first 16-bit work was to convert puzzle game *Bombuzal* (designed with David Bishop). Dan Phillips also went on to Amiga after finishing work on *Last Ninja III*.

Consoles like the NES started to take a larger share of the market, while the C64 charts became dominated by budget re-releases and the big games companies began to leave the machine behind. Developers like Simon Pick switched to the NES easily thanks to its similar processor (the 6502), converting *Rodland* for The Sales Curve. John Rowlands laments, "*Mayhem In Monsterland* is the game we're proudest of. It's just a shame that the C64 was at the end of its commercial life when we released it, as a large number of gamers had moved on to other platforms and missed out on our best game."

THE SOFTWARE HOUSE

Gregg Barnett
Formerly of Beam Software

When was it that you first used a Commodore 64?
I started working at Beam Software in 1983 as their first 6502 programmer and my initial task was converting *Hungry Horace* to the C64.

Was the C64 an important format for Beam Software?
Initially, the Commodore 64 lagged behind the already established Sinclair Spectrum but because it was a global format, whereas the Spectrum was predominantly UK, it quickly became the lead format from a sales perspective. It shared lead development format with the Spectrum dependent upon whether the lead programmer was a 6502 or Z80 programmer!

Was the C64 a big player in the Australian market?
It was probably the biggest home computer of its era and almost certainly the biggest game machine up until the release of the NES.

What made the C64 a good machine for programming games?
Along with the Atari home computers, it was one of the first computers to have a dedicated graphics chip with hardware sprites, so it was a natural for game development. Probably because of its penetration in the UK, it soon became a 'programmers'' machine, with people pushing it in all manner of new ways, whether it be a super-smooth screen scroll or the most sprites on screen.

What was your favourite project on the C64?
I'd have to say *The Way Of The Exploding Fist* because initially it was my first original project and then subsequently because it acquired that special development momentum that only comes with those titles you know are just going to work really well.

What other programmers and companies impressed you?
As I mentioned earlier, there were a host of programmers in the UK, such as Andrew Braybrook, who were constantly trying to push the envelope, and I always looked forward to seeing what they came up with next. As for actual games, we need to jump to the other side of the pond. The ones that really stood out for me – ironically due to their gameplay as opposed to any technical expertise – were EA's *Archon*, Epyx's *Jumpman* and Richard Garriott's *Ultima* series. *Archon* used a computer to evolve the game of chess, *Jumpman* was packed with original platforming ideas that are still being reused today, and *Ultima* helped forge my love of open-world RPGs.

When did you move on?
Beam was always pretty quick off the mark to reverse engineer new formats as they hit the market and that's what happened when the NES was released. I think by 1987 the bulk of the development team was working on the 8-bit consoles.

A LITTLE BIT OF COMMODORE IN ALL OF US

Poor management saw Commodore go bankrupt in 1994. Robert Bernardo says, "Though I was sad, I was not heartbroken. Commodore Business Machines never really supported the users that well. It was sad that there would be no more developments coming out of this company." The C65, with backward compatibility, Amiga-quality graphics and built-in 3.5" drive, was left as unfinished, with prototypes sold off at auction. "I had high hopes for the C65. I would have bought one," says Bernardo. Simon Pick adds, "It's a great shame that a company that made such innovations and had such a huge impact on the early games market is no more."

A wave of websites and homebrew software kept the machine alive, and it did appear again in some unusual new forms. The WebIt offered C64 emulation via a PC connected to the internet and a standard TV. Hardware hacker Jeri Ellsworth designed the C64DTV, a plug-in joystick containing 30 classic games, which became a big seller on shopping channel QVC. By coincidence, the company had taken over Commodore's former premises in West Chester, Pennsylvania.

Ellsworth also created the C-One, designed to emulate the C64, which consisted of a PC-style motherboard and "cores" that could configure it as other machines. Emulators let the software live again, helping to archive thousands of games and programs and encouraging the creation of new software. The music remix scene, including bands PRESS PLAY ON TAPE and 8-Bit Weapon, kept the music fresh in peoples' minds, culminating in live concerts of SID music in London, Copenhagen and Stockholm. New hardware has allowed access to the internet and bigger storage (hard drives and SD cards).

There are still regular events worldwide promoting the C64, including the legendary demo parties. The new releases at every party continue to push boundaries, from full screen video clips to sampled songs. Robert Bernardo travels to as many events as he can. "I find that travelling to Europe to find Commodore is always exciting. In the Eighties, my favourite events were the World of Commodore Shows in California. Currently my favourite show to attend is the Netherlands Commodore Show. I went to the Czech Republic for the Monastery Party 2005 and found a group of

» The unfinished successor to the C64, the Commodore 65

» This C64C bundle with Ocean's *Batman* game (a tie-in to Tim Burton's movie) is less known than the Amiga bundle.

» Steve Day created this alternative loading screen for *Wizball* in 2012.

From the forum

Why you love the Commodore 64

Noobish hat
Back in about 1990, I was spending Christmas at my great gran's house. I remember late one evening my dad came through the front door carrying a cardboard box. Inside there was a C64, some joysticks, and a whole bunch of tapes. To the best of my recollection, they were the first games I ever played. My dad, my brother, and I stayed up playing *1942*, *Commando*, *Fast Food*, *Chase HQ*, you name it. A night I'll never forget.

gman72
My first memory of the C64 was the very first time I saw *International Soccer* at my friend's house. I was amazed at how great it looked and played and was blown away by the fact that you could head the ball up the pitch from one end to the other. Then we played *Suicide Express* and the music was just miles and miles better than anything I'd heard from a computer before. Then he loaded *Impossible Mission* and the opening speech almost made me wee myself. It really was that good.

Mayhem
My parents didn't like the keyboard of the Speccy; they wanted something with 'a proper keyboard'. A few months later, one of my father's work colleagues was selling his system, and he bought it. So I came downstairs one weekend morning in March 1984 and discover this set up on the dining room table. Cue excited hysteria. I wouldn't trade those memories for anything else.

webding
I am forever grateful to my sister for parting with a massive chunk of her savings to buy a 64. She barely used it, and I inherited (ie stole) it in no time. How that transformer didn't burn a hole in my bedroom carpet over the next five to six years is beyond me.

paranoid marvin
Had to have one as soon as I saw *Impossible Mission* playing in John Menzies. Also the only computer before or since where I don't mind waiting for the games to load, thanks to the awesome music loading tunes. In fact, sometimes listening to the loading tunes was more fun than playing the games.

boggyb68
I was originally getting a Speccy, until in late '84 my dad came home from work and showed me an advert in the paper for the C64. He said, 'What about this one? It looks better than that other thing.' I was gobsmacked as it was so much more expensive and I thought I had no chance of getting one. How wrong I was at 3am Christmas morning when I ran into the front room and speedily unwrapped the big square box under the tree and immediately saw the Commodore logo staring back!

» Gregg Barnett's *Way Of The Exploding Fist* and Archer MacLean's *International Karate* both took inspiration from *Karate Champ*.

» Jeff Minter's surreal *Iridis Alpha* running in the iPad emulator.

» Simon Pick hard at work in the Eighties, with the sound sampler attached to the back of his C64.

dedicated Czech and Polish coders who welcomed me into their midst. It was held in a former monastery, and we camped out in the building while playing and coding Commodore."

Bernardo runs email lists keeping users informed of what is happening, and last year helped produce the new Sound Ultimate Xpander 6400 audio digitizer. "I'm happy that people are still producing hardware and software for the C64. With such activity, the C64 won't die. I guess that is my mission, to take the C64 onward into the 21st Century."

A wider audience recently became aware of the new games with the official *Canabalt* conversion in 2011, developed by Paul Koller. Julian Rignall says, "I was genuinely impressed with *C64anabalt*. I just love the fact that people are still making games for the machine. It's become its own strange art form. I love some of the crazy tech demos people have put together – and of course the SID chip has become a legitimate part of the musical landscape."

And now, with this retro revival, many are returning to the machine. "My return was initially based upon me feeling I had a point to prove with myself and certain others. That I still 'had it'," says Steve Day.

> **"Jeff Minter's games were what motivated me to get into C64 games in the first place"**
>
> – ANDREW BRAYBROOK

The Budget Classics

The budget labels bought C64 owners original games and great re-releases

MASTERTRONIC

Targeting many outlets, including garages, newsagents and corner shops, Mastertronic built a large business on the back of its budget output. The Ricochet label was home to many great re-releases, including the David Crane classic *Ghostbusters* with an added 'Invade-a-load' game to play while loading. One of the biggest sellers was *Kikstart 2*, Shaun Southern's superb scramble simulator inspired by the BBC TV show *Kick Start*. A fantastic two-player game enhanced with an easy-to-use construction kit.

CODEMASTERS

The Darlings brought us cheap and cheerful packaging, often with personal quotes about how good the game was. *BMX Simulator* was their first hit, drawing on arcade game *Super Sprint*. The *Dizzy* series was a big seller, along with the value-for-money *Quattro* compilations, which put four games on a single tape. New character Seymour appeared in *Dizzy*-style adventures and two great spin-offs: the maze game *Sergeant Seymour Robot Cop*, and the excellent *Bomb Jack*-inspired *Super Seymour Saves The Planet*.

ZEPPELIN

Where Codemasters and Mastertronic had succeeded, Zeppelin followed. Among its first wave of releases was the superb shoot-'em-up *Zybex*. One or two players controlled prisoners fighting to escape their captivity across a series of planets. The horizontally scrolling action was backed up by a unique progressive weapon system, with the weapons losing strength when a player died. The player could also choose which order to tackle the planets, adding longevity to a well-produced game.

KIXX

US Gold made its reputation importing American games, including hits such as *Beach-Head* and *Impossible Mission*. Few games could match the wonderful speech, tricky puzzles and demanding platform action of Dennis Caswell's classic. Many would appear again on the Kixx budget label, with *Multimixx* compilations offering three games for the price of one. Epyx re-releases included the multiplayer fun of *Summer Games II*, but Access really hit the spot with the *Leaderboard* golf simulations.

THE PROGRAMMER

Archer MacLean

Game designer, programmer and electronics expert

When did you get a Commodore 64?
First time I saw a C64 was about 1983 when a mate of mine from university wrote a perfect version of arcade classic *Qix* for the C64, cunningly called *Stix*, published by Supersoft. I was a die-hard Atari evangelist and we'd have vigorous discussions down the pub about which was better, which only ever ended if one of us fell over drunk. We'd also play arcade games, including *Stargate* and *Defender*. I bragged that the Atari 800 could do a *Defender* clone without breaking into a sweat, and he bet me a grand I couldn't prove it let alone get it published successfully. I did, it became *Dropzone*, and he still owes me the money! The Atari version was published under licence to US Gold, and it was pressure from them in 1985 that meant I had to roll my sleeves up and crack on with a C64 conversion.

What made it different to other machines?
When the C64 came along in Europe, it was fresh and new and had a big marketing campaign that openly boasted about sprites, the SID chip and how 64K of RAM was going to do wonders for games. The C64 quickly established itself as market leader in Europe and it therefore made commercial sense to develop games on the C64. C64 sprites were certainly easier to use and more versatile than the Atari's system, even if it did lack some of the Atari's amazing graphical hardware.

What was your favourite project?
Hard to pick a favourite. *Dropzone* was dammed difficult because the C64's 6502 was running a bit slower anyway. To fudge it to work, I had to scale back all the difficulty levels, reduce the explosion size and amount of pixel lumps flying around the screen, whilst desperately trying to make it look as smooth as the Atari version. However, this paid off the following year when I did *International Karate* in late 1985 on the Atari first, without using sprites. I took the proven *Dropzone* 'shell' and built the game quicker than I would otherwise have done.

International Karate should have been my favourite, especially since it was a huge number one in the USA as *World Karate Championship*, but I soon discovered like so many others that the licensee had no intention of honouring the contract or paying a penny in royalties, which is why *International Karate +* was contractually licensed only to Activision… which then led to other problems! Publishers routinely ripped off developers because they knew there was always going to be another developer coming along right behind them.

Who were your favourite programmers?
It would include Andrew Braybrook for *Gribbly's Day Out*, *Paradroid*, and of course *Uridium*; David Braben for the landmark game, *Elite*; Paul Woakes for *Mercenary* and *Encounter*; Jeff Minter for bonkers game ideas and wacky touches throughout; another was the prolific Tony Crowther, responsible for the *Monty Mole* series, *Blagger* series and *Loco* to name a few. And loads more.

Were there any unfinished projects?
Dropzone 2 for the C64 had quite a lot of work done on it in 1986/87 but never saw the light of day for all sorts of reasons. It opened up the idea of being able to descend down into caverns beneath the moonscape and rid the inner chambers of infestation problems, including laying time bombs that needed you to get back out before all hell broke loose. Plus it had warp jumps. A lot of these ideas resurfaced in the 1992/93 SNES game *Super Dropzone*.

» The golden C64 created by Commodore Germany celebrated one million units sold in that country.

"After doing a couple of images, I realised I was as hooked as I was in 1986. Cross development is the only way I could do C64 graphics again. I couldn't cope with native apps on 30-year-old machines."

Dan Phillips admits he still tinkers with the odd assembler file, while Simon Pick also retains something of an interest in the Commodore 64. "I often daydream about putting some of my back catalogue on the iPhone (those games that I own the rights to), but I do still sometimes find myself wondering what I could make the C64 do with all the knowledge I've amassed over the past 25 years. Until last year, I worked with Tony Crowther at EA, and we would often talk about C64 development and how much simpler life used to be back then; maybe we should team up and bring the world something new and awesome!"

"About once a year I wake up having dreamt we were working on another C64 game – all fun and creativity without producers and marketing departments – but the games industry is a different beast now. If I were in a position to develop games purely for fun, I'd be tempted to pick it up again," says John Rowlands. "The Commodore 64 will always have a soft spot in my heart." And the same is true for many thousands of C64 users, gamers and programmers.

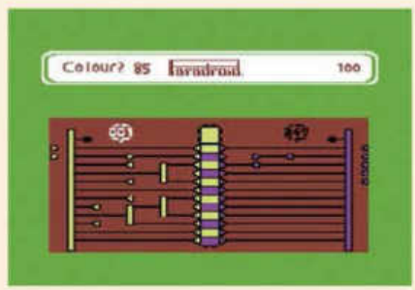
*Dedicated to the memory of my grandparents, Ronald & Beatrice Fisher, who helped buy our first Commodore 64. Thanks to Richard Lagendijk (**www.richardlagendijk.nl/cip**), Jason Mackenzie (**www.binaryzone.org/retrostore**) and Archer MacLean for images, Mark Ambrose for his C64 and everyone else who took part.*

The Graftgold Classics

Steve Turner and Andrew Braybrook produced several fantastic games

PARADROID

The fleet of dreadnoughts are out of control, the robot crews no longer responding to command. The Influence Device has been beamed onto the first ship, allowing the player to take over other robots and regain control. *Paradroid* was a clever mix of exploration and shooting, with the added challenge of the transfer sub-game where players had to activate circuits to influence a new robot. Best sampled as the enhanced *Metal Edition*, but watch out for the Dalek-shaped 883…



URIDIUM

This time the player was fighting on the surface of the dreadnoughts, using a manoeuvrable Manta class fighter. The player had to shoot waves of enemies, dodge homing missiles and avoid dangerous structures on the ship to reach the landing strip, before the self-destruct system – a chance for bonus points – was activated and the dreadnought exploded. Intense and polished, once the original was conquered there was *Uridium+* with new levels to play through.

INTENSITY

A forgotten gem, released by Firebird after Graftgold had split with publisher Hewson. Colonists had to be rescued from invading aliens, but there was no shooting. Instead the player controlled two separate ships with one following the other, the skimmer destroying enemies on contact and the trailing drone picking up the colonists. It boasted more beautiful bas-relief graphics, enemies that evolved and changed shape, and a strategic element in buying extra ships that took time to build.

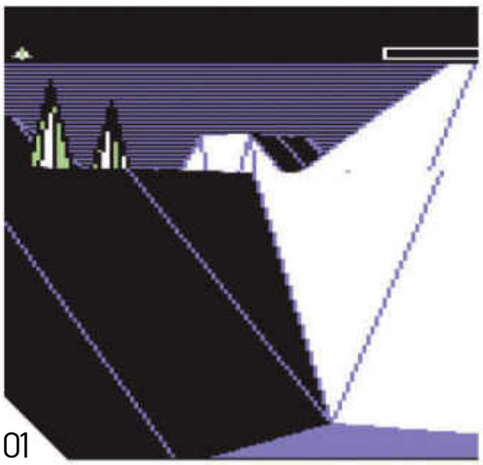
RAINBOW ISLANDS

After a row between Ocean and MicroProse over the rights, this exquisite conversion by Gary Foreman from the Taito coin-op was finally published to critical acclaim. In this follow-up to *Bubble Bobble*, Bub and Bob used rainbows to kill enemies and climb above the rising water. Superb graphics, giant bosses and Jason Page's jaunty music (*Somewhere Over The Rainbow*) make this one of the best conversions, replicating the gameplay secrets and tricks of the original but sadly lacking two islands.

commodore 64

PERFECT TEN GAMES

Commodore 64 has a staggering selection of fantastic games. Oh decisions, decisions. What to go for? Well, we hope you'll agree that this little clutch of C64 titles are pretty sublime



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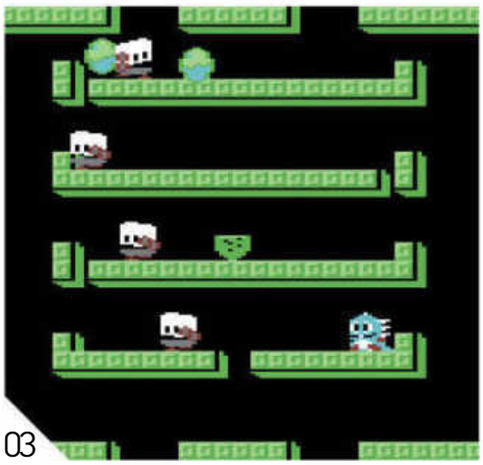

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THE SENTINEL

- **RELEASED:** 1986
- **PUBLISHED BY:** FIREBIRD
- **CREATED BY:** GEOFF CRAMMOND
- **BY THE SAME DEVELOPER:** STUNT CAR RACER

01 Geoff Crammond's name may be synonymous with racing games, but when he wasn't pouring his heart and soul into his latest *Grand Prix* title, he was adept at turning his hand to all sorts of different genres, with *The Sentinel* being a perfect example of his handiwork. Haunting and with a meticulously designed game engine that gives a tremendous sense of scale and depth, Crammond's *Sentinel* was one of the best strategy games on the C64 – although to be fair, it initially appeared on the BBC Micro – and even today offers a worryingly addictive challenge. Take control of a Synthoid, and climb the hills and valleys. Best of all, emulation means you no longer have to endure those lengthy screen loads. Lovely!

IK+

- **RELEASED:** 1987
- **PUBLISHED BY:** SYSTEM 3
- **CREATED BY:** ARCHER MACLEAN
- **BY THE SAME DEVELOPER:** MERCURY

02 There had been previous games involving the slamming of bodily appendages against each other, in a sweaty contest of stamina and skill, but it was Archer Maclean's *IK+* which was first to ménage à trois with the concept – metaphorically speaking. It revolutionised the mechanics of games like *Way Of The Exploding Fist* and *Karate Champ*, and also incredibly well on the humble C64. Music was by Rob Hubbard and while there was only one background, it was filled with many clever Easter eggs (those joyous bonuses you could spend months discovering). The fluidity of control made it easy to initially play, but this was backed up by a complex system which rewarded continued practice. A classic.

BUBBLE BOBBLE

- **RELEASED:** 1987
- **PUBLISHED BY:** FIREBIRD
- **CREATED BY:** SOFTWARE CREATIONS
- **BY THE SAME DEVELOPER:** SLY SPY: SECRET AGENT

03 There have been plenty of classic coin-op conversions on Commodore's mighty 8-bit, but *Bubble Bobble* ranks as one of the best. From its cute, vibrant – if slightly squashed looking – visuals to the outstanding, bouncy music, the C64 perfectly captured the spirit of the original arcade hit and proved to be the perfect game to show-off to your Spectrum and Amstrad-owning mates.

It might not feature all the secrets that appeared in the original arcade game and having to press up on the joystick in order to jump is no substitute for a proper fire button, but if you're looking for an extremely competent conversion of a classic arcade hit, look no further. This is a superb conversion that shouldn't be missed.

MAYHEM IN MONSTER LAND

- **RELEASED:** 1993
- **PUBLISHED BY:** APEX COMPUTER PRODUCTIONS
- **CREATED BY:** CREATURES 2
- **BY THE SAME DEVELOPER:** CREATURES

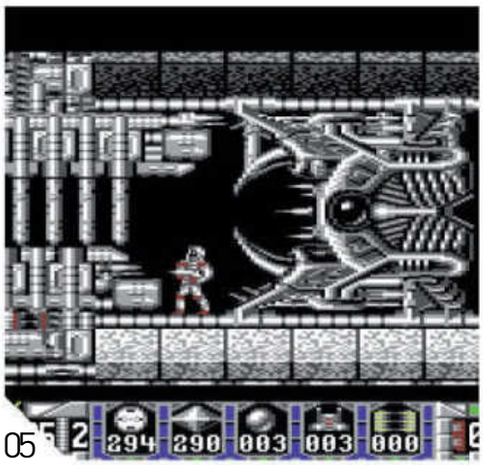
04 There was no question of this not making the Perfect Ten, what with it being regarded by many as the C64's last great release both in terms of gameplay and sheer technical achievement. As most already know, it infamously used a 'bug' in the graphics chip, which allowed entire screen scrolling and therefore resulted in much smoother and faster gameplay.

Despite being a C64 title it has all the speed and tactile control you'd expect from an early-Nineties platformer, which not only guarantees it a place here but also means it's still great to play even today. Being a dinosaur and returning colour to the land has never been such fun.

TURRICAN

- **RELEASED:** 1990
- **PUBLISHED BY:** RAINBOW ARTS
- **CREATED BY:** MANFRED TRENZ
- **BY THE SAME DEVELOPER:** THE GREAT GIANA SISTERS

05 There's an unwritten law in videogames that states: all C64 lists must feature at least one Manfred Trenz game. While many will no doubt argue that Trenz's *Turrican II* is clearly the better game, we've decided to stick with the original, mainly because there was nothing quite else like it when it first appeared in 1990. It may well have borrowed heavily from obscure coin-op *Psycho-Nics-Oscar*, but Trenz's technical wizardry of Commodore's machine simply blew us away, and it still manages to impress today. Part platformer, part shooter, *Turrican* features incredible visuals, a stunning score by music maestro Chris Hülsbeck and some of the most frenetic gameplay around. It fully deserves every accolade that has been bestowed on it.



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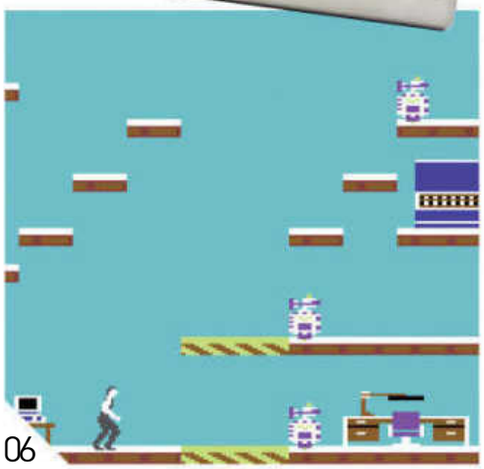
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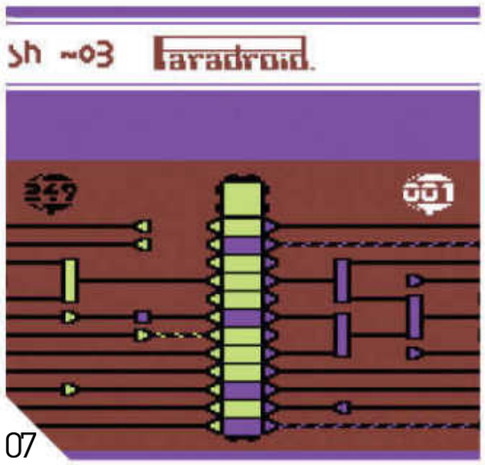

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IMPOSSIBLE MISSION

- **RELEASED:** 1984
- **PUBLISHED BY:** US GOLD
- **CREATED BY:** DENNIS CASWELL
- **BY THE SAME DEVELOPER:** PHASER PATROL

06 We sincerely hope everyone reading this will take the time to experience this timeless classic from Dennis Caswell. *Impossible Mission* was a perfect blend of joystick-waggling dexterity – especially when avoiding the terrifying spheres of floaty-electric-death – and also tricky puzzles (many had problems with the final password-piece assembly).

Although its premise – of searching furniture to find those elusive passwords and avoiding robots – may sound nauseatingly simple, it made for a videogame that was easy to get into, but difficult to put down again. Although *Impossible Mission* was ported to several other systems, for us the Commodore 64 original is still the best version.

PARADROID

- **RELEASED:** 1985
- **PUBLISHED BY:** HEWSON
- **CREATED BY:** ANDREW BRAYBROOK
- **BY THE SAME DEVELOPER:** URIDIUM

07 Ask any C64 owner to name their favourite games, and chances are that this superb effort from Andrew Braybrook will almost always make their top five. Taking control of a weak prototype droid called the Influence Device, your aim is to simply clear each boarded spaceship (of which there are eight) of its out-of-control robots. While your droid is woefully underpowered (even Dusty Bin could have it in a scrap) it does retain the unique ability to transfer itself into any available droid, albeit for a limited amount of time. This enables it to take out the ship's more dangerous foes (via a charming mini-game) and adds an interesting play mechanic.

With its subtle blend of strategy and blasting, *Paradroid* deserves to be in every C64 owner's collection.

WIZBALL

- **RELEASED:** 1987
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** SENSIBLE SOFTWARE
- **BY THE SAME DEVELOPER:** PARALLAX

08 Playing *Wizball* was a rites of passage for many Commodore 64 owners and became more than ample ammunition for those who wanted to taunt their CPC and ZX Spectrum owning peers. Insanely smooth scrolling, a scintillating soundtrack from the always dependable Martin Galway and its slick blending of genres means that *Wizball* will forever remain within the higher echelons of Commodore 64 classics. It might well have taken a while to get used to your ball's incessant bouncing, but once you finally mastered it and collected a few power-ups *Wizball*'s true identify and depth are revealed. Quite possibly one of the most beautifully crafted Commodore 64 games that you'll ever have the privilege to play.

PROJECT FIRESTART

- **RELEASED:** 1989
- **PUBLISHED BY:** DYNAMIX
- **CREATED BY:** ELECTRONIC ARTS
- **BY THE SAME DEVELOPER:** RISE OF THE DRAGON

09 Many games claim to have pioneered the survival-horror genre, but while others came before it, *Project Firestart* is one of the very best and is still supremely enjoyable today. Your task is to dock with a research vessel in space and find out why there's been no communication. From the start, when you see the body of a dead crewmember who has written the word 'danger' in their own blood, you know it's going to be an incredibly tense mission with plenty of twists and turns. Throughout the ship are various mutilated bodies, log reports, even a survivor; then you encounter the terrifying invisible enemies, which randomly appear. Multiple endings guarantee regular returns to that hellish place.

ZAK MCKRACKEN AND THE ALIEN MINDBENDERS

- **RELEASED:** 1988
- **PUBLISHED BY:** LUCASARTS
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** MANIAC MANSION

10 It's only fair to list one of LucasArts' excellent games. But we can already hear a great disturbance, as if millions of voices suddenly cried out in terror, due to our choice. Yes, we could have listed *Maniac Mansion*, but everyone knows *Maniac Mansion*. *Zak McKracken* is arguably just as good of a game, and the journalistic setting struck a chord in the office. Traversing the entire globe, protagonist Zak encounters aliens disguised with Groucho Marx-style nose-glasses and cowboy hats. Throw into the mix wacky sidekicks, a bus that travels to mars, and some bitingly witty newspaper headlines, and you have one hell of a crazy adventure.

Year released: Japan: June 1983, US: November 1982, UK: May 1983

Original price: Japan: 54800 Yen, US: $199.99, UK: £149.99

Buy it now for: £50-75/$81-121

Associated magazines: None

Why the Vectrex was great… Vectors have never gone out of fashion. They were cool in the Eighties, and they are still cool today, as evidenced by games such as *Geometry Wars*. They have not aged with time like many other graphics, their sharp, pinpoint definition and almost hypnotic phosphor glow a lure, drawing you closer. The games behind them were pretty good also, with a level of quality today that just keeps going up and up. To not include Vectrex is to be incomplete

VECTREX

UNTIL 1982 ALL HOME SYSTEMS HAD ONE THING IN COMMON: THEY OUTPUT A RASTER DISPLAY. THE VECTREX, IN ITS SLEEK BLACK EXTERIOR, WAS ABOUT TO CHANGE ALL THAT. MAT ALLEN TAKES A LOOK AT A CONSOLE THAT HAS ARGUABLY GAINED IN POPULARITY WITH TIME, AND IS NOW CONSIDERED AN ESSENTIAL PART OF ANY GAMING COLLECTION

The Vectrex, when you look at it in today's gaming environment, is a complete aberration: different to anything that came before it or has come after it. While there are a few other examples of the display/machine hybrid, it is the only one to stand out in its own right, and the only machine to offer a dedicated vector-based gaming experience. The fact that it also had one of the shortest lifespans of any machine makes it doubly interesting. If you thought the Dreamcast didn't have that long of a commercial life, then pity the poor Vectrex, which was dead within 18 months of launch. Yet today it has a cult following, and a homebrew scene second in size to that of the Atari 2600.

The men primarily responsible for creating the Vectrex we love today were Jay Smith and Gerry Karr. Smith had a long and detailed technical background that started while working on the Apollo space program. "I was really a gadget maker, and not too long after that, I went to work at Mattel Toys," he states. "We got into making electronic toys, and from electronic toys to videogames, which were just coming onto the scene."

Smith was also head of two companies that are often labelled together as Smith Engineering/Western Technologies, which, for the further purposes of this article, are abbreviated to SE/WT. The real break for Smith came with the Microvision, which was picked up by Milton Bradley (MB) for distribution in 1979. It was while dealing with MB that Karr met Smith; Karr would later work on the Microvision before being hired for what would become the Vectrex project and be responsible for much of the technical design.

"We really didn't have any idea at the time that this would become a classic. What we were trying to do was push the envelope, move it to the next level, do something unique, make your contribution that way, and provide another outlet," admits Smith. Vector machines such as *Asteroids* and *Tempest* were popular in

Larger Vision

Not only was Jay Smith responsible for designing the first vector home console, he also designed the world's first portable machine: the Microvision. Unlike modern incarnations such as the Game Boy and PSP, the Microvision was just a hollow shell with buttons and an LCD display. The real grunt of each game was present on the changeable cartridges; they didn't just contain the 2K of ROM holding the instructions, but also housed the actual processor.

If you think this sounds like a strange way to do things, then you'd be right. The whole idea of the handheld was way before the technology existed to do it proper justice, especially considering the screen resolution was a mere 16x16 pixels. By the time Milton Bradley canned the project two years later, there had been 11 releases in the US and seven in Europe. Today a good condition Microvision is hard to find, given that it often suffers from the ravages of time.

"THE VECTREX, WHEN YOU LOOK AT IT IN TODAY'S GAMING ENVIRONMENT, IS A COMPLETE ABERRATION"


VECTREX
MB
VECTREX
CASETTE
PERCHASE
MB
VECTREX
CASETTE
FORTRESS OF
NARZOD
NARZOD
VECTREX
1 2 3 4

» The 3D Imager. It promised so much and was never able to deliver on it.

the arcades and, Karr recalls, "Part of the initial design specification and push to sell was to produce a device capable of emulating *Asteroids*." Continuing the portable theme, the idea for a handheld device was formed and a prototype was built with a one-inch screen using a supply found by hardware designer John Ross, though in hindsight it was incredibly hard to achieve logistically, given the short distances involved with deflecting the dots from the plates inside the CRT.

Towards the end of 1980, so it is told, workers from SE/WT found a supply of five-inch monitors going cheap and it was decided that the new vector project was going to be based upon this display instead. "There were really only two iterations of design. The original concept was for a device called Mini Arcade. It was a five-inch screen, much smaller and less capable. We ended up licensing it to GCE, in a different configuration, but quite similar to what it looks now. As we were on a short schedule, and we had control over the design, there was constant evolution right up to production. At any one time, it was prototyped what was there, but conceptually it didn't vary a great deal," states Smith. By the end of the year the general design of the machine was almost complete and Smith began to look for potential investors.

"We optioned the product to Kenner, who were the ones to do the *Star Wars* products. Kenner thought about it, and thought, and thought, and this all occurred in the winter of 1980, spring of 1981. Finally, in the summer of 1981, they decided no, it would not be popular, would never go. They gave it back to us in around July or August, and we went to a guy called Ed Krakauer, who was the key guy for Intellivision at Mattel and then left to form his own company called GCE, or General Consumer Electronics."

Krakauer saw the potential for the machine immediately. "Ed was really quite a visionary, and he took a look at it and said, 'Great, that's wonderful, if it could have a bigger screen, I'd really be interested.'" Therefore, in place of the original five-inch screen, the final design encompassed a nine-inch screen instead.

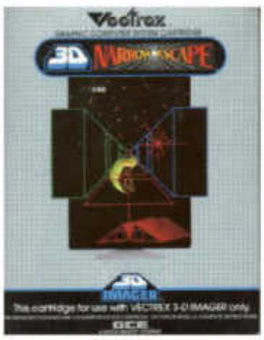
The 'Mini Arcade' name was not exactly catchy in the eyes of the marketing people – and, apparently, the name of another already-existing product – and so a suitable replacement was sought. After a brainstorming session, programmer Tom Sloper came up with the name "Vector-X", which was eventually contracted to the name we know today.

"And so by September or October we were in fully swing with a plan to do a games system and 12 games, and have them all ready to show by June 1982, which was about nine or ten months away. So in the ensuing ten months we developed the entire games system, the operating system for the game, 12 games that were showable at CES, and that was the birth of Vectrex."

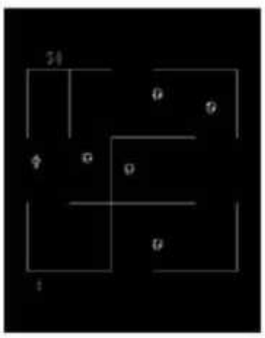
In that time, a number of design points were nailed down, such as the screen orientation, the control system and the overlays. "The Vectrex has a vertically orientated screen instead of horizontal. This was so it didn't look like a TV. By orientating it vertically, it gave it a different look, and it had its own value as a game."

Smith continues to remember the choices made over the joystick. "How did we decide it was an analogue joystick or a digital joystick, and why was it on the left instead of the right? The placement of the joystick wound up being from a discussion that if you were flying an F-14 or whatever the fighter was at the time, the pilot's hand is on a flight stick in his left, and the throttle in his right. So he does all the flying control with his left hand."

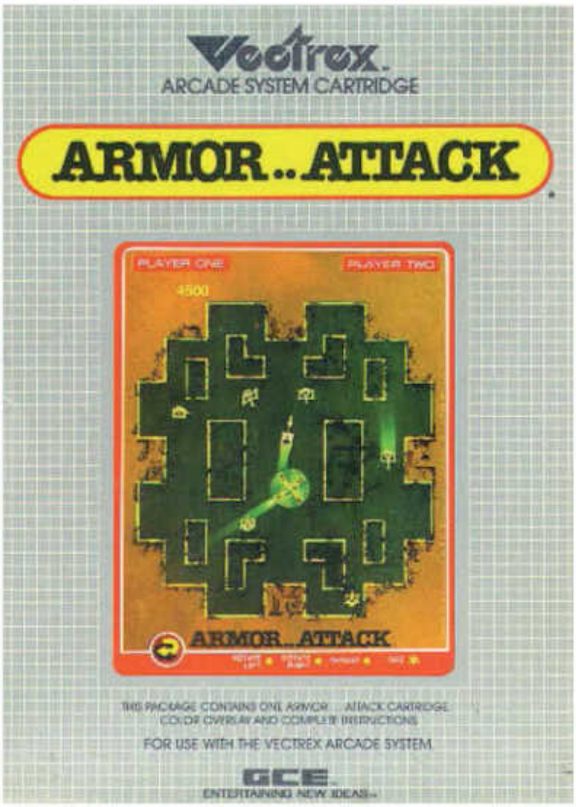
"THE VECTREX HAS A VERTICALLY ORIENTATED SCREEN INSTEAD OF HORIZONTAL. WHY? THE REAL ANSWER WAS SO IT DIDN'T LOOK LIKE A TV SET" JAY SMITH

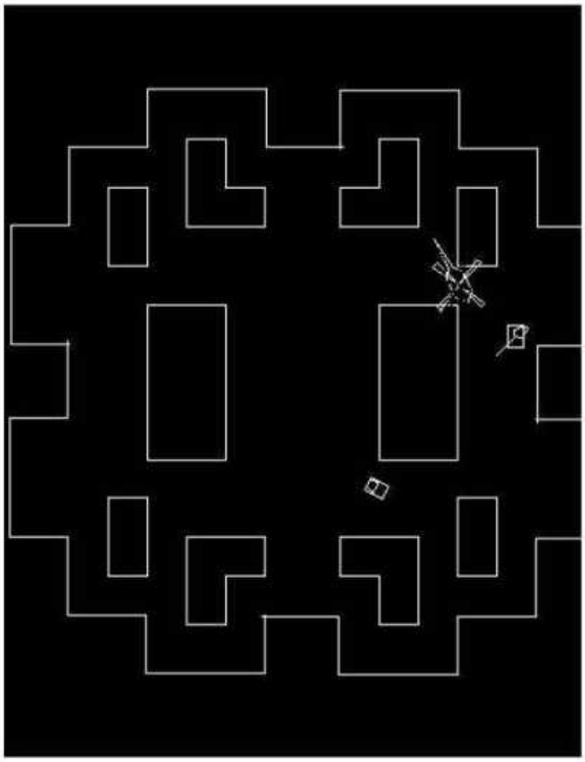


» Probably the best of the three-dimensional games, this one showed off the true nature of the headset.

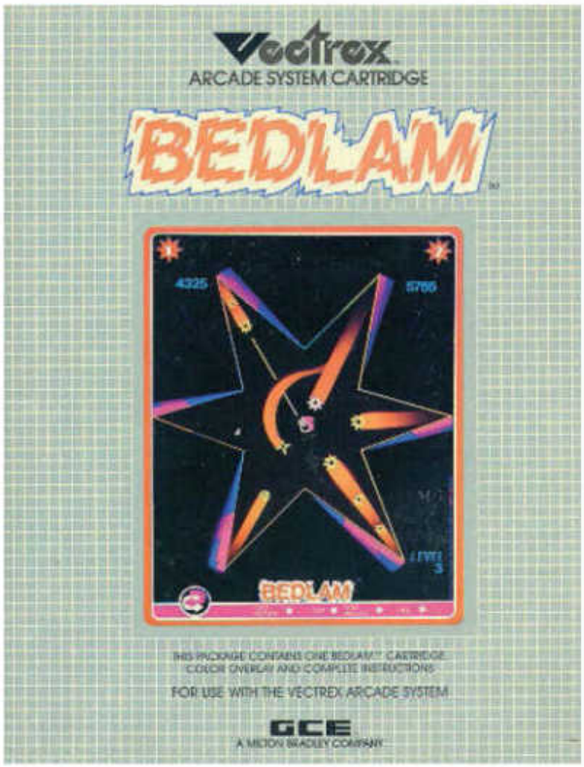


» *Berzerk*: A very competent conversion of the Stern arcade, apart from slowdown with lots of robots.

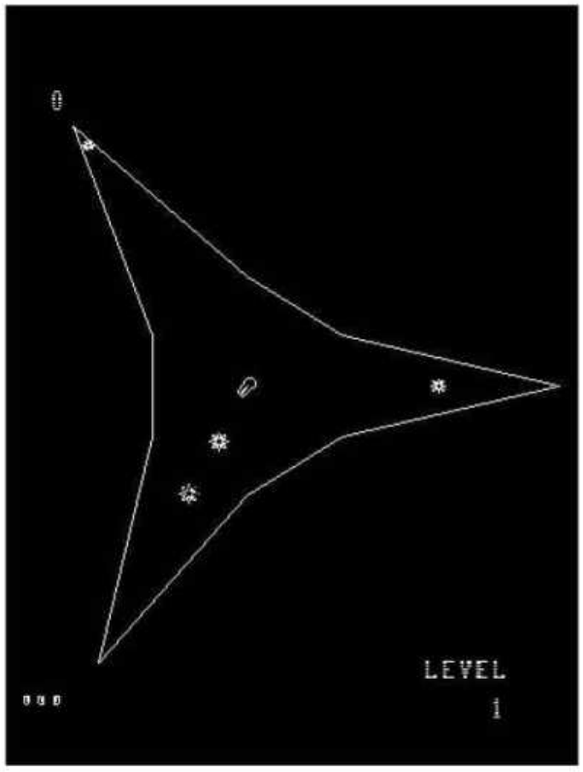




» *Armor Attack*: Like many Vectrex games, this could be played as two-player co-op. Take on the might of tanks and helicopters with just a jeep. Nothing like making it easy.



» *Bedlam*: Easiest way to describe it would a reversed *Tempest*, where your ship is in the middle and the enemies attack from the outside.



Boston Out

A special version of *Clean Sweep* that was co-produced with the Mr Boston Liquor Company. *Clean Sweep* itself was a *Pac-Man* variant where you controlled a vacuum cleaner sucking up all the money in the maze while pursued by the threatening pincers of doom, though the vacuum only had a certain capacity, meaning it had to be emptied every so often.

The new version replaced the vacuum cleaner with the company's symbol, a top hat, and the title screen featured an advert for Mr Boston Liquor products. It was almost certainly never commercially available but was handed out as a promotional item. One copy known to exist is complete with the box and overlay, so the company went the whole hog in producing the full set of pieces. It is, however, the hardest produced cartridge to find, as only two others have been found, making this a prime candidate for some high bidding should another one turn up on eBay.

» *Blitz*: Go on you Os! You can beat the Xs now!

The size of the joystick unit was based purely on the fact that the unit was as wide as it was, and it needed something that size to fit the slot at the bottom. This is also why there were four buttons to use, and was also the reason why analogue control was present: there was the space and it needed to be filled. Almost all consoles since the Vectrex have had the pad/stick on the left, and in terms of further pioneering, the Vectrex was also the first console to have a dedicated analogue control as standard.

It wasn't all easy going, Smith recalls: "Another big problem along the way was that it was a TV set, and had a lot of digital circuitry in it. The screen with all these electrons running around didn't go well with the digital circuitry at all. There was a lot of moving around, shielding, but we got through it."

In the midst of the hardware finalisation, there needed to be some games to play on it. Paul Alan Newell, Mark Indictor and John Hall were pulled off an Atari 2600 reverse engineer project and assigned to writing games or develop the internals for the launch of the Vectrex instead. Joining them were placement appointees Bill Hawkins and Chris King, who were students at Georgia Tech, and Duncan Muirhead, who had just dropped out of a course at UCLA. All six were assigned to write the first batch of games pencilled in – *Minestorm*, *Scramble*, *Armor Attack*, *Star Trek*, *Berzerk* and *Rip Off* – and that was later expanded to 12 by the time the console was to be shown at the Chicago CES in June 1982.

Many of the early titles came from Cinematronics, with WT/SE striking a licensing agreement that allowed full access to each other's games. The source code of many of the arcade machines was fully available to the Vectrex programmers, and Cinematronics had the option to release any of the original Vectrex games it liked as full arcade versions, which it eventually did with *Cosmic Chasm*.

Included with each game was the final component: a hard plastic overlay to attach to the front of the unit. The marketing department decided that the black and white display would not be as appealing to the general consumer, and it needed an injection of colour. Newell especially was never happy about them, and there was always a rift between some of the programmers and those advertising the machine regarding the policy. Hawkins once joked that they had thought about coding messages into each game stating, "for improved gameplay, remove the overlays"!

Smith comments about having a game included with the console: "At that time most Atari cartridges were done in 4k, with some adventurous cartridges getting up to 8k. The system ROM that ran the machine was put in 4k and the original game that was included with the unit was put in the other half of an 8k ROM. So the included game required no cartridge. Everything was in one ROM within the unit." However, while Hall and Karr had worked together on the system ROM called the Executor, when Hall was assigned to write *Minestorm*, the eponymous *Asteroids* clone, Karr felt that the module needed rewriting from scratch.

After a successful showing in Chicago, the Vectrex was eventually released in November 1982 in the US for the reasonable price of $199. Following good reviews and press, it sold modestly well and looked to become another success for Smith. It was also around this time that another player was becoming interested in entering the console market properly, as Smith recalls: "In late '82, GCE

» How are you going to sell the console when it appears the player is more interesting to watch than the game?

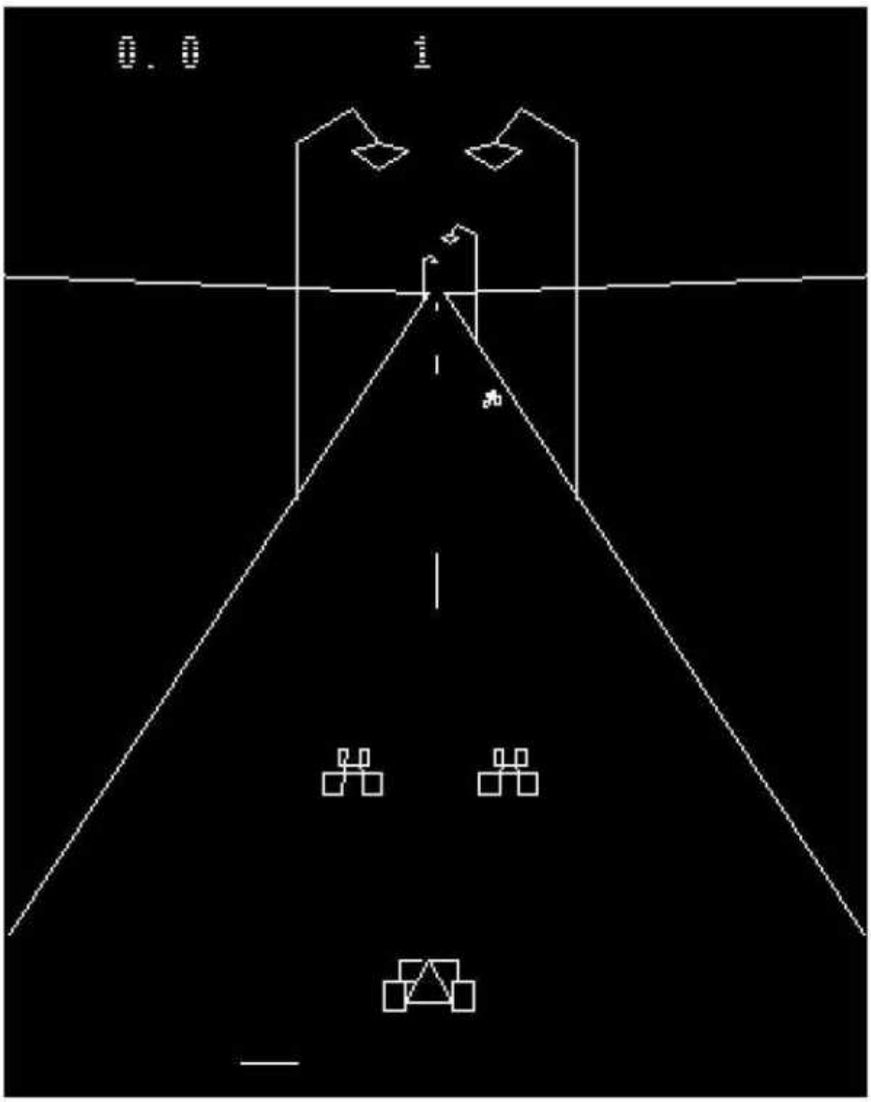
» Using cute manga girls to sell product in Japan is an age-old tradition.

"WHEN DID THEY STEP INTO THE FRAY? JUST ABOUT WHEN THE WHOLE BUSINESS TANKED!" MIKE CARTABIANO

began negotiations with Milton Bradley, who bought the whole product line and put it out in force for 1983. They did TV advertising; they actually went up directly against Atari and Intellivision, when in retrospect they should have gone for a niche game or a specialty game; something that a kid could take to his bedroom."

Now Mike Cartabiano comes into the picture, who would work on much of the product development and promotion for the console at Milton Bradley. He had met Smith during the Microvision period as he had just started at MB as a design manager. His thoughts about that time are quite dry humoured and blunt: "Coleco were right down the road from Milton Bradley, so they had to step right into the fray. When did they step into the fray? Just about when the whole business tanked! They had cash but not much brains."

But they had bought the Vectrex and the games, the packaging, and they also decided that this would be a great product for Europe, because at the time Atari, the Intellivision and Colecovision had made a big impact in Europe. MB had a large operation over there, with factories in Ireland and Germany. They shipped a load of Vectrexes over to Frankfurt, I think, did some testing and got a great reception over there. People went wild over it in Germany."



» *Hyper Chase*: A game very much in the ilk of *Turbo* and other such racers.

MB had the means to distribute and advertise the Vectrex properly worldwide, something up until that point GCE would never have been able to contemplate. Whatever can be said about MB's handling of the console in general, in hindsight without it this wonderful little machine would probably have been stuck in the US and not be as popular as it is today.

Cartabiano naturally has his own scathing critique on the internal promotion of the Vectrex: "So they said, 'Now we're going to play with the big boys,' but instead of doing it the right way, like get people who knew what the game business was about, who knew how to play games and how to sell games, they gave it to their toy salesmen, who had no interest in pushing this product. So they found themselves facing some sale challenges, [and] meanwhile the business in general was getting very competitive. There was a glut of product."

While the Vectrex was being rolled out in Europe, MB sold the rights to distribute the console in Japan to Bandai, which would label it as the Kousokusen over there. Although the 11 available games were sold at a reasonable price of 4,800 Yen each (around £25 today) the machine never took off, which was an indicator back then of how Japanese attitudes to Western technology have not changed when viewing the similar performance of Microsoft's consoles today.

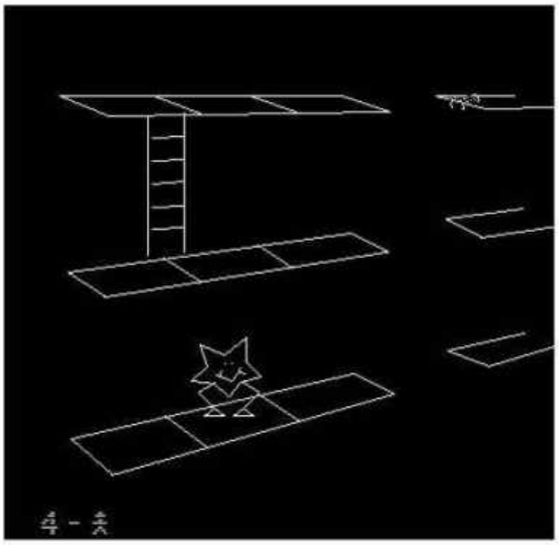
During 1983, a number of new products were developed, most that never made it to market and two that did. A colour Vectrex was designed, the process of which Smith recalls vividly: "It was a serious proposal to put it in a regular Vectrex case, and the TV tube had two layers of phosphor. The obvious thing to do is make it into a colour TV, but it was three times as expensive because instead of one gun providing a point you had to have three guns for RGB. You had the mask on the tube, the tube was more expensive, the electronics were more expensive; it was out of the question cost-wise. This was a Vectrex that had two layers of phosphor on the tube – a red layer and a green layer – and you ran the electron gun into the CRT at two different voltages: 18,000 and 25,000 volts."

However the best laid plans and all that: "Nice concept, worked well, except that going from 18,000 to 25,000 volts was too time consuming. And at 30,000 volts you burn a hole in the tube. If you look at the colour Vectrex [the sole prototype is always on display at CGE] you will see it has a nice little hole burnt in the phosphor!"

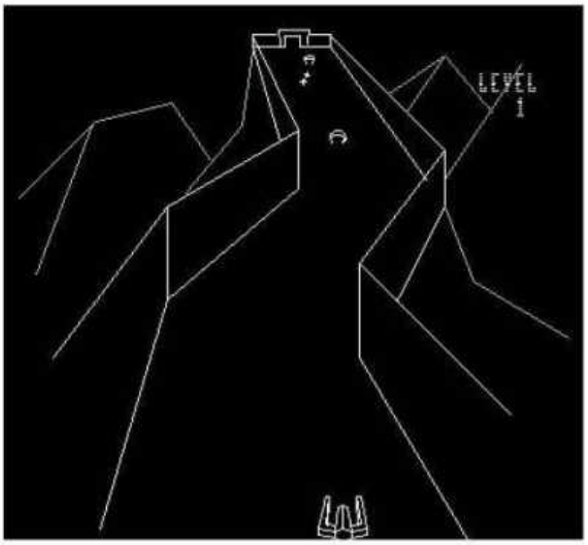
Aside from scrapping the idea for a colour version, Cartabiano recalls other concepts that fell by the wayside. "Internally we loved this thing. We came back with ways to blow this thing out, be competitive, and keep us in this business. So we started on several campaigns, one was to take the basic technology and start to expand it. Jay was working on colour technology and a couple of other things so we left that to him, and we looked at the peripherals and we started making some of the same mistakes the other guys were doing. So we had developed a full QWERTY keyboard, and overlays for that, and a musical device that could play really bad music with speaker systems that could plug into it in really odd places. Then we had a voice recognition module… We actually built a prototype for a baseball game on Vectrex, to call a pitch and a few other things, and played really badly."

The two peripherals that did make it to sale were the lightpen and 3D Imager. The lightpen was a natural introduction given the technology available and the facilities of the Vectrex itself. Contrary to popular belief, the pen itself is actually a receiver, with the screen being scanned invisibly to find where it is positioned. As the joystick ports have a voltage line, this provided the input needed to power the pen itself. Three titles were released to take advantage of the device and it was met with reasonable success.

The 3D Imager is an interesting device, mainly because, as a piece of technology over 20 years old, it still works amazingly well and is still one of the best examples of 3D imaging, thanks to the



» Help! Spike! Eek! Molly!



» *Fortress Of Infuriating Death* more like…

Homebrew Heaven

Given the Vectrex's small original library, it may come as no surprise that the homebrew scene is actually bigger by comparison. Since John Dondzila's first steps over ten years ago, the scene has developed into a vibrant, thriving community that constantly seeks to push forward the boundaries of the technology and what can be done with it. In return it has resulted in a dedicated voice synthesiser add-on, a replacement 3D Imager, flash memory cartridge and onboard battery saving.

But all this is nothing without the games. Such masterpieces as *Protector* by Alex Herbert, *I Cyborg* by George Pelonis, *Gravitrex* by John D, *Spike's Circus* by Alex Nicholson and *Nebula Commander* by Craig Akers are proof positive that today's developments are just as good, if not better, than those during the Eighties. Thankfully most homebrew is still available to buy today so go search the web and support these guys in their efforts!

www.vectrexcarts.com
www.vectrex.biz
www.furyunlimited.com
www.vectorzoa.com
www.madtronix.com
www.classicgamecreations.com

"THEY SHIPPED A LOAD OF VECTREXES OVER TO FRANKFURT I THINK, DID SOME TESTING AND GOT A GREAT RECEPTION OVER THERE. PEOPLE WENT WILD OVER IT IN GERMANY." MIKE CARTABIANO

efforts of designer John Ross. Thankfully, to save having to use the old hardware and/or spend a lot of money acquiring it – originals sell for over £150/$243 usually – a modern version has been developed in conjunction with new games taking advantage of what it can offer, namely depth of vision and colour. It's just a pity that back then it launched dead, right at the start of 1984, and this is why the original is hard to find today. *3D Minestorm* included with the unit and *Narrow Escape* especially are pretty good in their own right.

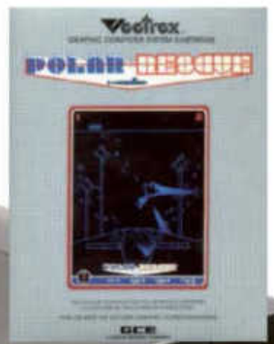
"By 1984, Vectrex succumbed to the entire problem that overcame the whole videogame industry at the time." Smith's conclusive statement really needs no more comment. A few months into the year, MB closed GCE and started to sell off the remainder of its stock at cut prices, with the unit down to $49 and games $10 each in the US by the summer. All this was really in preparation for the takeover by Hasbro that occurred in May of that year. Stock that wasn't sold was apparently landfilled in Springfield, Massachusetts, according to Cartabiano.

Four years later, Smith had the idea to resurrect the console as a handheld, taking the concept to Milton Bradley. "The thought at the time behind that was Sinclair had put out a device they called the flatscreen pocket TV. We hooked this up and made a Vectrex out of it [the tube]. MB thought about it, finally decided it would have to sell for about $100-110, so decided no, it could never sell anything like that. About a year and a half later, the Game Boy came out!"

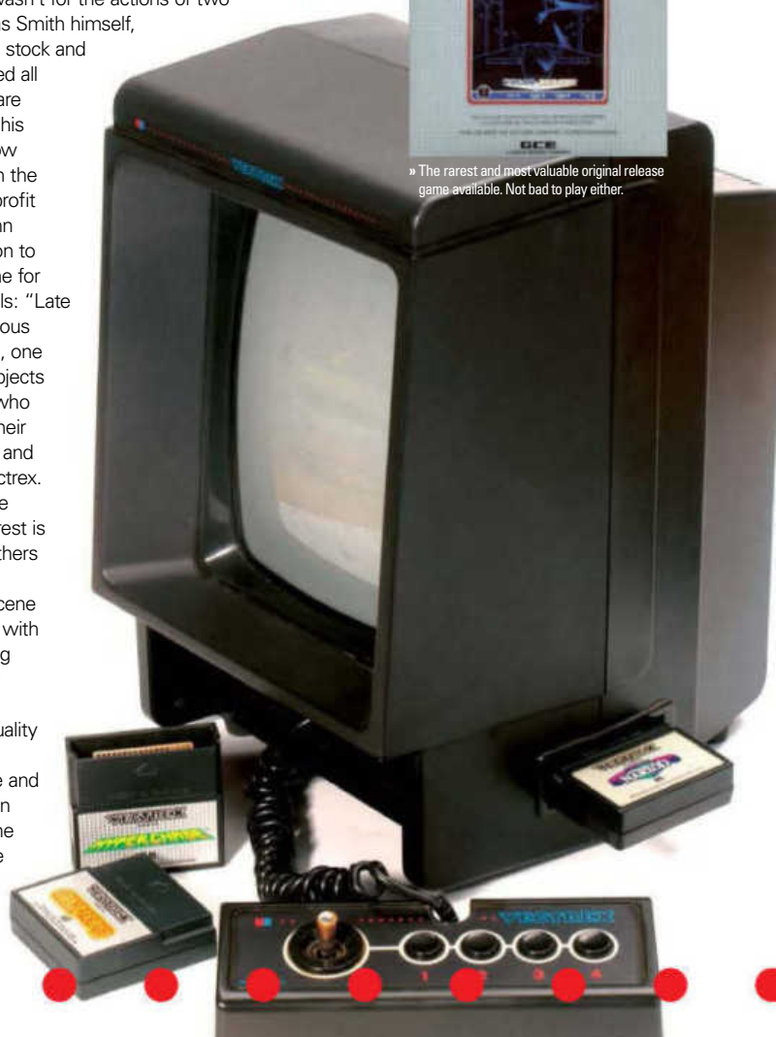
And with that, the Vectrex could have remained this curio console from the Eighties, if it wasn't for the actions of two individuals. The first was Smith himself, for upon MB liquidating stock and closing GCE, he obtained all the rights to the hardware and software back into his own companies and now makes them available in the public domain for non-profit use. The other was John Dondzila, the first person to write a homebrew game for the Vectrex, as he recalls: "Late 1995, following the various Vectrex Usenet threads, one of the most popular subjects was always someone who was going to develop their own Vectrex RAM cart and code games for the Vectrex. I decided I wanted to be that someone and the rest is history." In his stead, others have since followed.

Today, the Vectrex scene keeps getting stronger, with more people discovering what it has to offer and a dedicated group of individuals producing quality homebrew titles. For a console that arrived late and died so early, it has risen like a phoenix to become one of those must-have pieces of hardware.

» *Pole Position*: Given the potential limitations of the hardware, not a bad conversion indeed.



» The rarest and most valuable original release game available. Not bad to play either.



PERFECT TEN GAMES

The Vectrex only had 28 programs officially released for it, but over the years there have been some amazing homebrew titles coming out. Here's a selection of both…

01

SPACE WARS

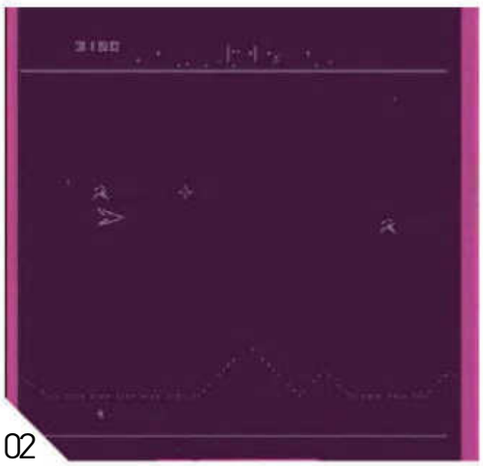
- **RELEASED:** 1982
- **PUBLISHED BY:** GCE
- **CREATED BY:** GCE
- **BY THE SAME DEVELOPER:** MINESTORM REVIEW

01 Everyone knew *Space Wars* would make the top ten list, since it's not only a great adaptation of a timeless classic but also the purest distillation of the multiplayer gaming ethic. Even today it's great fun and, while an obvious choice, is a title every Vectrex owner should get. Gameplay is elegantly simple: it's you and a rival ship, turn left or right, fire, accelerate, and warp; two ships enter, one ship leaves. Terrific in one-player thanks to some decent AI, it's unstoppable with a friend. It's a title with many clever touches, like bits of ships getting shot off and becoming debris, or the central star's gravity affecting your speed. Brilliant.

PROTECTOR

- **RELEASED:** 2003
- **PUBLISHED BY:** N/A
- **CREATED BY:** ALEX HERBERT
- **BY THE SAME DEVELOPER:** YASI

02 The best Vectrex game of all time? The most important Vectrex game of all time? One thing is for sure: this superb *Defender* clone grabbed the community by the proverbial balls when first previewed and led many to believe it couldn't possibly be done on the hardware. How wrong they were. Alex Herbert's seminal tribute to Jarvis' classic is just one example of the untapped potential the machine held and the control scheme was a perfect fit to the Vectrex design. Thankfully now available in unlimited format, the original limited-release with custom box and overlay – of which there were only a hundred copies – has become one of the most expensive homebrews to acquire.


02

ARMOR ATTACK

- **RELEASED:** 1982
- **PUBLISHED BY:** GCE
- **CREATED BY:** DUNCAN MUIRHEAD
- **BY THE SAME DEVELOPER:** WEB WARS

03 A rocket-firing jeep, enemy tanks, and a terrifying helicopter, which isn't bound by buildings on the ground, are all trapped among the rubble of a ruined maze-like war zone. It may not sound like much, but this is a tense little action title backed up by some excellent AI. Shots can't travel through walls, so it becomes a game of cat and mouse as you attempt to outmanoeuvre the enemy tanks attempting to flank you. When hit, though, tanks aren't always damaged – they can sometimes still move their turrets and return fire. Like the best videogames it affects the imagination, conjuring up images from war films.

SPACE FRENZY

- **RELEASED:** 2006
- **PUBLISHED BY:** N/A
- **CREATED BY:** JOHN DONDZILA
- **BY THE SAME DEVELOPER:** PATRIOTS, VECMANIA, GRAVITREX

04 With the Vectrex living such a short time and the wealth of vector arcade machines during that era, there are still opportunities to bring them across to the home format. John Dondzila's most current release is a homage to *Space Fury*, an obscure Sega/Gremlin title that took a lead from *Gorf* and gave you a taunting alien adversary. *Space Frenzy* as a game is almost identical to the arcade parent bar the colour and plays fast and hard in the traditional 'shoot everything on screen' genre, though also giving the player the opportunity to improve their shot power by docking with upgrades.

DARK TOWER

- **RELEASED:** N/A
- **PUBLISHED BY:** N/A
- **CREATED BY:** JOHN HALL
- **BY THE SAME DEVELOPER:** MINESTORM II

05 Technically not an official release since it never came out, though a prototype was later found, dumped, and is now available on most multicarts. Regardless, it's one of the best games on the system and, interestingly, is actually based on a 1981 board game by Milton Bradley. *Dark Tower* could be regarded as the system's first and only adventure RPG. The game has you wandering 3D fields of trees, opening treasure chests, avoiding tornadoes, and battling wicked mages. There might not be any saving, but it's a thrilling adventure and is still quite exciting now.

03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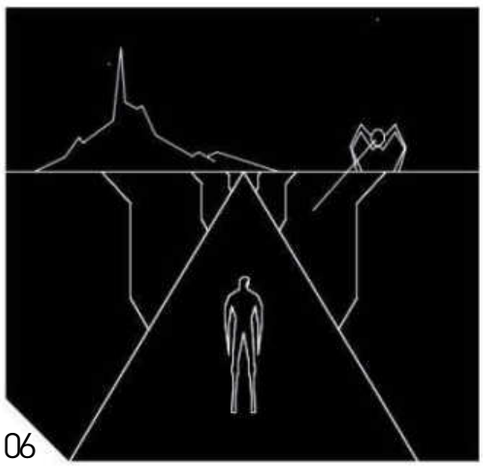


06

07

08

I, CYBORG

- **RELEASED:** 2004
- **PUBLISHED BY:** N/A
- **CREATED BY:** GEORGE PELONIS
- **BY THE SAME DEVELOPER:** WAR OF THE ROBOTS, VECTOR 21

06 **One thing can be said about George Pelonis' output on the Vectrex, and that is it's not your average run-of-the-mill game idea.** Everything he has done so far is just a little bit different, not something that has really been attempted in the past. *I, Cyborg*, while a name homage to a more well-known publication, is a highly challenging escape running game where you control the titular character in its attempt to break free of the prison he is locked inside. Unlike many other titles, this game fully uses the 32k memory space allocated and will keep most players occupied for a long time trying to complete it.

COSMIC CHASM

- **RELEASED:** 1982
- **PUBLISHED BY:** GCE
- **CREATED BY:** BILL HAWKINS
- **BY THE SAME DEVELOPER:** CRAZY COASTER 3D

07 ***Cosmic Chasm* captivates our minds because, considering it's a game from 1982, there is surprising depth to it – like trousers that appear normal, but have infinitely long legs.** The basic premise is that you're trapped underground, in a massive maze-like cavern, but have a map charting your progress, and each cave has both enemies that try to kill you, and also a massive expanding central core. Luckily, you have a shield, lasers, and a drill with which to break down walls blocking your progress. The goal is to reach the core, blow it up, and then make your way back out of the caves before a chain reaction blows everything up.

STAR SLING

- **RELEASED:** 2006
- **PUBLISHED BY:** N/A
- **CREATED BY:** ALEX NICHOLSON
- **BY THE SAME DEVELOPER:** LOGO, SPIKE'S CIRCUS

08 **Ever play *Quantum*? Most of you probably haven't, given that it's an obscure, low-production-run Atari coin-op.** Alex Nicholson hadn't heard of it and yet managed to produce what would prove to be a natural evolution of the concept and a challenging game to boot. Floating in space, your little ship is equipped with a tractor beam and lasso-type weapon, the object being to ensnare on-screen like-shaped entities to destroy them. At the same time, you avoid colliding with the shapes by using the tractor beam to match their velocity to pull you along. It's hard to explain, but it becomes easy to understand when playing. And very hard then to stop playing.

09

SPIKE

- **RELEASED:** 1983
- **PUBLISHED BY:** GCE
- **CREATED BY:** GCE
- **BY THE SAME DEVELOPER:** N/A

09 ***Spike* is an important game for many reasons. It's a platformer featuring a hedgehog, but one that isn't *Sonic*. It's also technically the only platformer on the Vectrex system.** Then there's the fact that it has some awesome and unforgettable digitised speech – we chuckle every single time we hear "OH NO!" All this has led to Spike becoming something of an unofficial Vectrex mascot – and rightly so, since the game itself is awesome fun. It's essentially a clone of the arcade classic *Donkey Kong*, except slightly different. You need to use warping ladders to reach and collect a key, before climbing to the summit. You can also kick flying TVs, which try to kill you. It's crazy!

THRUST

- **RELEASED:** 2004
- **PUBLISHED BY:** MARK SHAKER
- **CREATED BY:** VILLE KRUMLINDE
- **BY THE SAME DEVELOPER:** N/A

10 **After doing the rounds in the Eighties and being resurrected for the Atari 2600, this vector-based classic finally made the transition to its most natural home only as recently as 2004.** Taking inspiration from the C64 version, complete with translated Rob Hubbard soundtrack, it not only perfectly recreates the original but goes beyond the design with an additional rock hard difficulty level and time attack mode that will test even the most hardened *Thrust* players. Words are inadequate to be able to praise this game highly enough, with just the right balance between learned progression and challenging frustration evident with every turn, thrust and shot. In fact, the ultimate tribute to Jeremy Smith's genius.

10

MSX

THE JAPANESE MSX COMPUTER STARTED LIFE AS THE WORLD'S FIRST STANDARDISED COMPUTING HARDWARE BUT ENDED UP BEING NOTHING MORE THAN AN HISTORICAL FOOTNOTE. IT DID HAVE SOME BLOODY GOOD GAMES, THOUGH, AS ASHLEY DAY REMEMBERS...

One of the greatest things about the 8-bit micro age was the sheer variety of machines and games available. The boom in popularity of home computing led almost every electronics firm of the day to manufacture their own games machines, and the UK was flooded with all manner of wonderful hardware and games to play on them.

It was a great time to be a games fan but also one of the most turbulent. There were the playground arguments about whose machine was best, of course, but there was also a huge problem for parents who, faced with so many choices, often didn't know which computer to buy. Game developers had the same problem: with new machines hitting the market every month, how could they know which would become successful and, therefore, which they should develop their games for? And those kids in the playground, they could only share and trade games if they happened to be using the same hardware as their friends were.

Surely, the solution to these issues would be one universal hardware format that could eliminate the concerns of consumers and developers and ensure that no matter what game you bought, it would work on your own machine. It was a good idea in principle; after all, it had worked for the home video industry, as competing tape manufacturers gradually gave up on their own formats throughout the Eighties and came to support JVC's VHS standard.

One man with the vision to realise the dream of a unified gaming platform was Kazuhiko Nishi, a prominent figure in the Japanese games industry from its very inception. In 1977 he founded a publishing company called ASCII Corporation, which specialised in games magazines and launched the country's first micro-computer periodical, named *ASCII*, in the same year. In 1979, he joined Microsoft and became the vice president in charge of the Far East and, later, the director and vice president in charge of new technologies, all while maintaining a controlling interest in the ASCII Corporation. And it was during this fateful time that he proposed the legendary MSX standard.

Year released: 1983 (MSX) 1986 (MSX2) 1988 (MSX2+) 1990 (MSX Turbo R)

Original price: Various. Example - ¥16,500 (Toshiba HX10)

Buy it now for: £10-£80/$16-129 depending on model

Associated magazines: *What MSX?*, *MSX Computing*, *MSX User*, *MSX Fan*, *MSX Ouendan*

Why the MSX was great… Though it failed to make a splash in the UK, the MSX was an important machine elsewhere around the world. It was the first taste of home computing for many in Japan, Holland and Brazil, was Microsoft's first real investment in videogames, nearly two decades before the Xbox, and the first computing 'standard'. It is remembered now for its weird and wonderful hardware variations and its catalogue of Japanese games that spawned several evergreen franchises.

On June 27, 1983, the MSX was officially unveiled to the world as a collaboration between ASCII and Microsoft. The former would control and license the hardware specification, while the latter would program the format's operating system and BASIC language. Impressively, the MSX group had already attracted a huge number of Japanese manufacturers to the cause, and big names like Sony, Toshiba, Panasonic and Yamaha, among many others, announced that they would release their own MSX machines in Japan.

The plan was simple yet brilliant. Every licensed manufacturer would be allowed to create any kind of computer they wished and badge it with the MSX logo as long as it incorporated a strict number of features. These were a Zilog Z80 processor, running at 3.58MHz; a minimum of 8kb RAM; a Texas Instruments TMS9918 Video Display Processor; a General Instruments AY-3-8910 sound chip; and a 32kb ROM containing the MSX BIOS and Microsoft's MSX BASIC. Compatibility between machines was achieved by making sure all models also featured the same keyboard, cartridge slot, and expansion ports, but manufacturers could also add their own USPs like additional cartridge slots, tape drives, extra RAM, and so on. Many of these extra features were dictated by the way each company decided to position their own MSX model within the market. Some, like the Toshiba HX10, were sold simply as game machines and were produced to the lowest possible specification to remain affordable and were usually packaged with a pair of joysticks. Yamaha, meanwhile, marketed its MSX

> **"Manufacturers could add USPs like additional cartridge slots, tape drives, and extra RAM"**
> ON THE MSX MODELS

INSTANT EXPERT

- **Nobody really knows** what MSX means. Microsoft claimed that it meant MicroSoft eXtended. Nishi, however, claims that it means Machines with Software eXchangeability.
- **The MSX computer** was popular in parts of Eastern Europe because it was very good at creating subtitles for illegally distributed foreign videotapes.
- **Some Konami games** had both a disk and cartridge in the box, but you'll struggle to find the carts these days. Many of them were bought separately by music enthusiasts for the SCC+ sound chip they contained.
- **Many MSX models** had two cartridge slots. Konami took advantage of this by building secrets into its games that you could only access with two cartridges at once – similar to the way that GBA games often unlock content in DS games now.
- **Konami released so** many MSX games that in 1998 it released a compilation of them for the Saturn and PlayStation. The *Konami Antiques MSX Collection* featured 30 such games but, sadly, no MSX2 titles.
- **The 'Beecard' format** used in NEC's PC-Engine console was first used on the MSX. It was manufactured by Hudson and required a special adaptor cartridge to load it.
- ***Metal Gear 2:*** *Solid Snake* is probably the best MSX2 game. It was only officially translated in 2006, however, when it appeared as a bonus feature in *Metal Gear Solid 3: Subsistence* on the PS2.
- **A handful of** the MSX licensees later tried their hand at another 'single format' console: the unsuccessful 3DO.
- **Though Microsoft hasn't** been involved with the MSX since 1988, the name lives on in the company: it's the internal product code for the Xbox.
- **A staggering 265** different MSX models are known to exist, but there may be more. Nobody knows exactly how many variations were manufactured.

COMMUNITY MSX SITES TO WATCH

MSX Museum bOX
www.passionmsx.org/msxgamesbox/museum/index.php

MSX Museum bOX is the best way to find out about the many variations of the MSX hardware. Organised by manufacturer and featuring over 200 photographs, it's a comprehensive archive.

Generation MSX
www.generation-msx.nl

A bit like Lemon64 but for the MSX, this site has spent the last decade attempting to catalogue every MSX game. In addition to the games listings, you'll also find a library of historical images and a forum populated by friendly MSX gamers.

MSX Resource Center
www.msx.org

The most comprehensive English-language news service for the MSX. It can get a bit technical sometimes, but if you need to know about new translations and homebrew games, this is your first stop. The forum is friendly and helpful too.

The Ultimate MSX FAQ
www.faq.msxnet.org

As the name suggests, the Ultimate MSX FAQ is comprehensive, with all the info you'd ever need to know about the MSX and its software. Everything is covered, from a history of the project to in-depth analysis of the hardware and relevant info about the fan community.

SPECIFICATIONS

MSX: 3.58MHz Z80 processor, 8kb-128kb RAM, 16kb video RAM, 256x192 resolution (with 16 colours), AY-3-8910 sound chip

MSX2: 3.58MHz Z80 processor, 64kb-512kb RAM, 128kb video RAM, 512x212 resolution (with 16 colours), 256x212 resolution (with 256 colours), YM2149 sound chip

MSX Turbo R: 7.16MHz R800 processor, 256kb-512kb RAM, 128kb video RAM, 256x212 resolution, YM2149 sound chip

models as companions to the company's synthesizer keyboards and consequently built MIDI ports into most of its machines, bundling them with audio leads and music software. Others, like Sony, aimed their hardware at the professional markets, fitting the machines with as much RAM as possible and often building floppy disk drives and even LaserDisc or VHS samplers into the hardware.

The diversity of the early MSX models was instrumental in gaining a foothold in Japan. Consumers could buy with confidence, knowing that any MSX-branded software or hardware they bought would work with their own machine, while the different price brackets meant that dedicated users could buy a high-end machine for the workplace and a much cheaper, but fully compatible, machine for the home. The standard was considered a success and, with the combined force of its licensees, became a worthy contender to other Japanese computers of the time, like NEC's PC98 series.

This early success naturally attracted the attention of a number of videogame publishers and many of Japan's best soon began to support the standard. Konami, Hudson, Square, Compile, Enix and Falcom all developed and published several games for the system, and many of those companies' most famous franchises began life on the MSX.

Having gained a strong position in Japan, the MSX Association naturally set its sights on the US market next, but things didn't go so well this time. The US, of course, had been gripped by Commodore fever since 1982, and only a fool would gamble on an outsider taking away the C64's formidable market share with a technically inferior machine. Only one US company, Spectravideo, bothered to license the standard in 1984 and had little impact on the market. Yamaha also brought some of its MSX models over to the US, but they were marketed under the umbrella of music technology and went ignored by games fans and computing enthusiasts.

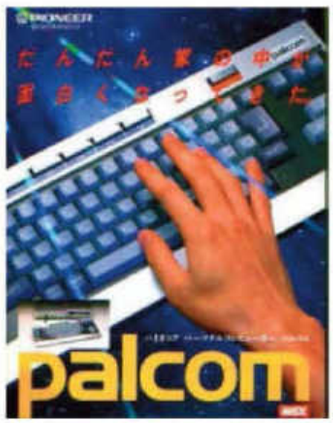
> **"The MSX was attacked as a foreign import"**
> ON THE FAILURE OF THE UK MSX

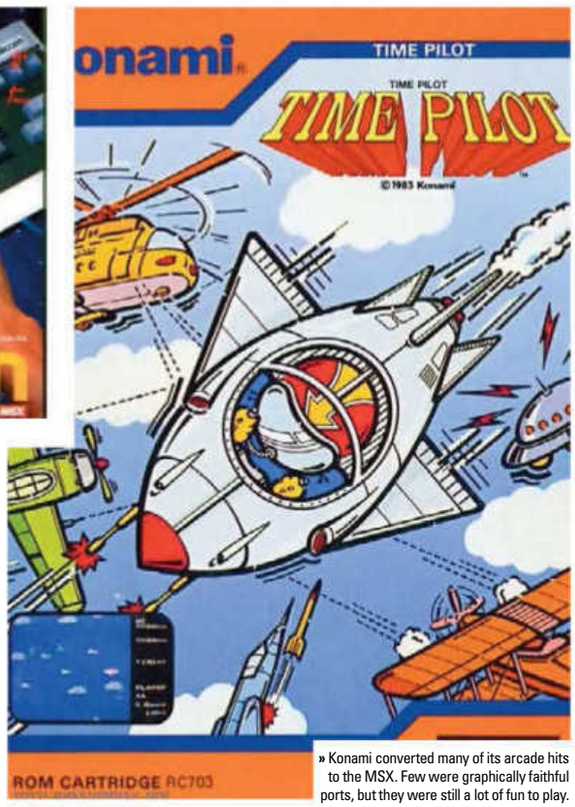
Retreating from the US, never to return, the MSX Association concentrated on other, less monopolised territories instead. Seeing the widespread use of 8-bit micros in Europe, the alliance moved in to take advantage of the eager consumer base. Some of the Japanese licensees, particularly Toshiba, created PAL versions of their low-end machines for Europe, while Dutch electronics giant Philips became an official licensee and one of the format's biggest supporters worldwide.

In the UK, the MSX was met with a mixture of indifference and animosity. As in the US, the underpowered hardware made MSX games look weak in comparison to Commodore 64 titles, while the more impressive games, such as Konami's excellent arcade ports, were only released on cartridge and seemed vastly overpriced in comparison to the tape software that most were used to. As a result, the UK MSX became lumbered mostly with second-rate ports of Spectrum games and was once venomously attacked in a *Crash* editorial as a foreign import that could rob the British developers of their national identity.

With its confused catalogue of software and one of the country's favourite games magazines dead against the system, the MSX never really took off in the UK, but it did perform well in other parts of Europe. Holland, in particular, embraced the machine with open arms. This was the home country of Philips, after all, which

» "Please buy me an MSX…" How could you say no to those eyes?





» Konami converted many of its arcade hits to the MSX. Few were graphically faithful ports, but they were still a lot of fun to play.

relied upon national goodwill toward its own brand, as well as its truly excellent hardware variations, to take a firm grip of the Dutch computer market. To this day, the MSX remains extremely popular in what is now the Netherlands, where it is remembered with the same fondness as the Spectrum and Amstrad are in Britain.

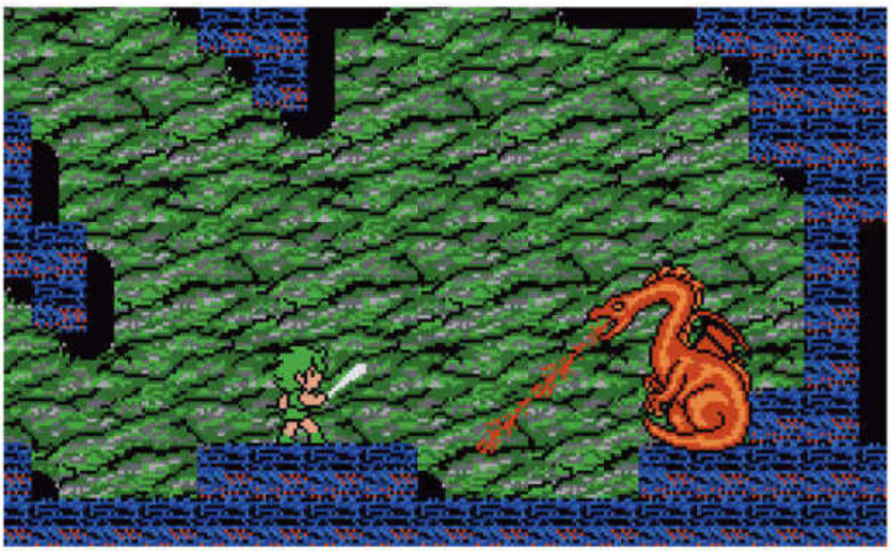
Other territories outside of Japan that also embraced the MSX system include Brazil, which explains the huge number of Portuguese-language fan sites on the web, and Saudi Arabia, where the standard became the first home computer to be made available in the country. Pioneering Saudi Arabian technology affiliates Sakhr and Al-Alamiah licensed several MSX models and created the world's first Arabic word-processing standard around the machines, a move that ensured the companies a place in the computing industry that survives to this day.

Despite its great start in Japan and limited success throughout the rest of the world, the MSX didn't have many more years left in it, and by the mid-Eighties it was starting to look quite dated in comparison to other computers. By 1985, European gamers eagerly cast their gaze westward, to the fledgling Amiga and Atari ST formats with their incredible 16-bit performance. Meanwhile, closer to home, Nintendo's Famicom had achieved dominance of the Japanese videogame industry and threatened to crush the MSX under its giant red and white boot. Although both machines were technically both 8-bit, Famicom games appeared far superior thanks to a number of flaws in the MSX design. The way in which the MSX addressed its video RAM was relatively slow and prevented smooth scrolling from screen to screen, thus limiting most of the MSX's games to flip-screen visuals. In addition, the computer's high-res mode wasn't quite up to scratch and created a colour-clash effect similar to the one that plagued Spectrum games.

These flaws were acceptable by the standards of 1983, but they soon made the MSX look old and rusty as new machines entered the market, and so the MSX group designed a new format that could compete with its contemporaries while remaining backwards compatible with the original software. This new standard was simply named MSX2 and, in addition to the usual hardware upgrades such as a faster processor and extra RAM, the graphics chip had five new video display modes built in. Some of these allowed games to play in high-res without colour clash; others were used to display digitised images on title screens or in desktop publishing software. In-game scrolling was slightly smoother on the MSX2, although it did cause some sprite flicker in the most complicated games. Most MSX2 machines also featured a 3.5-inch floppy disk drive, which allowed developers to produce their software at a greatly reduced cost in comparison to cartridges and gave home users a much more reliable storage solution than cassette tapes.

In some ways the MSX2 was a huge success, but in other ways it was an equally large failure. The standard was completely ignored in the US and UK and was not widely adopted in the poorer regions like Eastern Europe and South America, which left only Holland and Japan to keep the MSX flag flying. As before, Philips happily licensed the MSX2 technology and produced some wonderful hardware under the standard. Japanese licensees weren't as supportive as they had been for the original MSX, but many of the biggest manufacturers, such as Sony, Samsung and Panasonic, continued their support and created all manner of MSX2 units.

Although the MSX's global presence was notably shrinking, the support of manufacturers in Japan and Holland ensured that the format held on to its two key territories and many game developers



» The MSX has a healthy homebrew following, kept active by yearly competitions and fairs. There are some great arcade-style games as ROMs or even semi-professional disks and carts.

» *Penguin Adventure*, one of the best MSX games and one of the most emotional title screens in history.

consequently stayed with the machine. Konami, the biggest Japanese developer of MSX games, had moved on to the Famicom but had kept its MSX division alive, and it is in the MSX2 period that this division created its greatest games and, therefore, the best games on the system. With *Metal Gear* creator Hideo Kojima still posted to the MSX team, the format benefited greatly from the designer's newest creations like *Metal Gear 2: Solid Snake*, *Snatcher*, and *SD Snatcher*. Other Konami teams also created their own brilliant games, such as the horizontal shoot-'em-up *Space Manbow*, *Ganbare Goemon* (*Mystical Ninja*), and *Vampire Killer* (*Castlevania*). The likes of Capcom, Compile, Namco and Taito all released games for the MSX2, many of which were arcade conversions that were much more accurate than their MSX equivalents, and

"Nishi was thinking about the internet in 1986, when such tech was still in its infancy"

THE UNFULFILLED FUTURE

the format received a known 1,200 games in its lifetime. But that wouldn't be enough to save the MSX's skin…

Ever aware that the MSX was fighting a losing battle, Kazuhiko Nishi struggled to understand why more people were not interested in his machine. Offering an MSX to his grandmother, he pointed out all of the things she could do with it. "You can write letters," he said. But she told him she could already do that with a pen and paper. "You can work out stock prices," he countered, to which she held up her calculator. Finally, he explained that she could use the machine for entertainment. "But," she said, "I have a TV for that."

Nishi thought long and hard about how he could make the MSX relevant to the lives of ordinary people. He considered technologies that had been widely adopted throughout Japanese households like television, radio, and the telephone and realised that they all had one thing in common: they existed in a communications network. If only he could network all of the MSX systems to communicate with each other, as well as receive software from a remote broadcaster, then consumers would feel like they were missing out on something without one in their home. He was, of course, thinking about the internet, but this was 1986 and such technology was still in its infancy, way out of the reach of affordable home electronics for at least another ten years.

In the meantime, the MSX group took another stab at perfecting the hardware, although this time they did it without Microsoft, which had washed its hands of

the MSX and declined to improve any of the built-in software. This was presumably because the IBM PC was picking up speed in the west and Microsoft didn't need to compete with its own Windows 2.0 operating system.

In 1988, instead of creating an entirely new machine, ASCII designed the MSX2+, which included a built-in 9-channel FM synthesizer, the ability to display still images in up to 19,000 colours, and three new video modes, one of which totally eliminated the flickery scrolling that had plagued the MSX since 1983. The hardware itself featured two sliding dials – one to change hardware speed and the other to enable auto-fire – as well as an import-friendly RGB output.

Sadly, but quite inevitably, support of the MSX2+ was even weaker than for the previous two machines. As the new machine was quite rightly seen as a meagre update to the MSX2 and not a serious market challenger, most MSX licensees didn't see the point in producing new hardware. Only Sony, Sanyo, and Panasonic ever developed any MSX2+ computers, and only a handful of games were made exclusively for the system.

When it became time to think about creating an MSX3 in 1990, Nishi cast aside his ambitious network ideas and set his sights on the CD-ROM. Noting that console manufacturers like Sega and NEC planned to add CD-ROM drives to their consoles, ASCII considered integrating CD-ROM as standard into the next MSX hardware but eventually decided against it because it felt the seven-year-old medium would soon be superseded. It was right, of course, but it would take another seven years before DVD would materialise.

Not embracing the CD-ROM was arguably the last straw for the MSX manufacturers. Philips, the original creator of the CD, hadn't supported MSX for some time and by 1990 it was clear why. The Dutch giant was working on its own computer technology, the CD-based CD-i, which was sure to be capable of much more than the now extremely dated-looking MSX. Sony, likewise, had moved away from MSX and toward CD, as it worked secretly with Nintendo on the SNES-CD project, which was due for release in 1991 but would eventually resurface in 1993 as the Sony PlayStation.

By 1990, the list of MSX licensees had dwindled to just one: Panasonic, which helped create the final MSX standard, known as the Turbo R. Two variations of this underpowered 16-bit machine were created, but both went by unnoticed. The Turbo R was too little, too late. The format's once-loyal developers knew it and shifted their allegiance over to Nintendo, Sega and NEC, if they hadn't already done so. The MSX was dead and Nishi finally turned his back on the system, choosing to concentrate on ASCII's other business interests and taking a job as a media engineering lecturer at the Tokyo Institute of Technology.

In truth, though, the MSX had really died around the introduction of the 2+. The earliest success of the MSX came from a strength in numbers, afforded by the combined brand identities and market presence of the system's licensees. But as ASCII failed to improve upon the MSX specifications in ways that appealed to those licensees, their numbers dwindled to the point where not enough machines were manufactured to attract the software developers. From there the MSX fell into a spiral of decline. As fewer developers created new software, the machines became less attractive to consumers and licensees saw fewer reasons to manufacture more hardware. And then, of course, IBM and Microsoft virtually created the modern-day computing standard with the Windows-based PC, a format so successful that it relegated the MSX to the status of failed experiment.

And that's where our story ends.

Except it doesn't, because in 2001 Kazuhiko Nishi made a shock appearance at an MSX fair in Tilburg, the Netherlands, and announced his plans to revive the MSX format. Speaking to surprised attendees at the show, Nishi openly discussed the lengthy history of the MSX format and declared that there was still a place in the world for the MSX.

As it turns out, that place wasn't a brand new world-conquering system but an actual 'revival' that would enable new users, as well as enthusiasts, to experience the retro MSX in a brand new way. Under the name of the MSX Association, of which Nishi is the chairman, the revival began with the release of the MSXPLAYer, a small USB device that allows real MSX cartridges to be plugged into a PC and played on an official MSX emulator. Next, the association worked with D4 Enterprise on Project EGG, another official emulation program that allowed both old and new MSX software to be downloaded for a small fee and played on a PC. A European version of this project, called WOOMB.net, was also started by a company called Bazix in 2006, but it was sadly discontinued in June 2008, due to a disagreement with the MSX Association.

Finally, in 2006, the MSX Association teamed with D4 Enterprise and ESE Artists' Factory to produce the first new MSX hardware in 16 years. Known as the 1chipMSX, the new hardware uses an FPGA chip with the full MSX2 chipset programmed into it and can play commercial MSX cartridges as well as downloaded ROMs on an SD card. The 1chipMSX is due to be released in Europe in the future, once the MSX Association finds a suitable distributor. Until then, if you want one you'll have to keep an eye on eBay or trawl a few game stores in Tokyo, where we found our own unit.

Quite what the future holds for the MSX, we do not know, but we doubt that it will remain a relic of the past like so many other 8-bit micros of its time. The original creator still holds the rights to the name and is clearly intent on keeping it alive, and when it comes to a guy like Nishi, who can throw the sort of curve balls that he did with the announcement of the latest MSX revival, literally anything could happen in the next few years.

KONAMI KOMBOS

Several MSX machines had two cartridge slots built in, a feature that Konami made smart use of by unlocking cheats and Easter eggs in some of its games by combining them with others. Here are some of the most interesting combinations to try.

- ***Yie Ar Kung-Fu 2* with *Yie Ar Kung-Fu*** – Just before death, your father appears with a nice cup of tea.
- ***Nemesis* with *TwinBee*** – Replaces the Vic Viper with a TwinBee and the power-ups with bells.
- ***Ganbare Goemon* with *Q*Bert*** – Unlocks a hidden level select mode and pause function.
- ***The Maze Of Galious* with *Knightmare*** – You can revive the player 99 times rather than the standard one.
- ***Nemesis 2* with *Penguin Adventure*** – Changes the Vic Viper to a penguin and power-ups to fish.
- ***Salamander* with *Nemesis 2*** – Unlocks a secret final level.

MSX
PERFECT TEN GAMES

Owing to its high cost and nonexistent retail support, the MSX was constantly overshadowed by the Spectrum, C64 and the CPC in the UK. It's a real shame, because the MSX provided a whole host of fantastic games, and even proved the early stomping ground for many of videogames' most popular franchises. Here's the proof…

01

SPACE MANBOW

- **RELEASED:** 1989
- **PUBLISHER:** KONAMI
- **CREATED BY:** KONAMI
- **BY THE SAME DEVELOPER:** SPARKSTER

01 Not only the greatest shoot-'em-up on the MSX, but one of the best shoot-'em-ups period. Konami's wonderfully titled *Space Manbow* is a mesmerising tour de force for the machine that captivates and engages from its opening level – a wonderfully grounded take on the Bydo frigate stage in *R-Type*. From here the game continues to impress, thanks to fantastic arcade visuals, a strident soundtrack and frenetic shoot-'em-up action, which scrolls smoothly, both vertically and horizontally, with very little slowdown when things get busy. While rare and expensive to come by these days – a complete boxed version will cost you around £100 – *Space Manbow* is wholly worth seeking out for any MSX collection.

ALESTE 2

- **RELEASED:** 1990
- **PUBLISHER:** COMPILE
- **CREATED BY:** COMPILE
- **BY THE SAME DEVELOPER:** PUYO PUYO

02 Three *Aleste* games appeared on the MSX, and all are worth seeking out. While the final game in the trio, *Gaiden*, would supplement air, jets and spacecraft with Japanese robot suits, there's really not much separating the games in terms of their quality. Compile's popular shoot-'em-up franchise is fabled for its repetitive, open-feeling levels, fast-paced gameplay, deep weapon system and a neat mechanic whereby the very touch of a power-up will grant you momentary invulnerability. As we can only pick one game, it has to be *Aleste 2* because it looks superb, allows you to select your weapons at the start of the game, and is the first title in the canon to feature reoccurring protagonist Ellinor.

02

PENGUIN ADVENTURE

- **RELEASED:** 1987
- **PUBLISHER:** KONAMI
- **CREATED BY:** HIDEO KOJIMA (KONAMI)
- **BY THE SAME DEVELOPER:** SNATCHER

03 This follow up to the popular *Antarctic Adventure* finds the heroic penguin Pentaro desperately seeking a cure for a sick penguin princess who has succumbed to a deadly plague. Getting shot to notoriety late in life for being Hideo Kojima's very first published title for Konami, *Penguin Adventure* is one of the finest, and most tech-savvy games, to appear on the MSX. The game essentially comes down to an action racing game, viewed from that familiar into-the-screen perspective, and starring a cast of sickeningly cute little penguins. Penguin games simply don't get better than this.

VAMPIRE KILLER

- **RELEASED:** 1986
- **PUBLISHER:** KONAMI
- **CREATED BY:** KONAMI
- **BY THE SAME DEVELOPER:** GRADIUS

04 The first ever *Castlevania* game to be released in Europe, *Vampire Killer* is actually quite different to the more established NES game on which it was based. The MSX2 exclusive swaps out-and-out action for a more considered 'search for a bunch of keys in a castle' action. Why Konami felt the need to go and mess with the original is a mystery – we can only think that perhaps Konami felt that people who play games with keyboards need something deeper to sink their teeth into than those who use joypads. Neither is better than the other in the end but NES and MSX fans will argue that their respective version was the best until the end of time, anyway.

BOMBER MAN

- **RELEASED:** 1984
- **PUBLISHER:** HUDSON SOFT
- **CREATED BY:** HUDSON SOFT
- **BY THE SAME DEVELOPER:** MARIO PARTY

05 Spectrum owners will recognise this game as *Eric And The Floaters*, but the game's MSX version went under the more familiar and seminal title of *Bomber Man*, and marked the first appearance of Hudson Soft's infamous bombardier. This maze-based action game finds our hero looking less like a cute Japanese robot and more like Miner Willy (circa *Jet Set* era) with a strange blue mullet (only visible in the MSX version). Unlike later versions, this was single-player only and therefore a lot less fun. But it remains a fascinating insight into the origins of a true videogame legend, nevertheless.

03

04

05

SPECIAL THANKS TO GENERATION-MSX.NL FOR ADDITIONAL SCREENS

06

07

08

METAL GEAR 2: SOLID SNAKE

- **RELEASED:** 1990
- **PUBLISHER:** KONAMI
- **CREATED BY:** HIDEO KOJIMA
- **BY THE SAME DEVELOPER:** POLICENAUTS

06 There are actually two versions of *Metal Gear 2* – one by Konami that was released for the NES, the other by Kojima that was released for the MSX. To be frank, both games are good, but the MSX sequel is the better of the two. It employed several nice touches, like using carrier pigeons, hang-gliding and even tap codes, and established many gameplay ideas that would go on to make PSone's *Metal Gear Solid* such a classic. This was unfortunately never released outside Japan but a translated version appears in *Metal Gear Solid 3: Subsistence* on PS2.

SD SNATCHER

- **RELEASED:** 1990
- **PUBLISHER:** KONAMI
- **CREATED BY:** HIDEO KOJIMA
- **BY THE SAME DEVELOPER:** ZONE OF THE ENDERS

07 Like *Metal Gear* before it, Kojima succeeds in creating an emotive narrative around the limitations of the hardware. Following a similar plot to the original – Gillian is still trying to eradicate the body-pinching Snatchers – this switches the cinematic look of the original for a 'super deformed' anime style. It also drops the point-and-click comic book gameplay in favour of an RPG system. Engaging enemies in combat also switches the viewpoint to a first-person battle screen, where players could pinpoint specific body parts they wanted to attack. Easily one of the most immersive adventure games on the system.

GOLVELLIUS 2

- **RELEASED:** 1987
- **PUBLISHER:** COMPILE
- **CREATED BY:** COMPILE
- **BY THE SAME DEVELOPER:** ALESTE

08 Compile had an excellent track record on the MSX. Sadly, though, the company closed its doors in 1992 and many millions of people wept into their MSXs. Anyway, if you're looking for a *Zelda*-like adventure for your machine you won't go far wrong with *Golvellius 2*. The series began life on the MSX and the Master System, but would later get a confusingly titled remake for the MSX2. Viewed from a similar perspective, and featuring an overworld-style map and dungeon exploration similar to *Zelda*, the game's fluidity, action, visuals and variety make it a real must for any role-playing game fan.

09

YUUREIKUN (AKA MR GHOST)

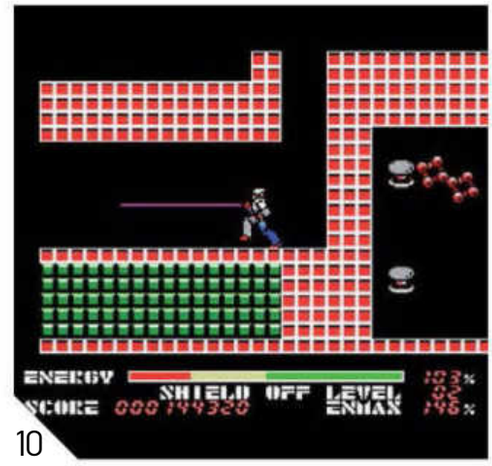
- **RELEASED:** 1989
- **PUBLISHER:** SYSTEM SACOM
- **CREATED BY:** SYSTEM SACOM
- **BY THE SAME DEVELOPER:** MARCHEN VEIL

09 *Mr Ghost* is a side and vertical – the game alternates between the two – scrolling shoot-'em-up where you play a buck-toothed ghost who's being bullied by other ghosts, jumping spiders, and crows, probably about his prominent teeth. *Mr Ghost* plays remarkably close to Irem's *Mr Heli*, so much so that they could, in fact, be related. Both games let your character move in eight directions, both allow you to deform parts of the environment, and both have a super-deformed look to them. What sets this game aside, though, is its combat system. Mr Ghost dispatches a little sperm-looking ghost at enemies and can only redeploy him after he's returned. Mr Ghost can also perform a bum rush to destroy enemies sneaking up behind him or break bricks.

THEXDER

- **RELEASED:** 1986
- **PUBLISHER:** GAME ARTS
- **CREATED BY:** GAME ARTS
- **BY THE SAME DEVELOPER:** GRANDIA

10 This great giant robo side-scrolling shoot-'em-up is a great example of the genre. The player assumes the role of a *Robotech*-esque robot with the power to transform into a jet plane – the transformation effect in the game is actually pretty impressive – and must negotiate a series of labyrinthine stages – often by repeatedly switching between the robot's two forms – before getting blown to smithereens by patrolling enemy droids. It's a really simple premise but one that becomes strangely addictive. The puzzle/strategy element and laser, which is only available to you in your robot form, was a notable inspiration to Treasure's *Bangai-O*. A sequel, called *Thexder Neo*, is now available on Sony's PSP Minis service.



10

The Budget BBC

An Acorn Electron Retrospective

They say mighty oaks grow from little acorns but in the case of the Electron, it was the other way around. David Crookes talks to Acorn's tech genius Steve Furber and its co-founder Christopher Curry about the budget version of the BBC Micro

When tasked with creating the Acorn Electron, the team weren't too keen on the task. "We didn't want to do it," says Steve Furber. "I recall the technical team was not enthusiastic about it." But the idea was out there and Christopher Curry, who co-founded Acorn Computers alongside Hermann Hauser and Andy Hopper, was not backing down.

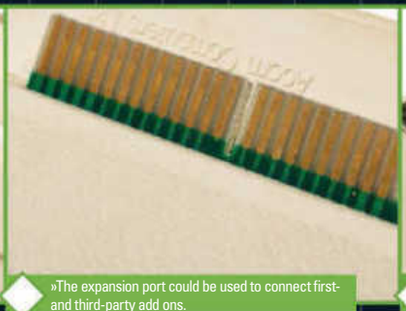
Acorn wanted the technical crew to produce a budget version of the BBC Micro Model B to penetrate the newly emerging and popular low-end of the market. The Electron was to be half the size of the computer that was making great waves in schools and it was geared towards parents who wanted to buy a recognisable, seemingly educational computer at a more affordable price.

"I also think Chris in particular was keen to try and eat a bit more of Clive Sinclair by attempting to move Acorn down into the section of the ZX Spectrum," Steve adds. "But our sense was that the right direction for Acorn was to go upwards and onwards rather than downwards and backwards."

It was 1982 and Sinclair had been making a huge impact on the computer market. The ZX81 cost £69.95 fully built (£20 less as a kit) and it was shifting 40,000 units each month. The ZX Spectrum had just been unveiled and its price was set at a fair £125 for the 16KB model and £175 for the 48KB. Acorn's BBC Micro Model B was £400 but while it went on to sell 1.5 million, Chris felt his company was set to miss a vital budget-end marketplace.

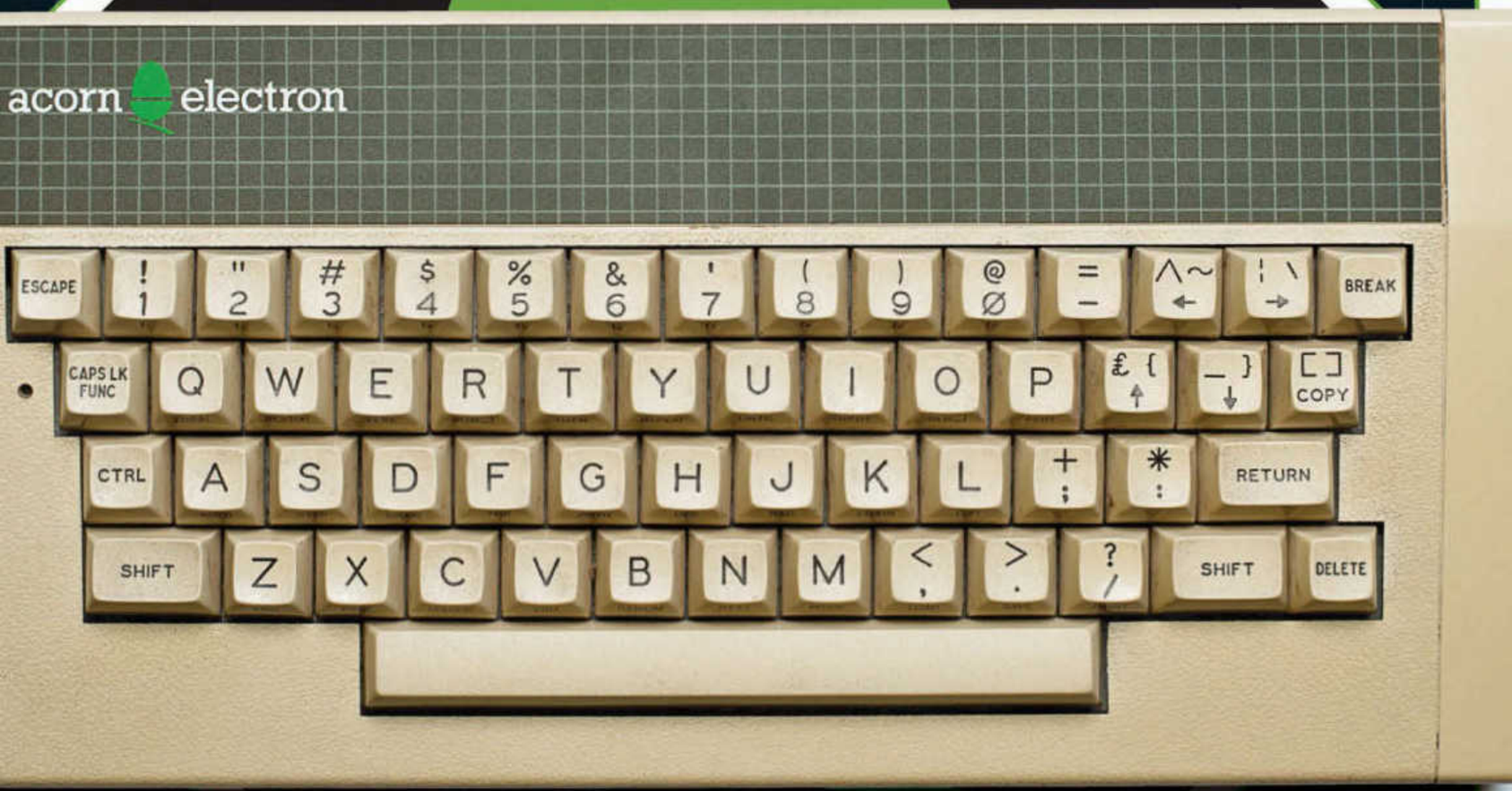
There was also some fierce rivalry to address. Chris had worked for Sinclair for 13 years but, following an argument, he jumped ship and jointly set up Cambridge Processor Unit Limited in December 1978. Three months later, Acorn

» Connect away to a colour or black-and-white TV, monitor and tape recorder.

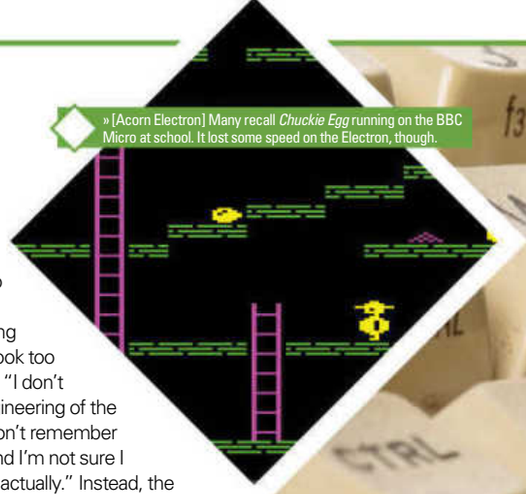


»The expansion port could be used to connect first- and third-party add ons.

» The Acorn branding was used for this machine, dropping the BBC label.



"Our sense was that the right direction for Acorn was to go onwards, rather than backwards"



» [Acorn Electron] Many recall *Chuckie Egg* running on the BBC Micro at school. It lost some speed on the Electron, though.

Computers was born, debuting with the well-received System 1 machine which had helped Acorn gain enough kudos to win its fight against Sinclair over the lucrative rights to produce computers for the BBC.

By producing a stripped down and cheaper version of the Electron, Acorn believed it was able to achieve two things: a foothold in a strong, emerging sector of the market, and another finger in the eye of Sir Clive. "I have no regrets," Chris tells us. "We needed something that could be priced near enough to compete with the main competition, the Spectrum. We had to take away a lot of the frills that were built into the BBC Micro, call it an Acorn product so that we didn't have to pay royalties to the BBC and have freedom over the prices. We also had to produce something that would be extendable beyond the BBC Micro. And that's what we did. We looked into producing a future-proof product."

The Electron was effectively an attack on the Spectrum line but it was also pitched as a rival to the Oric and Dragon computers. "It will have a massive impact on the sales of these machines," Chris told *Acorn User* magazine. Yet there were misgivings. "There was a feeling that we should stay superior and above the marketplace," Chris tells us. "But the [budget end] was a big marketplace. We were faced with a technical challenge but it was an interesting one. We ended up with a terrific product."

Given the intention was to primarily blow the Spectrum out of the water, it is surprising that the design team didn't look too closely at Sinclair's machine. "I don't think we did any reverse engineering of the Spectrum," says Steve. "I don't remember taking the Spectrum apart and I'm not sure I ever touched the Spectrum, actually." Instead, the process was about solely looking at the BBC Micro and slashing the number of chips in the machine.

Rather than have 102 as in the Micro, Furber and the team were able to get the Electron down to around a dozen including a 6502A microprocessor running at 2Mhz, two 16k memory chips, four RAM chips, nine simple TTL chips, a quad-operational amplifier chip and – most importantly – a single Uncommitted Logic Array (ULA) chip which attempted to take on board all of the key functionality of the ones that were being axed. This essentially created a system on a chip and it allowed the Electron to be placed in a box that was far smaller than the Micro. "We had to do much heavier integration on the ULA," says Steve. "But there were various other things we did specifically for cost reduction that compromised performance a bit."

» There were 10 user-definable function keys but no red ones.

ELECTRON VS MICRO

How the Electron shapes up to its counterpart

SLOW SPEEDS

■ The Electron had the same CPU but the system was up to 40 per cent slower than the BBC. The ROM was accessed at faster speeds than the RAM. Each byte had to be fetched twice.

NO MODE 7

■ Mode 7 was used for Teletext and it allowed for double height and flashing characters, taking up 1KB of memory. The Electron didn't have it since the designers had chopped the SAA505 chip.

NO 6845 CRTC CHIP

■ The BBC's graphics were controlled by the 6845 CRTC plus a video ULA to provide the colour palette. The Electron's ULA combined these chips. It meant sideways scrolling in games was not instantly available on the Electron.

ONE SOUND CHANNEL

■ The sound channels of the Micro were turned into three virtual ones that were then incorporated into a single physical channel on the Electron. It meant the Micro-style of music was not possible on the cut-down machine.

HARDWARE INCOMPATIBILITY

■ If a program was hardware-specific and tried to access aspects of the BBC Micro, then it would not run properly on a bare Electron because of the integration of so many chips into the single ULA.

SLICKER KEYBOARD

■ The Electron had the most efficient of the two computer keyboards. With 56 keys – 18 fewer than the BBC Micro – it most noticeably did away with the physical red function keys and allowed user-definable function keys instead.

» The BBC Micro and the Acorn Electron used MOS Technology 6502 processors.

» Beneath the BBC keyboard were expansion ROM slots. The Electron had two additional ROM slots.

> **"We needed something that could be priced near enough to compete with the main competition, the Spectrum"**
>
> Christopher Curry

It was a tough ask and the team began to struggle. The graphics of the Electron and Micro were set to be the same by and large but one problem that had to be overcome was an issue with the video ULA. "It was a major concern," says Steve, pointing to the difficulties in pushing the video ULA to the limits by running it at 16MHz in order to gain a 640x256 resolution in Mode 0. "We had been extremely careful when we designed that bit of the Electron ULA but we still had some display break-up problems, and I had quite a long wrangle with Ferranti over what the cause of these was and what the appropriate fix would be," Steve explains.

Ferranti assumed the design wasn't right; that the Acorn team hadn't designed it fully to its specification. But while that was an accusation that could easily have been levelled at the BBC Micro video processor ("it was not well designed to spec, and they used some design techniques that were scary," admits Steve), it was more difficult to justify with the new machine. "On the Electron we were careful to implement the high speed part in a different way to make sure if the logic worked to spec then the chip would be reliable," says Steve. "But it wasn't. And that's because the chip wasn't working to spec, not because the design wasn't."

Yet the ULA wasn't the only issue, compromises had to be made. "I think we had four accesses to the memory per microsecond and we used two for the video and two for the processor interleaved and so nothing slowed anything else down," Steve adds. "On the Electron, if you used a high-res mode then effectively, during the busy 40 microseconds of the scan time, the process had no access to the memory. If you used a lower resolution display mode then you got some access back. Basically, we halved the available memory bandwidth and that compromised the display, or the processor, or both a bit."

But it was important that they tried to resolve the issues because software produced for the Micro

ESSENTIAL EXCLUSIVES

The games that made the Electron sing

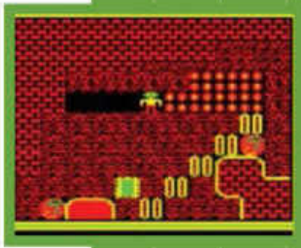
QUEST 1983

■ This game is a good example of how programmers sought to get the most out of the Electron. Tony Oakden used the Electron's detailed Mode 1 for this arcade-adventure but to get more than four colours on the screen, he used the dithering technique. It mixed two or more colours in a chequered pattern to give the clever illusion of extra colours.

ELITE 1984

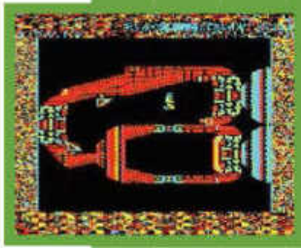
■ David Braben did not like the video restrictions of the Electron hardware yet he and Ian Bell still managed to get *Elite* working on Acorn's cut-down machine. Some elements were chopped (it only had five ships compared to the BBC Micro's six on tape and 18 on disc) and it was also black and white, but it was still out of this world.

> **"I've still got an Electron lying around and it still seems to work"**
>
> Steve Furber



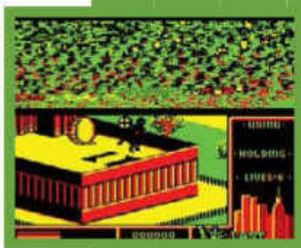
REPTON 1985

■ Created by Tim Tyler, *Repton* struck gamers with its reptilian hero and 12 levels of brain-teasing, *Boulder Dash*-style fun. The game involved finding diamonds while avoiding creatures and falling boulders and it was so popular that the series as a whole shifted 125,000. Superior boss Richard Hanson reckoned *Repton* would still be enjoyable in 100 years.



EXILE 1988

■ If you must play just one game, make it Peter Irvin and Jeremy Smith's action-adventure, *Exile*. It may have just four on-screen colours and non-graphical data visible in the display buffer but it got around the Electron's side-scrolling restrictions and it chucked everything it could at the Electron to get the most out of it. The physics engine was amazing.



THE LAST NINJA 2 1989

■ It wasn't originally written on the Acorn Electron, yet this port deserves a play if only to stare, open-mouthed at what is playing out on the colourful screen. Coded by the talented Peter Scott and published by Superior Software, this was one of the best conversions on any platform not least because the code was somehow shoehorned into 32K.

MORE BUDGET SYSTEMS

Other machines that were cut-down versions of the originals

COMMODORE 116

■ Originally envisaged for the US market at a price point of $49, the Commodore 116 was only released in Germany and some parts of Eastern Europe. Released in 1984, it was a cheaper version of the Commodore 16 with a cheap quality rubber chiclet keyboard and a smaller case.


© Toni Birer

RADIO SHACK TRS-80 MC-10

■ This budget version of the 1980 TRS-80 Color Computer lasted a year when it launched in 1983, not surprising given its 4K of (expandable) RAM paled compared to the Color Computer 2 which came out in the same year. It was well behind the march of the 64K machines competing against it.


© Jeff Keyzer

AMIGA 600

■ There wasn't much, in terms of functionality, between the Amiga A500+ and the A600 and neither was there a great price difference either. Still, it made a dramatic cut by removing the numeric keyboard, shortening the length of the machine. The A600 was going to be a cheaper A300 alternative to the A500+.

SEGA MEGA DRIVE II

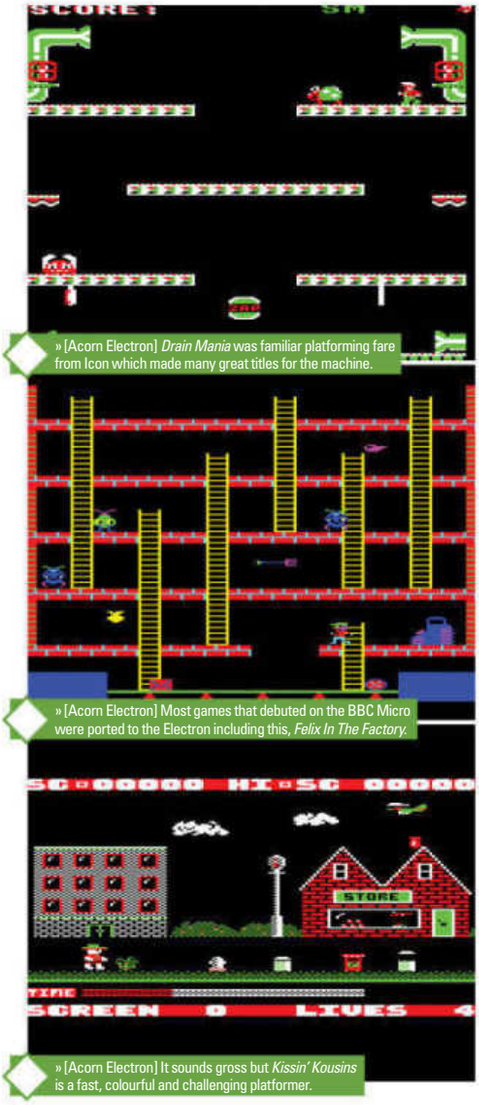
■ For better or for worse Sega had an intense habit of clinging on to its consoles to extend their life. The Mega Drive II was a smaller version of the original machine, omitting RF TV output, volume control and the headphone jack. The Master System also received similar treatment years earlier, removing the card port among other functions.


© Bill Bertram

GAME BOY MICRO

■ Debuting in 2005, the Game Boy Micro was a cheaper and smaller version of the Game Boy Advance SP but it left out a useful feature: the ability to play Game Boy and Game Boy Color games. Still, the tiny console was customisable and small enough to fit rather comfortably in your pocket.


© Evan-Amos



» [Acorn Electron] *Drain Mania* was familiar platforming fare from Icon which made many great titles for the machine.

» [Acorn Electron] Most games that debuted on the BBC Micro were ported to the Electron including this, *Felix In The Factory.*

» [Acorn Electron] It sounds gross but *Kissin' Kousins* is a fast, colourful and challenging platformer.

needed to be greatly compatible with the Electron. "The idea was that it would be BBC based and would run all of the applications the Micro could run," says Chris. Acorn knew the subsequent marketing drive would depend on it and it would also be crucial for enticing customers who wanted the benefits of owning a Beeb machine without its associated costs.

In the end it became clear that full compatibility would not be possible but that the machine should at least be hardware and software compatible with the features it supported. "There was some loss of performance which was a bit of an incompatibility, but functionally it used the same operating system and the same microprocessor so there was a high degree of compatibility as far as it went until you tried to use a feature that wasn't there," explains Steve.

> **"The machine was not as compatible with the BBC as it might have been"**
> Steve Furber

Speed was affected, though. Benchmarks showed that in comparisons with the BBC Micro, timings varied between the graphics modes. At its worst, the Electron would take 4.3 times as long to run the same program as on the BBC Micro. Tech journalist Paul Beverley noted in *Acorn User* that the 6502A processor was capable of running at 2MHz but it only worked to that speed when accessing ROM. During RAM access, it slowed to 1MHz. "The reason for this is that the read/write memory is arranged in four 64k by 1 bit chips, each of which contains two bits of information for each byte," he wrote. The removal of the 6845 CRT controller chip also slowed down graphics-heavy games.

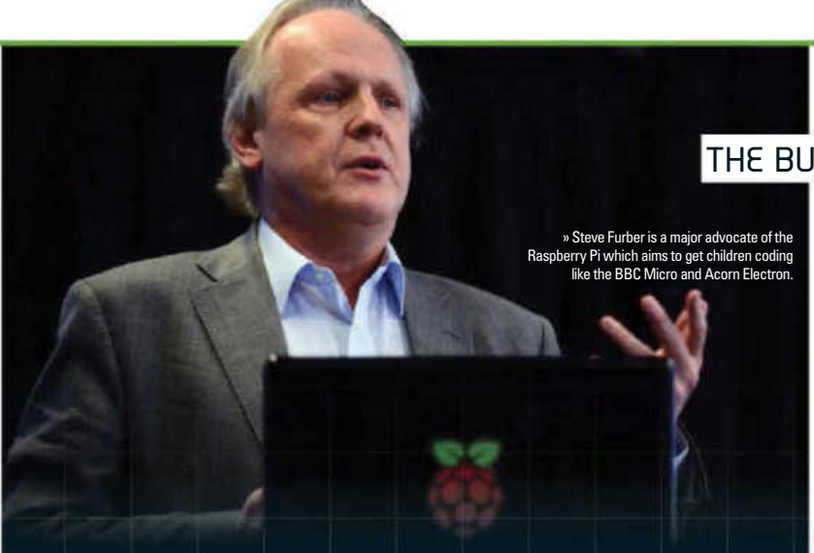
One of the noticeable chip casualties during the tech team's budget-induced cull was the chip which supplied Mode 7, the only one of the eight Micro modes to be dropped. Mode 7 was the default screen mode which took up a kilobyte of memory and allowed the BBC Micro to present hi-res text. It was also the mode made familiar by the BBC's teletext service, Ceefax, and it was an original requirement ordered by the broadcaster.

At the same time, the chip allowed the Micro to be used as a Prestel terminal which offered a primitive form of internet. By dropping it, both functionalities were lost.

"It meant the machine was not as compatible with the BBC as it might have been," laments Steve. "It wouldn't run programmes that relied on Mode 7 being there. There were quite a few of those because the Beeb was fairly memory constrained. If you could do what you wanted to do in Mode 7, that only used 1KB of the memory so you had 31KB left for your programme and data, whereas if you used Mode 0 that used 10KB, so the full screen used 20KB, which left you with 12KB for your programme. Mode 7 was very attractive and it would give you a form of full colour graphics with very low memory use."

The hardware differences between the BBC Micro and the Electron meant many programs and games had to be re-written in order to speed them up. Titles such as *Monsters*, *Starship Command* and *Meteors* were re-coded by Acornsoft. Others such as *Rocket Raid* and *Planetoid* suffered from the Electron's lack of sideways scrolling (the latter ported well to the Electron and added features). Electron launch title *Snapper* could not have run in its original form because it used hardware timers not present in the Electron.

Acorn's answer to the loss of certain features was to provide add-on modules that could be plugged into each other. The idea was they could be chosen by consumers to fit their needs. "There were seven different add-on modules in the original plan," Chris says. "We launched the first one a year late but we were looking at having them for multiple controlling and Teletext." The first was a huge general-purpose module called Plus-1 which comprised a printer port, two parallel ROM sockets, a joystick port. Slotted into the back and costing £59, it expanded the Electron's size to a depth matching the BBC Micro.



» Steve Furber is a major advocate of the Raspberry Pi which aims to get children coding like the BBC Micro and Acorn Electron.

LOVING THE ELK

Acorn co-founder Christopher Curry lists his reasons for believing the Electron – which was nicknamed the Elk – deserves its place in computer history

1 It was so much cheaper to make so that it competed directly with our main competitor in the mass consumer market – the ZX Spectrum.

2 **The styling was crisper than the rather ponderous Beeb. The case felt solid and the computer was small enough to carry about with you.**

3 It was labelled Acorn. We had been subjected to a certain amount of identity loss during the Beeb days.

4 **The modular approach enabled 'Horses for Courses' so the initial module did all that a games player/programmer novice needed.**

5 The industrial controller market bought the module they needed. The physical arrangement meant that modules could be daisy-chained and physically bolted to its neighbour for a solid feel rather than a mass of interconnecting wires

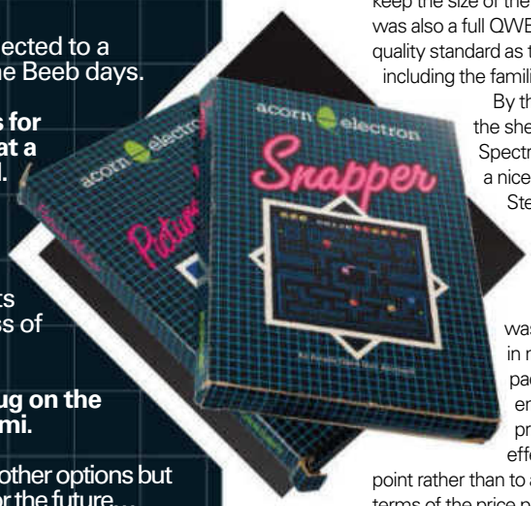
6 **The serious number cruncher would plug on the second processor – a 32-bit from Natsemi.**

7 The modem and the Teletext adaptor were other options but many further modules remained as ideas for the future…

8 **With its huge ULA it was the most advanced custom chip design in the world at the time – pity it was also the biggest fly in the ointment.**

9 It was the inspiration for the Communicator – the networked business machine with remote servers that arrived before the internet!

10 It was also the inspiration for the Keyline shopping Terminal – based on autodial modem and ICL Traderpoint switched networks which, again, emerged before the internet.



The video ULA continued to pose problem, though, and it delayed the project for many months. "The ULAs were marketed strongly on having a very small logic swing but in my view, it was too small. We didn't fix the problem in time for the Christmas 1983 market which was the time when the Electron would have sold really well if it had been available. We got it thoroughly fixed by early 1984 by increasing the voltage swing by about 50 per cent and so we made lots of Electrons that Christmas but by then we'd missed the market and the company was left with quarter of a million unsold Electrons in a warehouse."

The computer had been formally announced on 25 August 1983, a year after it had been talked about but supplies were low with just 30,000 Electrons available for people to buy. Games began to be released that year and demand continued to be high but it wasn't until the following year that things were able to pick up. "There was a concern that the situation had definitely been compromised by technical difficulties," laments Steve.

Even so, with 32KB of RAM and a ROM containing BBC BASIC v2, it was an attractive package, retailing for a palatable £199. Power was fed by an external mains transformer within the large mains plug which helped keep the size of the computer down. The keyboard was also a full QWERTY one but it wasn't to the same quality standard as the BBC Micro (it also lost 18 keys including the familiar red function ones of the Micro).

By this time, the ZX Spectrum was on the shelves and there was talk of a ZX Spectrum+. "But I think the Electron was a nicer machine than the Spectrum," says Steve. "It had a respectable keyboard and it was nicely put together. I've still got an Electron lying around and it still seems to work."

Despite that, Steve believes it was created with the wrong priorities in mind. "It was a nicely integrated package but it was a product engineered to a price point, and I prefer products to be designed cost effectively but to a function and spec point rather than to a cost point," he says. "But in terms of the price point we were aiming for, we got as much functionality in there as was humanly possible if only our functionality had functioned."

The problems meant the Electron had a short lifespan. A price cut to £129 in January 1985 helped to ignite sales, as did a later reduction to a modest £99 but Steve says the computers were being sold at a loss: "There was a large stock, so there was a reasonable market penetration but they stopped making them fairly early on so I'm pretty surprised that software sales lasted that long. The machine cost Acorn a lot of money. Acorn was selling them to Dixons for £50 or so and Dixons was selling them for £99." On the flip side, the Electron did go on to enjoy a long lifespan in software terms at least. Apps and games continued to be produced until the early Nineties.

Steve is philosophical about the Electron's time. "It hurt the company because of the millions it spent building the stock but it didn't hurt the BBC Micro. And shortly after the ARM processor, which we also worked on, turned out to be a runaway success. So the Electron was this thing in the middle that didn't quite turn out as successful. You can't win them all."

System supplied by The National Videogame Arcade, gamecity.org

FAMILY COMPUTER

WITH OVER 50 MILLION UNITS SOLD WORLDWIDE, THE FAMICOM/NES IS ONE OF THE MOST POPULAR CONSOLES OF ALL TIME AND MAINTAINED PRODUCTION FOR AN AMAZING 20 YEARS. DURING THIS TIME THE SYSTEM WAS HOME TO MANY OF TODAY'S BIGGEST FRANCHISES AND PIONEERED SEVERAL HARDWARE INNOVATIONS. JOHN SZCZEPANIAK EXAMINES THE ORIGINAL JAPANESE FAMICOM AND ITS DISK SYSTEM SIBLING

The Japanese counterpart to the West's Nintendo Entertainment System was superior in almost every respect. It's perhaps surprising, then, that few people outside Japan know the full impact it had on gaming history. Production of the Famicom was discontinued in late 2003, having outlasted every other console ever developed. Even then, the assembly line was only stopped due to difficulty in obtaining the necessary electronic components.

To commemorate the Famicom's passing, various groups set about creating dedication memorabilia. The Tokyo Metropolitan Museum of Photography held a Famicom arts exhibition from 4 December 2003 to 8 February 2004, showcasing every game released for the Japanese machine, along with various peripherals and model versions.

Enterbrain, in association with the famous Japanese gaming magazine *Famitsu*, commissioned a commemorative Famicom DVD, featuring interviews, the televised *Star Soldier* tournament from 1986, and the results of a *Famitsu* poll of Japan's 100 favourite Famicom games, which, unsurprisingly, consisted heavily of RPGs and shooters.

FAMICOM FEVER

The Famicom was launched on 15 July 1983. Initially, only a handful of games were released for the system, including *Donkey Kong* and *Popeye*. Designed based on the ideology that "form is superior to mass", Nintendo wanted to avoid Atari's mistake of releasing vast quantities of low-quality games that had eventually crashed the US games market. It believed that, in order for the system to succeed, the software would have to be of the highest quality. The Famicom was an instant success, with long queues forming and shipments selling out as fast as they could be delivered. To maintain quality, Nintendo placed strict licensing restrictions on prospective developers.

Licensing costs were high and licensees were only allowed to release a certain number of games per year to ensure that the titles were of a relatively high quality.

Japan was suddenly hooked. Everyone, from schoolchildren to salary men, was playing the Famicom, the lure of Shogi and *Mario* simply proving too strong. In Japan, gaming was not merely a child's pastime and even professionals, such as the famous copywriter Shigesato Itoi (*Mother* series), had their interests piqued by the possibility of increasing their 'creative assets' by writing good games. Many of today's established games designers started producing titles for the system during this time. Satoshi Tajiri, the creator of *Pokémon*, first cut his teeth on the Famicom hardware back in the Eighties, creating the cult classic *Quinty*. To do this, Tajiri bought old circuit boards from Akihabara junk shops and combined them with parts from his Famicom system. The legendary Shigeru Miyamoto also began his console career on the Famicom, and Hideo Kojima hoped to be assigned to the machine when he joined Konami.

The Famicom was still popular well into the Nineties, so much so that Nintendo was reluctant to release its successor, the Super Famicom, and only did so due to the pressure of rival companies releasing their own superior hardware. Regardless of this, the fascination with the Famicom remained, and in 1993 the console was remodelled to celebrate its 10th anniversary. Many features were removed in order

Photo by: Evan-Amos

» The Famicom. The original Japanese design was deemed too toy-like for Western tastes.

» The Famicom AV appeared in 1993, featuring AV composite output – hence the name.

"THE FAMICOM WAS A SUCCESS, WITH SHIPMENTS SELLING OUT AS FAST AS THEY COULD BE DELIVERED"

» In Japan, the Famicom came with illustrated comic books

"ALTHOUGH THE DREAMCAST WENT ONLINE, THE FAMICOM GOT THERE FIRST"

Disky business

In February 1986, Nintendo took the bold step of releasing a Disk System add-on for the Famicom. Although this wasn't as successful as it could have been, it had the potential to change the face of gaming forever. Created to lower the price of games by using proprietary-made rewritable disks, it was possible to purchase new games on a regular basis as easily and cheaply as renting DVDs today. Gamers could buy a blank disk from Nintendo, costing 2,000 yen (around £10) and for 500 yen (£2.50) write any of the supported titles onto this disk via small vending machines found in stores throughout Japan. Pre-loaded disk games complete with manuals were also available from around 3,000 yen (£15), but some FDS titles were download-only. This effectively reduced the cost of cartridge production, which at the time was very expensive, thereby lowering prices considerably and allowing for the production of much larger games. As the disks were rewritable, it meant that any game you didn't like could be easily replaced with a new one and game data saved without the need for costly battery backup. Titles such as *Metroid*, which in the West had a complex password system, could incorporate save features in Japan because of this. Many games were converted from cartridge and several disk exclusives were also produced, including *Super Mario Bros 2* (*The Lost Levels*).

Pirates soon found ways of copying the disks, and the market was flooded with cheap bootlegs. In addition, the cost of cartridge manufacturing started decreasing, resulting in bigger cartridges that surpassed the memory limits of the disks. All of this resulted in companies slowly abandoning the FDS. Another problem for the hardware was that its drive belts were notorious for breaking. Later, combined cartridge and disk systems were released by companies such as Sharp, but it was too late. FDS software development was eventually stopped, and in 1993 the vending machines were dismantled. Had it been more successful, the gaming world would probably be a very different place today.

Photo by: Evan-Amos

to lower the cost, but the Famicom AV had a sleeker and more compact appearance. Software development for the system officially halted in the mid-Nineties, and the final game released in Japan was *Takahashi Meijin No Boukenjima IV* (aka *Adventure Island 4*) on 24 June 1994. Hardware production, however, continued until 2003, long after its Western counterpart's sales had ground to a halt. In fact, in the years leading up to its 20th anniversary, output had to be increased to meet the demands of adults who were buying the machines in order to relive their childhood memories.

Making a mark

The Famicom is a landmark system, not least because it introduced many innovations now taken for granted. Even today, the cross-shaped directional pad and Start/Select buttons are used on modern controller layouts – Nintendo's handheld Game & Watch series was the first to utilise D-pad technology. It was also the first system to use voice-recognition technology via a small microphone built in to the control pad. In *Raid On Bungeling Bay* the second player could control his fighters by shouting into it, while *Kid Icarus* players were able to gain discounts if the player spoke directly to the game's merchants. In *Takeshi No Chousenjou*, the player was told to sing karaoke-style into the microphone in order to progress further, although few succeeded since the voice-recognition technology wasn't entirely reliable.

While many believe the Sega Dreamcast to be the first console to go online, the Famicom actually got there first. Several network adaptors and modems were released that plugged into the system so various connection setups could be used, enabling users to check text messages and horse-racing results. Sadly, online gaming was never implemented.

As the Family Computer name claims, it was also possible to turn the console into a form of semi-computer, complete with its own unique programming software (Family BASIC) and keyboard. This enabled many users to start programming their own simple, home-made games and get a taste for the hardware. Speaking of hardware, its Western equivalent also set precedents – specifically, the region lockout that stopped US games being played on a European NES and vice versa, which infuriated gamers and went on to become a console standard of the present day.

Classic gaming

Games-wise, Nintendo made good on its promise and released large amounts of extremely high-quality software. Famous franchises such as *Final Fantasy*, *Dragon Quest* and *Metroid* started life on the Famicom, and though first released on the MSX, series like *Goemon* (*Mystical Ninja*), *Castlevania* and *Metal Gear* also made their console debut on the system. Readers might be unaware that a *Biohazard/Resident Evil* semi-predecessor was also made for it. Entitled *Sweet Home*, it was an RPG by Capcom that featured several key gameplay elements that would go on to heavily influence the survival horror series that followed, as well as being set in an abandoned mansion. Many would argue that survival horror started with *Alone In The Dark*, but some credit should at least be given to the Famicom.

Advances in technology and design scope meant Famicom and FDS games could increase in size and quality. Games began incorporating unique gameplay elements, and a good example of this is *Otocky*. A music-influenced product combined with classic shooter gameplay, *Otocky* was described as a cross between media art and videogames – *Rez* is its closest modern-day equivalent.

Though not quite so boast-worthy today, the Famicom also had a hefty list of licences and franchise endorsements. A game featuring the antics of Kiss-influenced rockers Seikima (*Seikima II: Akuma No Gyakushu*), received surprising acclaim. Takeshi 'Beat' Kitano had a game designed to his specifications, and Congressman Masuzoe created a game about "intra-office politics" that "taught

you the art of how to get ahead in life" – conversely, congressmen in the US more often than not try to ban videogames. A multitude of manga and anime licences were released, such as *Dirty Pair* and the rather excellent *Patlabor*. Several major licences were to remain unknown outside of Japan, though, such as Master Takahashi. Having participated in and been crowned winner of Hudson's *Star Soldier* National Rally 16-Blast championship tournament, the hero of the game went on to star as the lead character in *Takahashi Meijin No Boukenjima*, and was recognised by children across Japan. Rather than setting up a similar tournament in the West, Hudson localised the game – Takahashi was changed to Master Higgins, and the game title became *Adventure Island*. Interestingly enough, the game was released in arcades as *Wonderboy*.

On the whole, the Japanese Famicom games were vastly superior to their Western-localised equivalents. Apart from the fact that only a small proportion of the available triple-A titles were brought over, nearly all of them had butchered cover art (*Mega Man*), were censored to some degree (*Ice Climber*), or suffered from the most bastardised translations ever witnessed (*Metal Gear*). The regular reinterpretation and modification of games was wholly unnecessary – stages were removed, sprites redrawn and difficulty levels changed for reasons that have never become apparent.

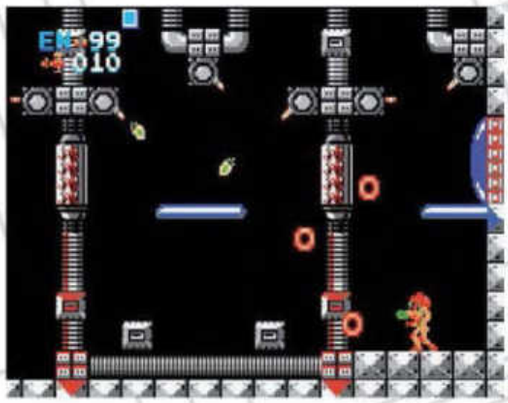
Lasting appeal

The popularity of Nintendo's first interchangeable games console is plain to see if you take a quick look at the internet – there is a vast array of dedicated fan sites, chronicling even the most obscure and bizarre facts – bootleg system designs and overclocking the processor, anyone?

The availability of software in the emulation scene is also very revealing – there are more emulators for the Famicom/NES than perhaps any other console or computer. The continued recognition and legacy of the Famicom has caused developers to realise that older-style games are still profitable. Many companies have recently released compilations of their past hits, such as Capcom's *Mega Man* collection and Hudson's remakes of *Adventure Island* and *Star Soldier*. And let's not forget the three sets of Famicom Mini games released for the GBA and the system's continued life on the Wii's Virtual Console.

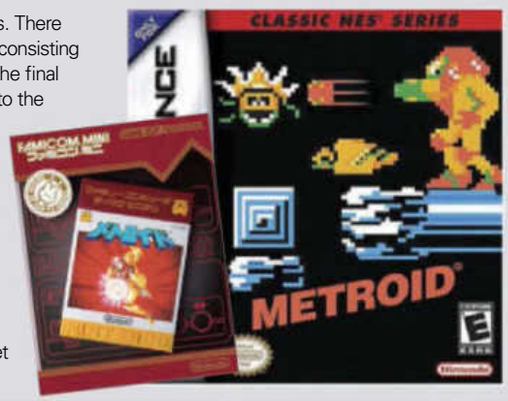
The Famicom's impact on console gaming is therefore obvious. Without it and the many developers who began painting their visions and dreams using it, we would have no *Metroid* or *Zelda*, no *Mario* or his rival *Sonic*, and the great *Final Fantasy* would be little more than a twinkling in Yoshitaka Amano's eye.

» Just some of the titles that debuted on the Famicom. From top to bottom: *The Legend Of Zelda, Metroid, Super Mario Bros.*



Pocket pleasure

To commemorate the end of Famicom production, Nintendo released a special edition Famicom-themed gold and burgundy GBA SP in very limited quantities, not meant for general sale. It also mass-produced another special edition SP in the style of the Famicom AV for the masses, and then a later one based on the NES for the Western market. To coincide with these, Nintendo converted and re-released the best Famicom titles as the GBA Famicom Mini series. There were three sets released consisting of ten games each, with the final set dedicated exclusively to the FDS – they were even produced on yellow cartridges that mimicked the old disks. Despite being relatively pricey (US $20 to US $30) for what are basically 20-year-old games, for the ardent collector nothing less than the full boxed set will suffice.



FAMICOM FAVOURITES

So which Famicom games did the Japanese public vote as their favourite in the *Famitsu* poll? Here are the top 40 titles…

1 Dragon Quest III
2 Super Mario Bros
3 Super Mario Bros 3
4 Final Fantasy III
5 Dragon Quest IV
6 Dragon Quest II
7 Dragon Quest
8 The Legend Of Zelda
9 Mother
10 Mario Bros
11 Final Fantasy
12 Kirby
13 Kunio In Feudal Japan
14 Kunio Sports
15 Spartan X
16 Super Mario Bros 2
17 Kunio Dodgeball
18 Final Fantasy II
19 Fire Emblem
20 Sanma No Meitantei
21 Xevious
22 Ice Climber
23 Spelunker
24 Castlevania
25 Gradius
26 Goonies
27 Captain Tsubasa
28 Konami Wai Wai World
29 Metroid
30 Takeshi No Chousenjou
31 Final Fantasy I + II
32 Portpia Renzoku Satsujin Jiken
33 Nekketsu Kouha Kunio Kun
34 Bomberman
35 Ganbare Goemon
36 Wizardry
37 Donkey Kong
38 Hokkaidou Rensa Satsujin
39 Pro Yakkyu Family Stadium
40 TwinBee

» Leapfrogging *Mario* to the top of the poll: Enix's *Dragon Quest*.

FAMICOM UNSUNG TOP 10

Over 1,200 titles were released, so trying to whittle it down to ten of the best would be an unenviable task and some readers would no doubt be outraged that their favourite title had been left out. Instead, we're going to list what is considered to be the ten unsung greats, since virtually everyone knows the classics such as *Mario*, *Zelda*, *Contra* and *Final Fantasy*. Number order is not important – what is important is that gamers can discover some of the gems that the Famicom has to offer.

Takeshi No Chousenjou

The worst game ever designed or a twisted work of genius? *Takeshi No Chousenjou* was the first and only game that film director Takeshi 'Beat' Kitano ever created. Despite the fact that the player has to perform near-impossible tasks such as singing karaoke – leaving the control pad untouched for an hour – and hitting an enemy 20,000 times to kill it, the Japanese public still voted it into the top 50 Famicom games of all time. Designed with the intention of breaking as many gaming rules as possible and by someone who claims to hate videogames, it's an example of the experimental design techniques that no longer exist in today's climate of risk aversion.

Utsurun Desu Kawauso Hawaii E Iku

Another game that tries to break away from convention, *Utsurun* has its own take on the platforming genre. When booted up it reveals two fake title screens, and later in the game the player is forced to take a blind leap of faith into a pit of spikes, only to realise that the background forms a bridge of safety. Enemies are also attacked in an unusual way: to activate the variety of moves available, the attack button has to be held down for varying lengths of time as the game cycles through each one, with the most powerful only available for a short time. But that's nothing compared to the characters, the main one of which seems to be a middle-aged man in a rubber otter suit. There are many other bizarre elements found within, all of which are wrapped in the kind of surrealism only the Japanese can get away with.

Crisis Force

Old-fashioned shoot-'em-up gaming from the people who brought you *Parodius* and *TwinBee*. This is another title that regularly reaches the higher echelons of the Famicom shooter charts. Smooth parallax scrolling and luscious graphics, coupled with a typically excellent Konami soundtrack, set this apart from many of the other Famicom games in this genre. As is standard for a good shooter, there is a suitably impressive weapons power-up system – based around your craft being able to transform into one of three attack configurations at the press of a button – and, of course, there's the screen-filling power bomb. *Crisis Force* is incredibly fast-paced and is all about raising weapon power to ridiculous levels, so that single shots can take out fleets of enemies.

Kunio Kun series

One of the best things to come out of Technos was its *Kunio* series of games. These games involved everything from sports to high-school gang brawls, and all of them featured super-deformed character designs that would become synonymous with Technos games. Some of the titles from the series went on to be localised and released abroad as *River City Ransom* titles, but many greats, such as *Jidaigeki Dayo Zenin Shuugou* (pictured), were exclusive to Japan. Sport aside, *Kunio* games took the form of stats-based brawlers and were a joy to play. Featuring large characters, outrageous special moves, and detailed scenery that could be used as weapons, it was the definitive beat-'em-up series. Later games even supported simultaneous four-player fights, making it an unrivalled series of fighters on the Famicom.

Quinty

This isn't a Japan-only title as it was released in the West under the name *Mendel Palace*, but it's of such a high quality that it deserves a mention. *Quinty* was the very first game designed by *Pokémon* creator Satoshi Tajiri. The game's packed with small details and delicate character animation, and the aesthetics can still impress. Gameplay, meanwhile, is deceptively simple and drags you in – you're soon kicking cards around to collect bonus items and trying to splat enemies against the walls. To call it an action-based puzzle game would be a very loose description as there's nothing else quite like it.

Gun-Dec

Released in the West under the title *Vice: Project Doom*, this excellent *Ninja Gaiden* clone just has to be included. With amazing cut-scenes and flawlessly crafted gameplay, this is a title that actually surpasses the game that inspired it. Gameplay is kept fresh throughout via a combination of side-scrolling action, driving and *Operation Wolf*-style shooting sections, all of which create one perfectly formed package. Those who manage to complete it also get to enjoy the grand conclusion to this surprisingly dark plot, filled with red herrings.

Konami Wai Wai World

Everyone loves character compilation games and almost everyone loves Konami game characters, so it's strange that while Japan was blessed twice with the *Wai Wai* games, neither title made it to the West. The game is a send-up of everything you love about Konami. Featuring a selection of well-known characters, such as Simon Belmont, Goemon and even TwinBee, the game also throws a number of new ones into the mix. Each of the many stages is themed around an entire game from Konami's much-loved back catalogue, and the production values are extremely high, especially in the second title of the series.

Huang Di

Possibly the greatest game to come out of China during the Famicom era, *Huang Di* is as enjoyable to play as it is difficult to track down. An unlicensed bootleg-only cartridge, the game was released in limited quantities. Though it can be tentatively described as a platform action game, it's innovative in that it allows the player limitless flight and spell casting. *Huang Di* also contains some truly breathtaking levels, bosses, set pieces and cut-scenes. Flying over a village of headless warriors, traversing a fungi jungle and battling a wildcat under the moonlight are just some of the treats that players will never forget.

Sweet Home

Combine the gameplay mechanics of *Final Fantasy* with the original *Biohazard/ Resident Evil* house scenario and improve it by incorporating an innovative 'team' system, then integrate a truly disturbing plot about a deranged female artist who has been kidnapping and burning local children alive, and you've got *Sweet Home*. Made by Capcom and bearing more than a striking resemblance to the aforementioned PlayStation/Saturn hit, it's a thrilling game from beginning to end, particularly the fan translation. One of the many great RPGs that were never localised, *Sweet Home* is now highly sought after.

Mother

Released exclusively for the Famicom, this is a fine example of why games should be regarded as modern art. Written by the legendary Shigesato Itoi, it's set in the present day and includes many emotional themes running throughout. Though an RPG by nature, it avoids many clichés such as levelling and gold hunting, instead replacing them with growing up and gaining a regular allowance from a father who's never at home. It would be a severe injustice to try to describe the sum of parts that is the *Mother* series. The only way to fully understand it is to persevere with the game until the grand finale.

PHILIPS VIDEOPAC

It was the machine Philips tried to kill several times over but thanks to one man's determination to see the console succeed, it had an impact on gaming for six rollercoaster years, as David Crookes explains…

G7000

Let's not beat about the bush. If you are asked to name a console from the second generation of videogaming, chances are you are likely to mention the Atari 2600 or the Intellivision. Relatively few gamers will namecheck the Philips Videopac G7000 and if they do, it's most likely to be mere lip service.

But that is a real shame because there is much to be said about this successor to the world's first commercial home videogame console, the legendary Magnavox Odyssey. For this was a machine full of innovative ideas which sold more than two million units. And it was also the canvas for one man's incredible and prolific contribution to gaming. When all is said and done, the G7000 represented a sizeable swathe of gaming history and it deserves to be brought in from the sidelines.

Its development began at the beginning of 1977 when Alfred diScipio, then the president of Philips' subsidiary Magnavox, announced the company was making a new console. Within a few months it had signed up Intel as the chip provider, a move that would prove to be crucial for the G7000 in more ways than one.

Not only did the deal allow the G7000 to take advantage of Intel's ROM and RAM, it handed the machine a ready-made microprocessor in the guise of

» Annoyingly, game names aren't on cartridges, meaning you're going to need a very good memory.

COMPETITORS

How it stacked up against Atari 2600 and Intellivision

PHILIPS VIDEOPAC G7000

CPU: Intel 8048 8-bit microcontroller running at 1.79 MHz
RAM: 64 bytes + 128 bytes
ROM: 1 kb
DISPLAY: 154x100, powered by Intel 8244 (NTSC) or 8245 (PAL)
COLOURS: 12
FORMAT: Cartridge
AUDIO: 1 channel

ATARI VCS 2600

CPU: MOS Technology 6507 at 1.19 MHz
RAM: 128 bytes
ROM: 4 kb
DISPLAY: 160x192, powered by TIA chip
COLOURS: 128
FORMAT: Cartridge
AUDIO: 2 channels

INTELLIVISION

CPU: General Instrument CP1610 at 1MH
RAM: 1352 bytes
ROM: 7168 bytes
DISPLAY: 160x196
COLOURS: 16
FORMAT: Cartridge
AUDIO: 3 channels

the 8048 running at 1.79 MHz. The console could also take advantage of Intel's pioneering video and audio chip, the 8244, and with so much Intel silicon inside the machine, it ensured the chip maker would have a vested interest in trying to make the console a success.

The 8244 was the world's first programmable sprite-based game chip and it was designed by engineers Nick Nichols and Sam Schwartz. It allowed for four sprites on an 8x8 matrix – two of which could be combined to create a larger sprite. It also had eight group objects for backgrounds, titles and scores, as well as a noise generator.

"Intel needed to produce a graphics chip that could be sold for a reasonable price to the mass market because moving graphics around on a TV screen using RAM cost a fortune," says Ed Averett, an electrical engineer and sales representative at Intel. "I went to the folks who laid out silicon and presented the problem. They decided to use content addressable memory and it worked really well."

While the innards were being worked on, the casing was also devised. Rather than simply produce a featureless slab with a cartridge slot, the designers added a full 49-key, built-in alphanumeric membrane keyboard (as well as a couple of hardwired digital controllers, both of which had a solitary fire button and an eight-way directional stick).

> **"The people involved with the console at ground level always saw it as the first step towards a compter"**
> Ed Averett

The keyboard was created by engineer Roberto Lenarducci and it was tricky to type on but it certainly showed some ambition. "The keyboard was such a novel thing back in those days, before PCs had become commonplace. Typing messages on the screen was amazing stuff for kids," says collector William Cassidy, who runs The Odyssey Homepage at the-nextlevel.com.

It was also part of a much bolder plan. "The people involved with the console at the ground level always saw it as the first step towards a computer and it was ahead of Apple at the time," says Ed. "The plan was to get people to see it was a computer with keyboard and the idea was to evolve it."

Despite such advances and the impressive design ideas, Magnavox's

» William Cassidy is a big fan of the console and also runs The Odyssey Homepage at the-nextlevel.com.

parent company North American Philips (NAP) wasn't entirely convinced. It lacked confidence that the console could be a success and in August 1977 it made its first attempt to axe it.

Ralph Baer, who had devised the Odyssey, made an impassioned plea to keep development going. He succeeded and the intervention bought the G7000 team some time. It also allowed coder Sam Overton to program some games.

Overton readied sports titles including *Bowling/ Basketball* and *Computer Golf* as well as the shooter *Cosmic Conflict* and the simulation *Las Vegas Blackjack* for the expected launch. A cartridge called *Computer Intro* which taught simple coding was also created so that the G7000 could be marketed at parents as much as at children.

But NAP, whose core business was television and audio, still felt videogaming to be a mere sideline. It attempted to pull the plug *again* six months later. "The people that I worked directly with understood games: Mike Staup, the vice president in charge of the videogames division at Magnavox, knew what videogames were going to be," says Ed, who, at the time, was becoming frustrated at the attempts to thwart the console's progress.

"But the problem was that he did not have a seat at the big table at Magnavox or Intel. Those who did – the TV and radio people – were just kind of, 'Ok, you have this niche down there…' but they couldn't be convinced that videogames would be a huge business. They thought it wasn't possible."

WORLD WIDE SUCCESS

UNITED STATES

MAGNAVOX ODYSSEY 2

■ Around 50 games were released in the United States and a million consoles had been sold by 1983 but it still lagged behind the Atari 2600 and the Mattel Intellivision in terms of impact. US gamers were the only ones to get The Voice synthesiser, though.

EUROPE

PHILIPS VIDEOPAC G7000

■ The machine went down well in Europe so its superior follow-up, the G7400, was only released there. A Chess Module was made available for G7000 owners and other Videopac consoles were allowed to be produced by the likes of Siera and Jopac.

BRAZIL

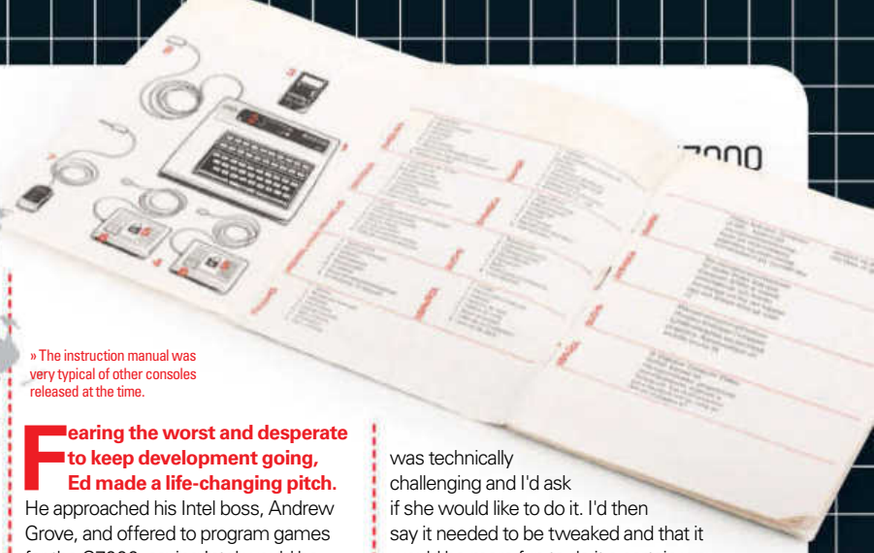
PHILIPS ODYSSEY

■ Released by a company called Planil Comércio, the console was massively popular in Brazil. Games were released in Portuguese and tournaments surrounding the machine's games - notably *K.C.'s Crazy Chase* – were held.

JAPAN

ODYSSEY 2

■ The console made a late entrance in Japan, being released in December 1982. There is not a lot of information about the machine in this territory but it appears that it retailed at ¥49,800 and not sell well. History shows the NES fared better...



» The instruction manual was very typical of other consoles released at the time.

Fearing the worst and desperate to keep development going, Ed made a life-changing pitch.

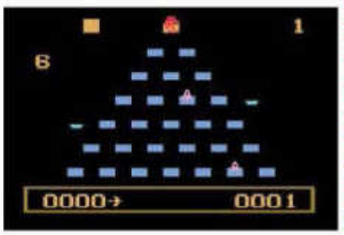
He approached his Intel boss, Andrew Grove, and offered to program games for the G7000, saying Intel would be able to sell more chips if the console sold well on the back of a healthy catalogue of games. Grove agreed and a deal was struck which meant Ed would leave Intel and become a freelance games designer working exclusively for the G7000.

In order to do this, Ed had to teach himself assembly language. He also took on a new assistant, his wife Linda who had been working at Hewlett Packard. They worked from their home in Chattanooga, Tennessee.

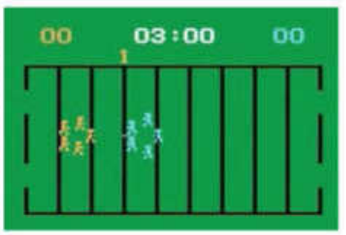
"Working with Linda was actually a non-starter from the first time or two," he laughs. "Initially I would come up with the game idea and start coding but then I'd come up against something that was technically challenging and I'd ask if she would like to do it. I'd then say it needed to be tweaked and that it would be more fun to do it a certain way and she'd be ready to kill me. It wasn't long before I decided I would do all the coding on the games."

"Ed's decision saved the project and the G7000 hit European shelves in 1978. It was also released in the US under the brand, the Magnavox Odyssey 2 although there was little difference between the machines, except for one being PAL and the other NTSC," says William. "When pushed you can add that the G7000 didn't have a power switch but it did end up with the greater number of games."

There was still uncertainty though. By this stage, the original game development group within Magnavox



» [Videopac G7000] The latter years of the G7000 saw some major releases including *Q*bert*.



» [Videopac G7000] It's not beautiful, but creating games based on sports had shelf appeal as *Football* proved.

ESSENTIAL GAMES

Don't buy a Videopac G7000 unless you plan to own the following classics

K.C. MUNCHKIN

■ Created to tap into the *Pac-Man* craze sweeping the arcades, *K.C. Munchkin* came to the attention of Atari which promptly sued. The game plays in a similar fashion to *Pac-Man* with the action taking place within multiple mazes. As such, K.C. is pursued by monsters as he tries to gobble a handful of moving pellets but there were some neat additions such as being able to produce your own maze. The fact it was pulled makes it one to be played via emulation.

TURTLES

■ As one of the earliest licensed coin-op ports for the G7000 (and an exclusive one at that), *Turtles* is an addictive maze game starring a well-animated turtle. Players are tasked with picking up baby turtles one at a time and returning them to their home while trying to avoid deadly beetles which are out for the kill. While the enemy can be stunned by mines, they recover quickly, making for a relentless chase. Try the US version since it makes use of The Voice synthesiser.

KILLER BEES

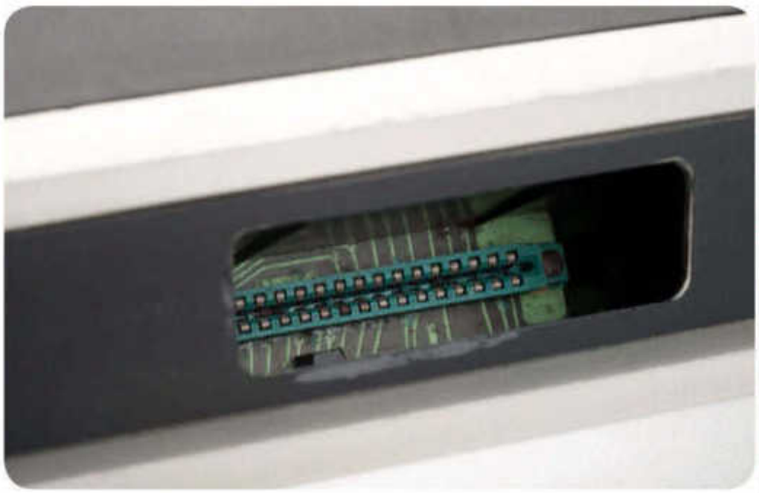
■ From the surprisingly authentic bee sounds to the imaginative, deep and involving gameplay, you wouldn't have felt stung if you'd bought this game back in the day. For not only are you expected to kill a gang of dastardly enemy Beebots by hovering your swarm of white bees over them for a set period of time, you have to avoid the coloured bees which seek to protect them. Should they clash, you lose some of your swarm, making it less effective. It's bee-autiful.

PICKAXE PETE

■ There is something of a *Donkey Kong* feel to *Pickaxe Pete*, given it involves moving from one platform to another, climbing ladders and trying hard to avoid being hit by rolling boulders that appear from what looks like a revolving door at the top of the screen. It is also just as hard as the Nintendo classic, if not more so, given that you have just one life and nothing more than a pickaxe to hand to knock the boulders away, We wonder where that idea came from, *Jumpman*?

ATTACK OF THE TIMELORD

■ With some lovely voice sounds and slick *Space Invaders* gameplay, *Attack Of The Timelord* is an addictive shooter of the leave-your-brain-at-the-door variety. It's simple enough with players firing shots from a cannon at the bottom of the screen as the enemy ships swirl in attractive patterns from the centre of the screen. The game was called *Gerry Anderson's Terrahawks* when it was released in Europe in an attempt to cash in on the British TV sci-fi series of the same name.



had been disbanded and Sam Overton had left. Ed was working on a royalty basis and he was the only person writing games for the system. This situation continued for two years with Ed trying his hardest to keep up with the vastly larger teams writing games at Atari. Not that he was complaining: "I got zero up front but the games always sold out," he says.

Indeed, he soon got into the swing of things, reusing the bulk of the code from one game to the next to speed up the development process. "It was pretty exciting and there was no downtime that's for sure," Ed says of the volume of work (he would eventually go on to write 24 G7000 games – around half of those released). And yet still Philips and Magnavox were unconvinced and the axe continued to loom.

It was only when Ed created *K.C. Munchkin* that attitudes within NAP changed. The game was very much inspired by *Pac-Man* and the powers-that-be were excited. "There was a feeling of, 'Oh my goodness, we can do a game better than the arcade and blow everyone out of the water,'" Ed says. "That was a true adrenalin rush for the corporate people who saw something they would understand."

The manufacturer began to put more resources into the system but Ed had a nagging doubt. He feared that the development may be on rocky ground even though it differed somewhat from the arcade classic by having some neat twists such as the random generation of maps and a rotating regeneration box for the ghosts (or monsters as they became). It was released in 1981 and gamers were snapping up the machine specifically to play it.

"The sales suddenly meant that they weren't going to quit making the console as soon as they could," Ed recalls. But then disaster struck. "Atari said, 'You can't do that, we're going to get you,'" he continues. "The first federal judge ruled in Philips' favour that there was no patent or copyright infringement but the appellant court was presented with information in a way that I would not have chosen to do it and Philips lost."

From a major high, *K.C. Munchkin* ended up dealing a devastating blow. "It put Philips off," says Ed. "They didn't see it coming and they thought all of their lawyers were good and solid and that there was no way Atari would win this. I was going to deviate further and further from *Pac-Man* than *K.C. Munchkin* ended up being but they said come closer, closer, as close as you can. They were totally blindsided in terms of the law and it shook them to the core."

Surprisingly, it did not spell the end for the console or, indeed, for *K.C.*. Another game, *K.C. Crazy Chase* (or *K.C. Krazy Chase* as it was in the US) followed. "I did that game because K.C. was my character and I wanted it on the record that it was not *Pac-Man*," says Ed who has since revitalised his creation with *KC Returns* for Windows 8 and 10 (it's out now on the Window Store).

But then K.C. had breathed new life into the console and the new wave of gamers were snapping up other games in the machine's catalogue, enjoying the likes of *Take the Money And Run*, *Math-A-Magic*, *War Of Nerves*, *Invaders from Hyperspace*, *Dynasty* and *Pocket Billiards* to *Monkeyshines*, *Pick Axe Pete*, *Freedom Fighters* and *Power Lords*.

"About 50 games were released during the console's commercial life in the US and about 70 in Europe," Cassidy says. "Several of them were edutainment games, and most of the sports titles for the system weren't very good but once you discarded those, you were left with a fairly small number of fun games – and those games were really fun!"

In 1982, the G7000 was given a further boost. A bespoke speech synthesiser unit, fittingly called 'The Voice', was released in the United States (us Europeans got a chess module instead). It was powered by a General Instruments speech chip and it fitted over the cartridge slot of the G7000 console to allow more than 100 words to be spoken.

"The people over in the engineering group knew we had to add something new to the console and The Voice was incredible; state-of-the-art wow," says Ed. "Roberto is the man who needs accolades for that because The Voice may have had a limited vocabulary but it showed what could be done with speech in games. I thought it was way cool."

"The people in the engineering group knew we had to add something to the console and The Voice was incredible"

Ed Averett

» Can you guess what the first Videopac game was? Answers on a postcard please.

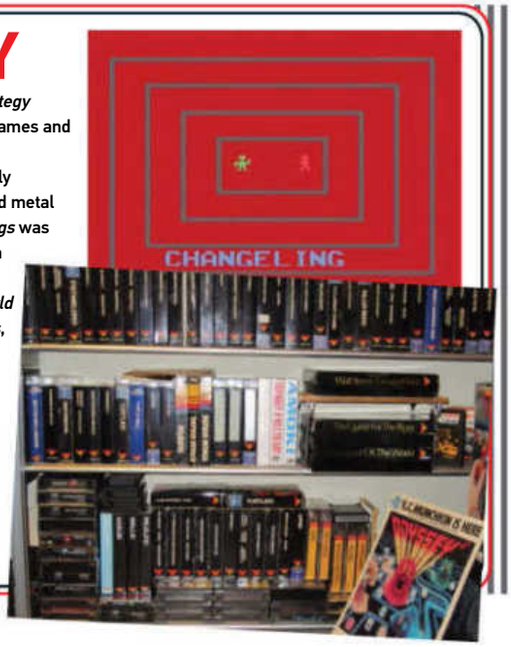
MASTER STRATEGY

One of the strengths of the Philips Videopac G7000 was the *Master Strategy* series, which was created in 1981. It brought together board and videogames and the first release, *Quest Of The Rings*, was particularly well-received.

Designed by Stephen Lehner and Ronald Bradford, the games not only made great use of the keyboard but they came complete with plastic and metal playing pieces, instruction manuals and game boards. *Quest Of The Rings* was a two-player co-op game which pitted players in a dungeon packed with monsters. It was influenced, obviously, by the *Lord Of The Rings* trilogy.

Two more games in the series were released – *Conquest Of The World* and *The Great Wall Street Fortune Hunt* – but another, *Sherlock Holmes*, was shelved. But how did they come about? "The concept was literally born on the back of a napkin," says Ed Averett who programmed all but *Sherlock Holmes* which was created by Ed Friedman.

"Myself and Mike Staup, who was the vice president in charge of Magnavox, were having dinner and discussing how to enhance the graphics because they were a real problem and we were running out of runway. We thought, 'What if we combined board games with the programability of the videogame?' The more we played around with it, the more we liked it."



» The keyboard isn't the best and it certainly takes a sizeable amount of time to get used to.

Voice-activated games such as *Attack Of The Timelord*, *Sid The Spellbinder* and *Type & Tell* worked with the unit and while the resulting sound was rather robotic, it became a hit. It played the audio through its own speaker rather than through the television which allowed for independent volume controls. And as if to show Philips' commitment, The Voice was advertised on television and in magazines in the US by a an older, grey-haired character called the *Wizard Of Odyssey* that the company's marketing team had introduced in the latter part of 1982. Money was finally being spent.

Third-party developers were also producing games for the console. Imagic released *Atlantis* and *Demon Attack*, JoPac produced *Exojet* and *Moto-Crash* and Parker Brothers sold versions of *Frogger*, *Spider-Man*, *Q*bert* and *Super Cobra* thanks to the UK-based Amazon Systems reverse engineering the G7000.

A new development team headed by a returning Sam Overton was also formed. He led other skilled coders to produce a new wave of great games. Bob Harris wrote *Killer Bees* and Jim Butler coded *Turtles*. Jake Dowding and Andy Eltis programmed *Norseman*.

The console was even entering new markets. The G7000 was released as the Odyssey in Brazil where consoles could not be imported but where Philips had a factory. It was also sold in Japan. Yet all of this happened at the end of the machine's life as the North American videogame crashed loomed in 1983.

That left Ed frustrated because he believes the console still had a lot of unrealised potential, not least because of its more complex graphics chip. "I always felt I was working with a high performance sports car and Atari was operating with a good Volkswagen. It gave me a tremendous advantage because I had superior processing power and graphics that were significantly superior to our rivals."

Even so, he acknowledges its restrictions. After all, gamers scorned the machine for falling back on similar, yet plain-looking graphics. "Most of the early games relied on a built-in 64-character set for graphics, giving them all a similar appearance," explains Cassidy.

"We had RAM and ROM restrictions," Ed admits (4K ROMS were introduced for the *Challenger Series* of games which boasted better graphics). "There wasn't much memory to work with and the graphics had huge limitations. There were no tools, characters were laid out on grid paper in hexidecimal but that was the price we paid for being at the frontier. I found that on every game I spent 20 to 30 per cent of my time trying to get the last five percent of the code in there. You'd sit there and say, 'I need to get this in there' but there is no room left so you'd figure out what you could cut and snip and squish and then finally get it in there. So that was a huge, huge limitation."

Ed worked on the G7000 for three years: "I knew disaster was around the corner and all on the inside knew… no-one was upgrading their hardware," he says. That said, the console continued to be sold for a few months, only being discontinued on March 20 1984.

Before it was removed from the shelves, it had been joined by some new siblings including the Philips Videopac+ G7400 and a G7200 which was essentially the G7000 with a built-in black and white display. But could it have been more during its own lifetime, especially with more backing in the first two years?

"I think the console was treated fairly, but did it reach its potential? Not even close," says Ed. "But then if Philips had realised what was there, then it would've never have let me do what I did. They took the position they did and didn't care. But I got an opportunity of a lifetime that I wouldn't have had at Atari."

Many thanks to William Cassidy for his assistance.

THE STORY CONTINUES...

Of course, as with many consoles, the story of the G700 continued following its official death.

The homebrew scene for the console has exploded in recent years with one coder, René van den Enden, developing an intricate knowledge of the system.

"The first-ever homebrew was John Dondzila's *Berzerk* clone *Amok* in 1998," says G7000/Odyssey 2 expert William Cassidy.

"But René has been mentoring and advising just about all of the recent homebrew developers. The most prolific developers of recent years have been Marijn Wenting of Revival Studios, Chris Read, and Rafael Cardoso of Brazil.

"Just about all homebrews support The Voice, and many of them even support high-resolution mode when played on a Videopac+ G7400 machine."

Check out the forums over at at videopac.nl to find out more.

» [Videopac G7000] Less a game and more something to play around with, *Type & Tell* was able to use the G7000 add-on, The Voice.


AMSTRAD
GT 65 Monitor
AMSTRAD
64K COLOUR PERSONAL COMPUTER
ESC
TAB
CAPS LOCK
SHIFT
CTRL
ENTER
DEL
COPY

Year Released: 1984

Original Price: £199/$325 (green screen monitor), £299/$488 (colour)

Buy it now for: £10 to £25

Associated Magazines: *Amtix*, *Computing With The Amstrad* (later known as *CPC Computing*), *Amstrad Computer User* (official publication – began life as *CPC 464 User*, then *Amstrad CPC 464 User* before changing name when the 664 was introduced in 1985), *Amstrad Action*, *CPC Attack* – and a host of top fanzines, including *Artificial Intelligence*, *Better Than Life* and the biggest of them all, the serious mag *WACCI*

Why the Amstrad CPC 464 was great… You didn't just own an Amstrad CPC464 – it became an integral part of your life. It was the ace up your sleeve, to be used when someone said: "What's best: the Spectrum or C64?" You could smilingly answer: "Neither! The CPC beats them both" And it did. This underdog of a computer had a few tricks – great graphics, decent sound and so many enthusiastic users who refused to let go when the machine died. CPC owners were proud of their choice and rightly so

AMSTRAD CPC 464

IN THE EIGHTIES, GAMES WERE PRODUCED FOR THE SPECTRUM AND COMMODORE. AND, OF COURSE, THE AMSTRAD. BUT MANY PEOPLE PAID LITTLE NOTICE TO THE UNDERRATED UNDERDOG THAT WAS THE CPC 464. YET SIR ALAN SUGAR'S 8-BIT ENTRY INTO THE WORLD OF HOME MICROS NEVERTHELESS PROVED TO BE A HIT, AS DAVID CROOKES EXPLAINS

The best things come to those who wait – and with the Amstrad CPC 464, that was certainly the case. When this marvellous machine was launched on April 11, 1984, to more than 400 journalists packed into the Great Hall of London's historic Westminster School, it was commonly agreed it had its work cut out.

It was competing against the Spectrum and Commodore 64, but Alan Sugar was confident his technically superior CPC – affectionately codenamed Arnold – would win.

It certainly struck a chord with the press: *The Guardian* called it 'Amstradivarius', *Personal Computer World* boldly said it was the 'Sinclair Beater', and *Computer News* referred to it as 'Arthur'.

The *Grimsby Evening Telegraph* called it the 'Mean Machine', but the *London Evening Standard* went one better. "After the People's Car [the VW Beetle], the People's Computer," it gushed.

Mr Sugar was planning worldwide sales of more than 20 million computers and was keen to shift an initial 100,000 that had been created prior to launch.

The launch had tried to capture the imagination of journalists by using historical figures ranging from Einstein, Ravel and Archimedes to Monet and Shakespeare to highlight the various attributes of the CPC. Shakespeare, for instance, showed how easy writing *Hamlet* would have been with a word processing package.

Amstrad was keen to portray the CPC – the Colour Personal Computer – as a 'jack of all trades'. Whereas the Spectrum and C64 were becoming firmly established as decent games machines, the CPC was being marketed as equally good for business.

And Amstrad wanted to get the machines out in the shops by the end of June, with Bill Poel, the general manager of Amsoft, telling *Your Computer*: "I will be prepared to eat one in Trafalgar Square if it's late." He didn't have to. On June 21, the machine was made available to buy

Post-production

When the 464 Plus was scrapped, it heralded the end of this great machine. For a while, commercial companies continued to support the computer, knocking out a host of budget and full-priced titles, including the brilliant *Super Cauldron* and *Prehistorik* in 1993. But as time went on, the market was placed in the hands of hardcore users who set up their own software companies. Among the best was Radical Software, maker of *Fluff* and *Ball Bearing*. The majority of these games were available on tape, although the brilliant *Zap 'T' Balls* was not, being disk-only and 128K. But as more and more games began to be released into the public domain for nothing, it became difficult for 464 users to find people willing to copy the latest homebrew titles onto cassettes. Unless they bought a disk drive, 464 owners found themselves shut off from many of the new wave of games, among the best being *Croco Magneto* and *Les Mings*, typically available by sending a disk and SAE.

» The CPC was marketed as the all-in-one solution, playing into the hands of the technophobes.

» This French-coded game became one of the CPC's best public domain titles

at Rumbelows in Edgware Road, London. Around 60 people queued for nearly an hour to get their hands on it, rushing forward when the doors finally opened at 9.30am. By 10.30am, 100 computers had been sold and software was being snapped from the shelves. It was reported that one man had even flown in from Bahrain!

Roland Perry, then Amstrad group technical manager, says: "We were pleased with this initial success. Sir Alan had wanted to create the CPC 464 because he wanted to get into the home computer market. It was the 'latest thing' that was clearly catching on as a mainstream item in the shops and we wanted to be a part of it. To see it sell was very pleasing."

Prior to the launch, Amstrad had been desperate for software, particularly games. The solution was to launch Amsoft at the beginning of 1984, tasked with approaching third-party companies to create 50 CPC games. Some of the games were given away with the CPC 464 and these included *Harrier Attack*, *The Galactic Plague*, *Roland On The Ropes*, *Fruit Machine*, *Bridge-It* and *Xanagrams*.

"Games were very important for the 464," continues Perry. "The subsequent CPC 664 and then 6128 with their disk drives started a trend towards small business use with CP/M and word processing and accounting packages, but for me the CPC 464 was 100 per cent a games machine."

The 8-bit CPC was impressive. Amstrad decided to use tapes as the storage medium because they were cheap. It was a good decision – it placed the CPC within the affordable reach of children and so the machine slowly became a strong games contender.

Although programmers wished it had hardware sprites, at the CPC's heart was a Z80 processor running at 4MHz. It had 64K of memory, a built-in tape drive – an external three-inch disk drive was available to buy later – and the choice of colour or green screen monitor.

The computer had three display modes. Mode 0 allowed 16 colours from the 27-strong palette to be shown in low resolution. Mode 1 used up to four colours from 27 in medium resolution. And mode 2 – which had the highest resolution – was able to show two colours from 27.

The 464 used the General Instruments AY-3-8912 sound chip that output in mono via a tiny, four-centimetre, built-in loudspeaker with volume control. It provided three-voice, eight-octave sound capacity. In later 464 models, stereo output was made available through a 3.5mm headphones jack, which could also be linked to external speakers.

While it didn't hit the heights of the C64, the sound capabilities were good enough to allow digital sound samples in games such as *Robin Hood* and *RoboCop*. But for the less technically savvy, the machine was striking for other reasons. Aside from the all-important joystick port, the keyboard, computer and tape deck were combined in one unit connected with just two wires to a monitor, which contained the power supply unit. The whole thing was powered by one plug in what proved to be a tidy, simple system, attractive to the public. It also kept manufacturing costs down. But the keyboard itself was more striking. Long and thin, and with the tape deck to the right of the keyboard, it had garish red, green and blue keys.

Perry says: "We wanted the keyboard to look like a 'real computer' – the sort of thing people saw at the airline check-in desk when they went on holiday. The integrated tape deck was created because Amstrad's success had been making integrated consumer electronics like the hi-fi that had nothing extra to buy and no complicated wiring. For this reason we bundled the CPC with a monitor."

Although the Z80 chip powered the CPC, Amstrad initially pondered using a 6502 processor, the same one used in Commodore's VIC-20 and in the Apple II. It was to have 32k of RAM and Microsoft's BASIC. In the end, Locomotive Software, which produced the CPC's BASIC, persuaded Amstrad to try the faster Z80 instead.

"We started the development of the Amstrad by having a basic idea and coming up with an outline spec, then filling in more details as we went along," continues Perry. "Sir Alan was pleased with the end result. Anything he didn't like we changed. I remember him wanting the cursor keys to 'work' at all times, which wasn't how people typically made BASIC interpreter interfaces at the time."

The CPC continued to pick up sales and was even making an impact in the classroom – in November 1984, Sir Keith Joseph, the minister of state for education and science, toured Thorpe Bay High School in Southend, which was the first to have 464s.

But although the 464 sold well in Britain, it became a phenomenon in Europe, particularly in France where it was the bestselling home micro. In Spain it was distributed by Indescorp as the CPC472 – it had an extra 8K of unusable RAM to get around a Spanish ruling that computers with 64K or less had to contain a tilde (~) on the keyboard. In Germany, it was sold under Schneider's name but without the coloured keys.

"We would have been happy to sell 100,000 CPCs and get into the top ten sellers," Perry further explains to us. "But we surpassed our expectations, got to the top of the charts and sold a couple of million. Much of that was because we insisted on distributing the machine in well-known high street stores rather than solely mail order or in specialist computer stores. It was a complete system, not just a console."

Buoyant sales of the machine meant the vast majority of the major third-party software houses soon supported it. Games produced for the Spectrum and Commodore were created for the CPC, although, because the Spectrum shared the Z80 processor, many initial Amstrad games were lazy Speccy ports. Some of these games were sluggish and jerky and did not take advantage of the four and 16-colour modes nor the hardware scrolling. But when done well, the CPC more than held its own, with colourful graphics, great sound and smooth scrolling.

In 1985, the CPC had its first show, which took place in the autumn at London's Novotel. Not many games software houses turned up – neither, come to that, did Amstrad itself.

But some great games were being released – David Braben's *Elite* made an appearance that Christmas. By this point, Sugar was claiming a whopping 25 per cent market share and he happily boasted that the 464 was "the machine that everyone knows and loves… reputedly used by a well-known vacuum manufacturer to stock control his cars!"

Leading software houses were also beginning to love the CPC. Nick Alexander, of Virgin Software, which had produced *Sorcery*, said that the Amstrad version was the biggest seller of the three platforms it had made the game for. "If you compare the Amstrad with the Spectrum and C64," he said, "I think our programmers' attitude toward it is that it's superior – the leader of the pack."

The following year, Infocom announced its acclaimed adventures, including *The Hitchhiker's Guide To The Galaxy* and *Zork I*, *II* and *III*, were at last being released on the CPC.

But in the same year, Amstrad bought its rival, Sinclair, and began to produce the Spectrum, prompting speculation that the CPC 464 would be discontinued. Amstrad denied it would get rid of "a machine that is making us money", though industry observers said the disk-based CPC 6128 was making more cash. But Sugar did say that the Sinclair purchase would mean the Spectrum being marketed as a games machine and the Amstrad for more serious stuff.

Such backing of the 464 by Sugar didn't quell speculation about the 464's future – by October, many software houses complained that software sales had slumped and blamed Amstrad, saying it had not produced enough 464s. Some claimed it had stopped production.

It was not the case and as the sales began to pick up again, the 464's golden era came as games were produced by the bucket load and a whole host of peripherals were created, one of the best being the Multiface 2, which allowed gamers to hack into games and input cheat codes that were printed in the mags.

Despite rumours abounding that Amstrad would manufacture a 16-bit machine, the 464 continued. Amstrad did indeed produce a new machine in 1989, however: the flop games-based PC, the Sinclair P200. The 464 came under threat again in August 1987, when the disk-based Spectrum Plus 3 was launched, meaning that Amstrad had three machines coming in under £300 – Plus 2, Plus 3 and 464 – on sale. And in 1988, Amstrad's club for CPC owners was sold off, prompting further speculation.

» **Above left:** *Amstrad Action* was the biggest-selling CPC magazine – at its height it sold 37,000 copies, easily beating the official *ACU*, *Amtix*, *Computing With The Amstrad* and the short-lived, six-issue *CPC Attack*. **Right:** Amstrad begins to change strategy – promoting the disk-based 6128, leaving the 464 in the background.

» Games are the order of the day for the 464. If you choose the green screen, Amstrad says, "but still want to play your arcade games in colour – don't worry! There's a power supply and modulator for linking to your colour TV".

Instead, the 464 was dusted off and placed into a fresh bundle, adding a TV tuner to allow users to watch television on their monitors, 17 games including *Trivial Pursuit*, *Roland In Time* and *Scalextric* – the only fun part of which was designing new tracks – as well as a desk, a clock radio and a terrible joystick. It was the all-in-one solution.

At the same time, Amstrad posted profits of more than £90 million. In 1990, the 464 ceased production – only to be replaced with the revamped 464 Plus. It was white, with greater width, similar to an Amiga or Atari ST in style, and came with a cartridge port for games that took advantage of a palette of up to 4,026 colours. The coloured keys were banished and the old cardboard edge connectors were replaced with more robust expansion ports.

The Z80A processor running at 4MHz remained, as did the 64k. But it benefited from four-channel 16-sound stereo with the addition of Direct Memory Access that allowed music to play without burdening the processor.

The old 464 refused to die, however. Groundbreaking games continued to be released – *Prince Of Persia* in the summer of 1991 looked so lush that it appeared almost identical to the Atari ST version. With fluid animation and smooth and detailed backgrounds, it was easily one of the best games ever released for the system.

But with the 16-bit Amiga and Atari ST becoming increasingly popular, the 8-bit technology of the CPC, no matter how spruced up with the cartridge slot, failed to attract enough punters, and although sales did rise, it was not enough to save the machine and it was finally, and sadly, discontinued.

Behind the curtain

The East Germans created a CPC 464 clone called the KC Compact. It was around 95 per cent compatible with the Amstrad-made CPCs and could be connected to either a tape machine or external 5.25-inch disk drive – the CPC 664 and 6128 used three-inch disks. Although ruining the Amstrad concept of everything in one box – the KC had an external power supply, a standalone computer/keyboard and used a standard television rather than a dedicated monitor – it still ran BASIC 1.1 and had 64K of RAM, although it used a U880 processor rather than Z80. An extra 64K was added when using the tape or disk drive adapter. The machine was scrapped shortly after the Berlin wall was pulled down. Over in West Germany at the time, the 464 was being produced by Schneider, which replaced the Amstrad badge on the computer's casing and had Schneider on the boot screen – as well as proper non-cardboard expansion edge connectors.

PERFECT TEN GAMES

NORTH & SOUTH

- **RELEASED:** 1991
- **PUBLISHED BY:** INFOGRAMES
- **CREATED BY:** NEW FRONTIER
- **BY THE SAME DEVELOPER:** HOSTAGES

***North & South* is a great example of what the CPC could do when it wasn't being overloaded with Spectrum ports.** While Infogrames' classic strategy title obviously can't hope to match the visuals of the impressive 16-bit versions, it's amazing how well it captures the spirit of the original Belgian comic *Les Tuniques Bleues* on which the game is based.

Fortunately the gameplay proves to be just as immersive as the striking visuals and you'll soon find yourself frantically trying to regain as much of your opponent's land as possible while you fight it out with infantry, huge cannons and even mobile forces. Excellent stuff.

THE GUILD OF THIEVES

- **RELEASED:** 1987
- **PUBLISHED BY:** RAINBIRD
- **CREATED BY:** MAGNETIC SCROLLS
- **BY THE SAME DEVELOPER:** FISH

There's a selection of great text adventures for the CPC, but it's the wonderful *Guild Of Thieves* we constantly return to. It's a meticulously crafted story, features some beautifully drawn locations and has some extremely devious puzzles to solve. Basically everything you'd expect from creators Magnetic Scrolls.

Like *The Pawn* before it, *The Guild Of Thieves* featured a lavish box set that was filled with plenty of goodies that ranged from a Bank of Kerovnia credit card, to '*What Burglar*' magazine and was once again set in Kerovnia. It's definitely a lot tougher, but is a far superior product that will have you scratching your head until the cows come home.

SPINDIZZY

- **RELEASED:** 1986
- **PUBLISHED BY:** ELECTRIC DREAMS
- **CREATED BY:** PAUL SHIRLEY
- **BY THE SAME DEVELOPER:** CONFUZION

The simplest ideas are often the best and they don't get much more straightforward than the wonderful *Spindizzy*. All you have to do is guide your spinning top around 386 isometric screens in search of jewels. Sounds simple, right? Well no, not really, but that's why it's so great. While many of the jewels are easily placed, they soon start to appear in all sorts of hard-to-reach locations, many of which require real ingenuity to obtain. Later jewels can only be reached by flicking switches, using lifts and even jumping chasms, and that's before you even consider the terrain that becomes increasingly tricky to negotiate the further you progress. Oh, and did we mention you have to collect all these jewels within a strict time limit…

GRYZOR

- **RELEASED:** 1987
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** JOHN BRANDWOOD
- **BY THE SAME DEVELOPER:** RENEGADE

It's a sad fact, but most Amstrad conversions were a poor third to the often-superior Spectrum and Commodore 64 ports. Every now and then, though, a game came along that totally blew its 8-bit peers away – *Gryzor* is one such game.

Not only does it look absolutely stunning – it features similar graphics to Mark Jones' other Ocean hit *Renegade* – it plays like a dream as well. Controls are extremely tight and responsive, the difficulty is just right, and there's an array of superb weapons. Indeed, barring a few minor differences – and a big decrease in aesthetics – this is as close to the original game as you could expect an 8-bit to get. Simply amazing.

TOTAL ECLIPSE

- **RELEASED:** 1988
- **PUBLISHED BY:** INCENTIVE SOFTWARE
- **CREATED BY:** MAJOR DEVELOPMENTS
- **BY THE SAME DEVELOPER:** DRILLER

By the time *Total Eclipse* appeared in 1988, developer Incentive already had two Freescape titles under its belt. While there was nothing wrong with the sci-fi settings of *Driller* or *Darkside*, the familiar setting of Thirties Egypt makes *Total Eclipse* far easier to relate to. It also helps that it's more technically proficient, has superior puzzles and a creepy tone that makes exploring the pyramid extremely atmospheric. A number of play mechanics were introduced and there was a tight two-hour timeframe to complete the game in, which would have been fine if the pyramid itself wasn't so confusing to navigate.

THE GUILD OF THIEVES

GRYZOR


PRINCE OF PERSIA

AMSTRAD CPC 464

It always came a poor third to the Spectrum and C64, but as the following games show, there were plenty of classics available for the 464. Before you write in, our top ten is bound to be subjective and open to violent debate, and that's what we're all about. Bring it on…

FANTASY WORLD DIZZY

GET DEXTER

PRINCE OF PERSIA

- **RELEASED:** 1990
- **PUBLISHED BY:** DOMARK/BRODERBUND
- **CREATED BY:** BRODERBUND
- **BY THE SAME DEVELOPER:** MYST

***Prince Of Persia* is quite possibly one of the most striking games to ever appear on Alan Sugar's 8-bit computer.** Released in 1990, it's a true revelation and easily showcases what the CPC can do when it's truly pushed. While the levels look sumptuous, it's the staggering animation on the Prince himself that truly impresses. Gameplay is just as good, with the Prince perfectly responding to either the press of a joystick or stroke of a key. Who knows? If games like *Prince Of Persia* had appeared at the beginning of the CPC's life – and not god awful rubbish like *Bridge It* – things may have been quite different.

FANTASY WORLD DIZZY

- **RELEASED:** 1989
- **PUBLISHED BY:** CODEMASTERS
- **CREATED BY:** THE OLIVER TWINS
- **BY THE SAME DEVELOPER:** GRAND PRIX SIMULATOR

You can't feature an Amstrad top ten without at least one *Dizzy* game, so we've decided to plump for his third adventure that sees the intrepid hero exploring Fantasy World in search of girlfriend Daisy. Fantasy World is a big place, however, and Dizzy has to solve a variety of different puzzles and make his way past several ferocious enemies before he's finally reunited with his loved one. After the difficulty of *Treasure Island Dizzy* – you only got one life – *Fantasy World* is far more enjoyable to play. Throw in some superior visuals and great puzzles and it's easy to see why the lovable character remains so popular.

HEAD OVER HEELS

- **RELEASED:** 1986
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** JON RITMAN, BERNIE DRUMMOND
- **BY THE SAME DEVELOPER:** BATMAN

We've already featured Drummond and Ritman's classic in the Spectrum Perfect Ten Games, but we love it so much we had to include it here as well. Like *Get Dexter* it's one of the finest Isometric adventures that the Amstrad (or any other machine for that matter) has to offer, and remains as fresh as ever. Level design is near perfect, the interaction between the two characters is a stroke of genius and Drummond's creations feature more character in a few pixels than a dozen of today's gaming heroes can muster. One of the best adventures ever made.

GET DEXTER

- **RELEASED:** 1986
- **PUBLISHED BY:** PSS/ERE
- **CREATED BY:** ERE INFORMATIQUE
- **BY THE SAME DEVELOPER:** PACIFIC

Produced by French company ERE Informatique in 1986, *Get Dexter/Crafton & Xunk* really showed off the CPC's power by injecting both originality and humour into the isometric adventure, easily surpassing anything that Ultimate had produced on the CPC.

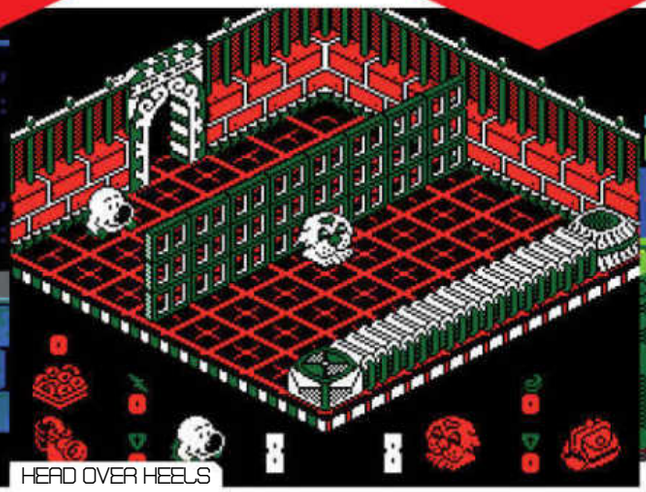
Get Dexter's graphics are superbly defined and colourful with it, and your character can interact with virtually everything on screen. The playability is finely balanced between being frustratingly difficult and enormously enjoyable; the perfect learning curve.

Visually stunning, *Get Dexter* is a true CPC classic.

CHASE HQ

- **RELEASED:** 1989
- **PUBLISHED BY:** OCEAN
- **CREATED BY:** JON O'BRIEN
- **BY THE SAME DEVELOPER:** NORTH STAR

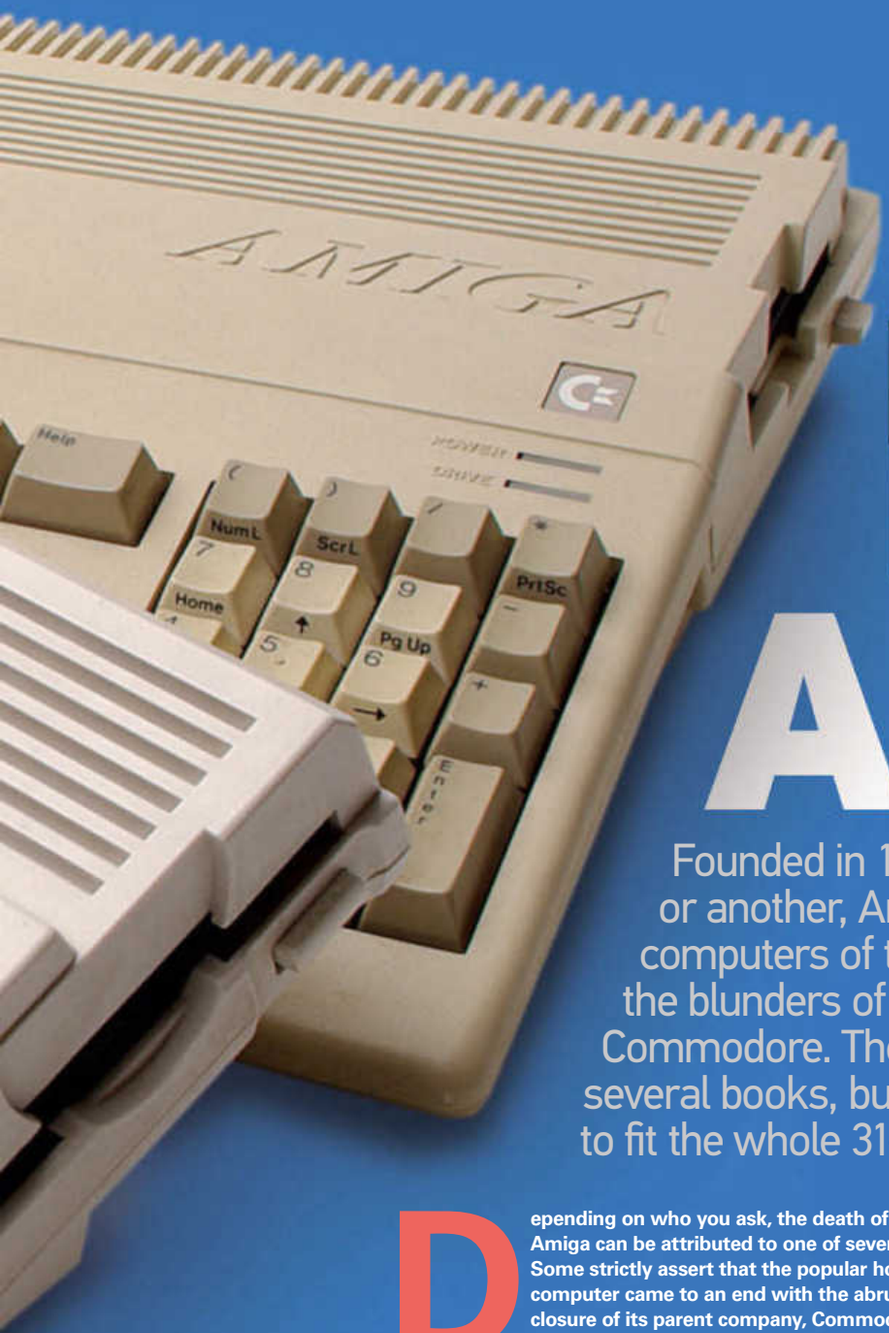
On an unexpanded CPC 464, the digitised classic line delivered by your boisterous partner – "Let's Go, Mr Driver" – could not be heard. But that didn't detract from the gameplay of what was certainly a legendary CPC arcade conversion by Ocean. If there was one complaint about this game, it was that it got your adreneline pumping to the nth degree, making your palms sweaty as you closed in on the bad guy with the clock ticking perilously close to 'Game Over', and smoke pouring from beneath your tyres.The graphics were colourful and chunky, the speed, particularly when pressing the turbo, was surprisingly fast. Few games could match the pace, or indeed the action, of this game.



HEAD OVER HEELS

CHASE HQ


Commodore
A1200
AMIGA
POWER



AMIGA

Founded in 1982 and still going today, in one way or another, Amiga created some of the best-loved computers of the Eighties and Nineties, despite the blunders of its most famous parent company, Commodore. The complete story of Amiga could fill several books, but here Ashley Day tries, as best he can, to fit the whole 31-year saga into just eight pages…

Depending on who you ask, the death of the Amiga can be attributed to one of several years. Some strictly assert that the popular home computer came to an end with the abrupt closure of its parent company, Commodore, in 1994. Some cite the closure of the last commercial Amiga magazine, *Amiga Format*, in 2000 as the truest sign of the computer's demise. A select group of faithful fans, meanwhile, simply cannot let go and would remind you that the Amiga brand itself is very much alive and well and that a new line of hardware will emerge when the time is right. Indeed, it's almost impossible to definitively say where the story of the Amiga ends, but we can definitely point to where it began.

It was the summer of 1982 and, as with many great business ventures, the genesis of the Amiga was about to start with a phone call. On the dialling end was Larry Kaplan, ex-Atari programmer and founding member of Activision. Picking up at his end was Jay Miner, the design guru behind the Atari 400 and 2600 VCS. Both men had achieved great things in the games industry, but both felt as though their abilities had been held back by a lack of vision from their respective managers.

Miner, an ambitious hardware designer, had been eager to create something using the new Motorola 68000 processor in 1980, but Atari was much more keen on working with cheaper, less powerful chips, like the 6502. And so he left to work in the medical industry. Kaplan, likewise, had been a game creator at Atari but was dispirited from receiving neither credit nor royalties. In 1979 he had left to form Activision but was unhappy that he was still essentially a programmer of Atari 2600 games, and therefore still lining the pockets of his former employer, albeit indirectly.

Kaplan had been approached by a consortium of investors – a Texas oil baron and three dentists – looking to plant $7 million into a new videogame company, and proposed to Miner that the two work together in the production of a new games console. He had seen the NES at CES of June 82 and believed that he could create something much better. His plan was to produce exclusive games for the system, while Miner would design the hardware. Miner agreed and the new company, then named Hi-Toro, was soon established in Santa Clara, California, along with former Tonka Toys marketing man, David Morse, who came on board as general manager. Things were off to a good start but, before the year was out, Hi-Toro was hit by one

VARIATIONS

A1000
The first Amiga model was launched in 1985 in a desktop-style. It was extremely expensive and, unlike the later models, the operating system was not loaded into a ROM. Instead it came on a floppy disk, which had to be manually installed.

A500
An improved version of the A1000 that condensed the desktop computer into an all-in-one keyboard device. This was a much more affordable Amiga and the first to gain widespread use among normal consumers. It was also the first Amiga to truly capitalise on its gaming potential.

A2000
With the second desktop offering Amiga used very similar hardware to the A500 but it was designed, like the 1000, to look like a serious business machine. Unlike the A1000 however, it featured a number of internal expansion ports and even had the ability to upgrade the CPU.

A1500
This was a UK-only variation on the A2000. This one featured two floppy drives rather than the usual singular one and did not come with a hard disk drive as standard. An HDD could, however, be installed with an upgrade kit – which actually makes the A1500 slightly better than the A2000.

CDTV
Commodore's first real attempt to capitalise on the growing CD-ROM format was this unsuccessful home entertainment device. Basically an A500 with a CD drive, it was marketed more like an interactive video player than a computer. Unfortunately, it failed to live up to its lofty promises.

A3000
The first of Commodore's new generation of machines to use the Enhanced Chipset (ECS), which was designed to improve the hardware's use of business software. The machine itself featured a faster processor, more RAM, two floppy drives and a hard drive, all stored in a desktop case.

A500 Plus
ECS made its way to the low-end machines with the introduction of the A500 Plus. As well as the new chipset, it used new versions of the operating system, which rendered some older games totally incompatible. The machine wasn't released in the US and was discontinued after just a year.

A600
One of Commodore's biggest mistakes, the A600 was a smaller, sleeker redesign of the A500 Plus, with new expansion ports and the ability to add an internal hard disk. It was designed to expand the lifespan of the ageing A500 hardware, but it just ended up alienating its consumers.

"The 2600 games were completed in 1983, just in time for the videogames crash"

of the many setbacks that would eventually come to define the Amiga's history. Looking to expand the business in a credible way, Morse asked Kaplan if he would approach Atari founder Nolan Bushnell about becoming chairman of the board. Upon the meeting, Bushnell instead convinced Kaplan to leave, saying that the two would make more money if they started their own project. Sadly Bushnell soon lost interest, and a jobless Kaplan was forced to go back to Atari and ask for work, while Miner was left wondering what to do about Hi-Toro.

Moving into Kaplan's position of chief engineer, Miner found himself at the helm of Hi-Toro and took the opportunity to push it in his own favoured direction. Where once his bosses at Atari had denied him the opportunity to use the 68000 processor, he now had the freedom to build it into his new machine, which he wanted to be a full personal computer. Hi-Toro's investors disagreed, however, and insisted that the new machine remain a games console. Miner went along with their plan but surreptitiously built expansion ports into the console so that it could be modified into a computer later on.

In order to keep the company ticking over while working on its new console, a part of Hi-Toro split off into a subdivision to work on Atari 2600 games that could be released quickly for a fast and reliable source of income. Under the trading name of Amiga, used because Toro belonged to a Japanese gardening technologies firm, the company produced three games for the 2600 as well as a controller called the Joyboard, which was used by standing on it and leaning from side to side.

The 2600 games were completed in 1983, just in time for the videogames crash to sweep the Atari market from under Amiga's feet. Very few of its games ever made it to the shelves, which dealt a severe blow to the company's finances but, ironically enough, it came as welcome news to Miner. With the American console market now considered dead by the industry and retailers alike, it would have been suicide to develop a new games machine – especially one as expensive as a 68000-based model would have been.

With Amiga and its investors finally singing from the same hymn sheet, Miner forged on with his computer prototype, now codenamed Lorraine, and the initial test model was completed in September 1983. Built from several bread-board sized PCBs wired together, Lorraine appeared to be something of a monster. But to those who understood computing, she was a thing of beauty. Not only did the computer feature the super-fast 68000, but it also used three custom chips – dubbed Agnus, Denise and Paula – that would regulate and control different functions of the machine, cleverly taking a lot of strain away from the processor and RAM.

The way in which modern computers use graphics cards, sound cards and all number of dedicated processors is somewhat similar to what Amiga was doing for the first time in 1983, so it was clear that Miner's vision was an innovative one. And these innovations were not limited to just hardware either. As a personal computer, rather than a games console, Lorraine would need an operating system – and it found one with Intuition, a clever little user interface designed by ex-Williams arcade engineer RJ Mical.

Later known as Workbench, Intuition was one of the first graphical user interfaces ever released for commercial purposes, following the 1984 release of Macintosh's Desktop in just under a year. Astonishingly simple to use, Workbench took commands that would previously have been made in text prompts and translated them in to visual signs that anyone could understand. With files and programs stored in drawers that opened and closed when you clicked on them, and a high-contrast colour display that remained visible on even the cheapest TVs, Workbench was a crucial element in Amiga's bid for mainstream appeal.

Before Amiga could reach for that success, it first had to convince investors, so that the machine could gain enough money to go into mass production. That's where the computer's official unveiling, at the January 1984 Consumer Electronics Show, came in. Mical coded a demo animation designed to wow attendees and show just what the computer was capable of. That demo was the now famous Boing Ball – a white and red chequered ball with realistic spherical effects that bounced around on the screen, alternating the direction of its rotations while Workbench continued to function as normal in the background. The demo was so well received that

A4000

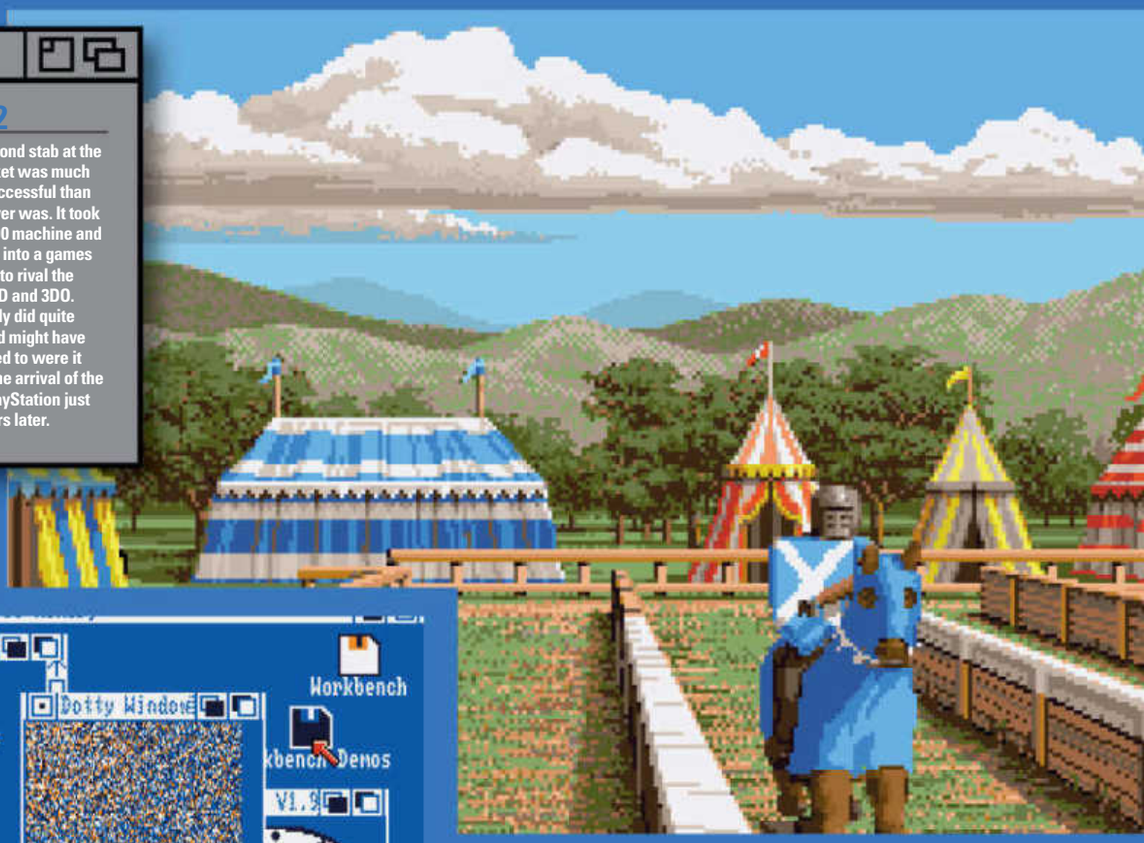
The first of Commodore's final generation of Amiga hardware use the Advanced Graphics Architecture to achieve a much higher quality of visuals. Originally released in a desktop casing, the A4000 was eventually changed to a tower model shortly before the Commodore's demise.

A1200

A low-end AGA machine, the A1200 was seen by many as the true successor to the A500 and became the second most popular Amiga among European gamers. Its advanced chipset allowed for some great games and a second wind of releases that lasted long after Commodore's end.

CD32

This second stab at the CD market was much more successful than CDTV ever was. It took the A1200 machine and turned it into a games console to rival the Mega-CD and 3DO. It actually did quite well, and might have continued to were it not for the arrival of the Sony PlayStation just two years later.



» *Defender Of The Crown* was the first game to really show the amazing power of original Amigas.

» Jay Miner's signature appeared inside the casing of the Amiga 1000, along with the print of his pet dog, Mitch.

it became synonymous with the Amiga itself. The chequered ball was even incorporated into the official Amiga logo, post-Commodore. Mike Dailly, creator of *Lemmings*, remembers why the machine seemed so exciting at the time: "The Amiga OS was an amazing system, and the hardware incredibly well thought out," he says. "The little tricks the hardware guys added, like lowering the clock speed just a little so that video mixing was easier, and having a copper-list that could do amazing things with a screen display. That's something that is only just getting there in Windows Vista if you ask me."

At CES itself, the Boing Ball demo caught the eye of executives at Atari, who saw the potential in Miner and Mical's work and offered to buy one million shares in the company for $3 each. This generous offer wasn't quite the windfall that Amiga needed, however. Atari was actually only interested in the custom chips that Miner had produced and had no intention of developing a saleable Amiga machine. Furthermore, it was willing to play dirty to get what it wanted at a bargain price. Atari loaned Amiga $500,000, knowing full well that they could not afford to pay it back, and delayed the paperwork on the buyout until the debt became an issue and cunningly reduced its offer to 98 cents per share to compensate for the debt it had manipulated Amiga into accruing.

In the face of such a sour deal, all hope seemed lost for Miner's dream machine. That was until Atari's biggest rival, Commodore, swooped in to save the day. The 30-year-old computing firm was currently enjoying phenomenal success thanks to the VIC-20 and C64 and was looking for a new machine that could continue the plan outlined by founder Jack Tramiel with his famous phrase: "Computers for the masses, not the classes". Ironically enough, Tramiel had quit Commodore that very month, but the vision for Amiga fell right in line with his philosophy nonetheless. Commodore paid off Atari with $1 million, which was double the amount of Amiga's debt and enough to free the company from Atari's demands. It then bought Miner's whole operation for $4.24 per share and set about making the Amiga computer a reality.

By 1985, the Amiga finally became something that ordinary people could see, try, buy and actually take home. With the custom chipset breadboards reduced down into a single desktop casing and with a keyboard, monitor and a mouse added, the Amiga 1000 was born. It was first publicly shown on 23 July 1985 at the Lincoln Centre in New York and it made a huge splash with the media as Commodore used its marketing clout and deep pockets to wheel out Debbie Harry and Andy Warhol to promote the new hardware.

The Amiga 1000 was commercially launched a few short months later, in September, but it was yet to fulfil its destiny as the ordinary family's computer of choice. Suffering some production problems, Commodore was able to manufacture only fifty A1000s by November and none of these were ever released to the public and were instead used internally. A few machines managed to make their way onto store shelves by Christmas, but few people were even aware of the machine's existence and it failed to sell in significant numbers. This trend continued throughout 1986 as a series of shoddy and vague adverts failed to convince anyone of the A1000's worth, despite the fact that it was much more capable than the IBM PCs and Apple Macs of the time. At $1,295, it was cheaper too. But without any killer apps that affordability counted for little, and the A1000 sold only 35,000 units during 1986.

For gamers, however, that killer app soon hit in the form of Cinemaware's *Defender Of The Crown*. Looking far more

advanced than any other home computer game could ever hope, it was the first piece of Amiga software with the power to make gamers lust after the computer until they could afford to buy one. Sadly, however, that affordable $1,295 price tag was actually an expensive one for gamers who were more accustomed to the cheaper machines like the Commodore 64 and Atari 800. The Amiga 1000 was way out of the league of the average consumer

Thankfully, Commodore was already on the case and soon followed the A1000 machine with a cut-down model that was intended for home use. Released in 1987, this new version was named the Amiga 500 – a phenomenally popular computer that remains the bestselling Amiga variation to date. With the whole Amiga computer squeezed inside a keyboard casing and the ability to use your own TV set rather than an expensive bundled monitor, the A500 weighed in at a much more attractive $599. The hardware had been developed by internal staff at Commodore, rather than Miner's original team, because the then Commodore CEO believed the new team would be more 'bloodthirsty'. This was a trend that would continue throughout the Amiga's life, with many machines designed and prototyped by competing factions of Commodore in order to promote innovation through an encouraged sense of competition.

The strategy worked. The Amiga 500 was a great computer and a popular one with consumers. Commodore couldn't take the whole credit, however. Much of the Amiga's emerging popularity could be attributed to unexpected support from Electronic Arts. Then led by Trip Hawkins, EA had pledged to develop the best possible games for Amiga, just as it had with C64. But it was EA's first release, actually a piece of software rather than a game, that proved to be the most important. That software was Deluxe Paint, an extremely innovative and user-friendly digital paint/animation package that was widely adopted by other games developers and became instrumental in creating amazing-looking games for the 16-bit computer. Some of the best UK developers around – big names like

THE GAMES

Best... Platformer SUPERFROG

In comparison to the Mega Drive and SNES, the Amiga didn't really have a platform game that came anywhere close to brilliant. The joystick controllers didn't help and neither did the lack of Japanese development talent. Still, that didn't stop the Europeans from giving it a go and one of the best efforts was this quirky release from Team17. Featuring bold, colourful visuals and fluid controls, it played a good platform game and had one of the most memorable mascots on the system.

Best... Shoot-em-up GUARDIAN

Released very late in the Amiga's life, this New Zealand-developed shooter took the Amiga into the realms of 3D in ways it had never done before. Rather than the white-on-black wireframe of old, *Guardian* featured crisp, colourful landscapes and a zippy speed that really made you feel like you were flying around a believable geographical area. The gameplay itself was like a 3D version of *Defender* and just as fun as that sounds.

Best... Racer SUPER SKIDMARKS

Another late bloomer – and from the same developer as *Guardian* – *Super Skidmarks* took the *Super Off Road* style and made it its own. Tiny polygonal cars, tons of competitors, arcadey handling and a neat sense of humour all made *Super Skidmarks* a pleasure to play and one of the best post-Commodore games on the system. One of its best features was the multiplayer support – one mode allowed four people to play in a team while another allowed three to race each other via a split-screen.

Best... Arcade Action ALIEN BREED TOWER ASSAULT

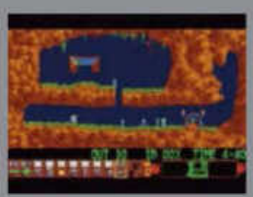
This one's a close call thanks to the excellent *Chaos Engine*, but *Alien Breed Tower Assault* wins out due to being that little bit cooler. Team17 made loads of versions of *Alien Breed* for the Amiga and this was the best by far thanks to its multiple routes that delivered a huge variety of locations and challenges, as well as the cool ability to walk backwards while firing. This was essential co-op action. Look out for the new *Alien Breed* on Xbox Live Arcade.

Best... Adventure MONKEY ISLAND 2: LECHUCK'S REVENGE

Okay, so it's arguably as much a PC game as an Amiga release, but we're going to let this one count. Almost every Amiga owner had a copy of this LucasArts classic back in the day and suffered swapping through its 12 disks every time just to spend a few hours emerged in the world of Guybrush Threepwood. Why? Because it was the funniest, best looking, best sounding and most mind-boggling adventure around. And it probably still is, actually.

Best... RPG LIBERATION

Designed by the legendary Tony Crowther, this sequel to the equally brilliant *Captive* is considered one of the greatest Western-style RPGs on the Amiga. Set in a wonderfully imaginative future underworld of cyborgs and sleaze, it combined immersive locations with a slowly unravelling plot and deep gameplay to great effect. Most of the missions were randomly generated and you had to control and manage four independent characters, which made the game very complicated.



Best... Puzzler LEMMINGS

Do we really need to explain why *Lemmings* was the best Amiga puzzle game? It's been converted to almost every format on the planet and has been played by every gamer and his mum. Its masterstroke was to combine fiendish yet enjoyable puzzles with characters and presentation so lovable that no one could resist playing. If it wasn't for the existence of *Tetris* then *Lemmings* would be the greatest puzzler of all time, regardless of format.

Best... Sports SPEEDBALL 2

Okay, it's not a real sport, but that's what made *Speedball* so special. You didn't need any pre-acquired knowledge to get into it, so it was a level playing field. So to speak. And it didn't rely on realism to succeed, which meant that you could have wild gameplay and a clever scoring system that other sports games didn't offer at the time. It also had lots and lots of violence, of course, which definitely helped endear it to the gamers of the time.

» The Amiga prototype, named Lorraine, that appeared at the 1984 CES.

HIDDEN TRUTHS

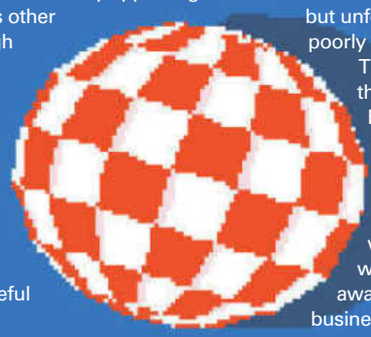
Those readers old enough to remember may recall that the European release of the Amiga 1000 suffered a delay of six months. But do you know why? The reason is that a disgruntled employee of the original Hi-Toro group was so angry about Commodore's failure to market the machine in the US that he loaded a hidden message into the computer's ROM. Holding down eight separate keys while inserting a disk at the same time would cause the computer to display the message, "We made the Amiga, they fued it up" on the screen. Commodore were naturally unhappy and refused to release the machine until all the ROM chips were replaced which, ironically enough, caused an even greater lack of sales. Which is exactly what that rebellious programmer was protesting against.**

Sensible Software, Bullfrog and The Bitmap Brothers – all moved onto Amiga in 1987 and began churning out incredible new games that would make the A500 the must-have system of its time. Martyn Brown, who founded Amiga specialist Team17 in 1990, outlines why the computer was so attractive to developers: "The Amiga offered a tremendous level playing field to the casual/small developer," he explains. "There were no license fees, no dev kit, no enormous resources required. Because of this, people were able to develop what they wanted and how they wanted, leading to a lot of creativity but with far better results than in the previous generation."

> **"Amiga offered a tremendous level playing field to the casual developer"**
>
> MARTYN BROWN, FOUNDER OF TEAM17

The year of 1987 was indeed a defining one for the Amiga, but it was also the year in which the first act of the company's story truly came to a close. Seeking more control over the company, Commodore chose to close down Amiga's offices in Los Gatos and move all of the staff to its own HQ in West Chester, Pennsylvania. Many of Amiga's biggest names declined to move and chose to separate from the company they had helped nurture. RJ Mical was one of the first to go, choosing instead to become an independent Amiga software contractor. Jay Miner left too, though he did maintain a role as a Commodore consultant for the remainder of the company's existence. From here on out the Amiga's fate was wholly in the hands of Commodore. For better or worse.

One of Commodore's better decisions was to operate the Amiga business on two tiers. Each hardware iteration would be produced in both affordable home and expensive professional variations. This began with the dual release of the Amiga 500 and the Amiga 2000, and was a great way to maximise the sales of one single technological standard by appealing to two very different markets at once. Its other major advantage, perhaps through tradition rather than considered intention, however, was to keep the Amiga as an 'open' platform. This meant that any developer could create, produce and sell software for the machine without having to gain a licence from Commodore and without having to buy into a proprietary media. This proved extremely useful to games developers at the time, especially as competing games machines like the NES and Mega Drive required both a licence and expensive cartridges from the platform holder. Self-publishing was simply out of the question on consoles, but on the Amiga it was a gloriously attainable reality.

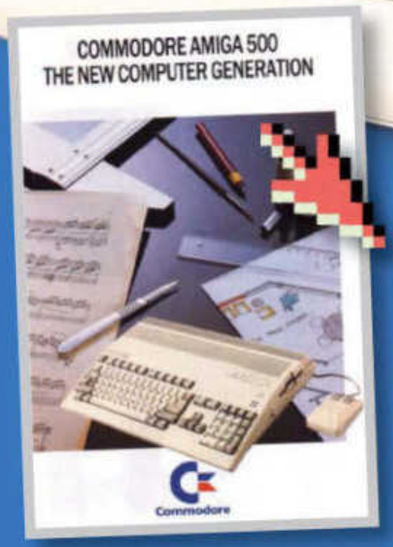


The ease with which developers could produce games for the Amiga meant that it soon amassed a gigantic catalogue of software that could thrive on the market, regardless of Commodore's actions. It was probably for the best, really, as the company soon began a decision-making process that would eventually lead to its own downfall. Though the twin guns of Amiga models 500 and 2000 had proved popular, there was one voice of dissent and, ironically enough, this voice came from Jay Miner, who advised A1000 owners not to upgrade. He believed that the 2000 didn't represent a significant enough improvement on the 1000 and was embarrassingly out of step with general computing standards by the time of its delayed release.

Amiga's ability to move with the times continued to diminish over the years, despite the best of intentions. The A500 had admittedly spawned and maintained a huge videogame industry, and the A2000 had proved extremely popular in the animation industry, most notably on the *Babylon 5* and *RoboCop* TV series. But that couldn't last forever. Commodore was aware of this and quickly moved to create new hardware, but unfortunately the new machines it chose to make were poorly thought out.

The Amiga 1500, a UK-only model, contributed nothing to the format's future, while the CDTV, an early multimedia box worthy of its own in-depth feature, was too far ahead of its time and so poorly marketed that it went unnoticed by the general public. A more worthwhile stab at self-improvement came with the Enhanced Chipset found in the A500+ and A3000 but, again, this was far from the major leap in power that was needed when Microsoft's Windows 3.1 was just a year or so away from taking a serious grip of both the home and business markets. All of these new Amigas, which did little or

» Escom's proposed new Amiga, called Walker, appeared on the front cover of *CU Amiga* and led many to believe that the format would make a strong comeback after the fall of Commodore. It never quite worked out, however.



» An early Commodore Amiga advert that typically failed to capitalise on the computer's strong points.

nothing new, only served to confuse and irritate the consumer base – a situation that was made worse with the arrival of the A600, a miniaturized A500+ that looked cool but, again, was really nothing new. Arriving just months before the real new generation of Amigas, the A600 was a colossal waste of time and must have taken a massive chunk of Commodore's money and flushed it down the drain.

In 1992, the much-needed new Amigas finally arrived. Commodore had initially been working on the AAA (Amiga Advanced Architecture) chipset, which was designed by chief engineer David Haynie, but the project was moving slowly, so a lower-grade machine was put out as a stopgap. Choosing to release two variants once again, Commodore released the A4000 for business use and the A1200 for home use. Both used AGA (Advanced Graphics Architecture) and represented a significant leap over ECS.

Compared to previous Amigas, AGA allowed for some fantastic-looking games, including some incredible 3D accomplishments but, once again, they were considered obsolete the moment they hit the shelves. Many considered the 68020 processor too slow, while it soon became apparent that a lack of a CD-ROM drive or a dedicated push to get the Amiga online would hurt the format in the near future.

"We were really excited about AGA Amigas," says Martyn Brown, "but it was unfortunate that it perhaps came a little too late to save the machine as other systems appeared." Team17 produced three games exclusively for AGA, including the technically incredible *Alien Breed 3D II*. "That game was essentially *Quake* on an Amiga back in 1995/96", Brown recalls. "I think it underlined the problem that if a super-powered Amiga had appeared around 1993/1994, then it may well have not only survived, but gone from strength to strength as the PC market boomed."

Behind the scenes, Commodore had produced three AAA prototypes, but in 1993 the company made the smart decision of scrapping the ageing project and starting afresh on a system so advanced that it would set the standard upon release. The system was codenamed Hombre (another Spanish word for friend, except male) and was intended to be a 64-bit RISC-based computer, built with both 3D and multimedia specifically in mind. Due to be designed by Haynie, in conjunction with Hewlett-Packard, and intended to take the form of both games console and computer, it could have revolutionised Amiga. But, alas, it was never completed.

In April 1994, just a few months after the ambitious release of the first Amiga games console, the CD32, Commodore was declared bankrupt and ceased all operations. In many ways this didn't represent the end of Amiga. Developers continued to produce games for many years to come, retailers like Electronics Boutique continued to stock software until around 1998, and Amiga-dedicated magazines survived on the newsstands, remarkably, until the new millennium. But without any new Amiga hardware on the horizon, this unique afterlife was destined to dwindle.

For a time it did look as though Amiga might survive after the death of Commodore, just as it had existed independently before 1983. The majority of Commodore's assets were soon acquired by Escom, which continued to produce A1200s until 1996 and manufactured a tower version of the A4000 in 1995. Escom spoke of licensing the Amiga technology to different manufacturers, effectively opening the machine up to IBM PC-like proliferation, and a new CD-based desktop machine, dubbed Walker, even featured on a 1996 *CU Amiga* cover. A sub-division of Escom, named Amiga Technologies, was set up but little of note happened for months.

In 1997, Amiga was auctioned off to the highest bidder, PC manufacturer Gateway 2000, and was renamed Amiga International. Under Gateway, the company produced a new operating system, AmigaOS 3.5, for the classic machines and plans were continued to license Amiga hardware, now PowerPC-based, to several companies. Again, however, very little actually happened, and Amiga found itself in the hands of another owner, Amino Development, in 2000.

Amino Development was renamed Amiga Inc and from there things get extremely complicated. In the years since 2000, the Amiga name has been used to brand some minor mobile and web-based software called Amiga Anywhere, while a small effort has been made to create new hardware. Amiga Inc contracted a company called Eyetech – made up of former Commodore UK employees – to produce new hardware, while a separate company, Hyperion, was charged with programming AmigaOS 4. The hardware, a PowerPC computer called AmigaOne, was completed and sold in very small numbers in 2002, while users had to wait until December 2006 for the final version of OS 4.

The existence of new hardware may seem like a big deal after all those years, but since the AmigaOne is both

LAPTOP LEGACY

One of the reasons for Amiga's downfall was that it never truly moved with the times. Why, for example, did the company never cash in on the extremely important laptop market? The blame lies with Marshall Smith, a one-time Commodore CEO who was responsible for some of the company's biggest mistakes. At the 1985 CES, Commodore was showing off a prototype of its first ever portable computer – a compact LCD-screened wonder that impressed attendees so much that 15,000 orders were placed that very day. The computer was never produced, however, because the CEO of Tandy, itself a producer of portables, took Marshall Smith to one side and conned him into believing that portable computers would never sell. Smith immediately cancelled the project and shut down the entire portable research and development group. The company never tried to produce a laptop ever again, and the Amiga missed out on a model that would have made it much more relevant to users, particularly in the Nineties.

» David Haynie, designer of the AAA chipset and the doomed Hombre computer.

incompatible with classic Amigas and was produced in extremely limited quantities, it can be considered little more than a curio. It is an Amiga in name only. OS 4, by contrast, has more in common with the original vision. Its features can be considered a true evolution of the original Workbench ideas and the fact that the OS works on both PPC-enhanced classic machines, as well as new hardware, certainly makes it feel like a member of the family. Or at least a distant relative.

Rumours abound that Hyperion is working on a PPC Apple Mac version of AmigaOS 4, but Amiga Inc itself claims that it is currently working on an AmigaOS 5 that will run on multiple computer systems. New hardware is even said to be on the way – this time from ACK Software Controls, which announced two new models in 2007. Its plans to produce a Basic Amiga at $500 and a Power Amiga at $1,500 are scarily similar to the business model adopted by Commodore during the height of the Amiga's popularity. But we'd be foolish to let such a similarity convince us that anything worthwhile will come of these new developments.

Though the Amiga name lives on, and is still invested in the production of original hardware and software, it is a far cry from the company that began life with the work of Jay Miner and RJ Mical. And that's how we'd prefer to remember Amiga. Not as a confused mess of IP ownership and rights, not as the tragic failure of Commodore, but as a computer that was totally unlike any other and one that spawned one of the greatest videogaming eras.

» From 1984-2006 the Amiga operating system has evolved considerably.

TEAM17

A true rags-to-riches story, Team17 is emblematic of the Amiga's importance to the games industry as a whole. Formed by an alliance of shareware coders and managed by Martyn Brown, who previously ran shareware distributor 17 Bit Software, Team17 took its bedroom programming prowess and harnessed it to become a truly world-class developer and publisher of Amiga software. Early hits like *Full Contact* and *Alien Breed* secured it a place in the hearts of Amiga fans – but it was Team17's decision to help develop Andy Davidson's *Worms* project, when nobody else would, that made it really rich. The team is still around today, it's still independent, and it's even working on a new *Alien Breed* for the Xbox 360.

THE BITMAP BROTHERS

One of the coolest developers on the Amiga, The Bitmap Brothers cleverly built an identifiable style into its games so that you could tell something was made by it just by looking. Chunky visuals with metallic effects and earthy textures gave Bitmap games like *Speedball 2, Gods* and *The Chaos Engine*, a unique look that stood them apart from anything else on the Amiga. Sadly, The Bitmaps was one publishing house that never really found a way to survive after the death of Amiga. It clung on to the bitter end, releasing the exclusive *Chaos Engine 2* in 1996, before slowly fading away in the PlayStation and PC days.

PSYGNOSIS

As both a developer and publisher, the Liverpool-based Psygnosis was responsible for a vast number of classic Amiga days and helped nurture talent across the British games industry. Under its umbrella were DMA Design (*Lemmings, Walker*), Bizarre Creations (*Killing Game Show, Wiz n Liz*) Traveller's Tales (*Leander*) and Reflections (*Shadow Of The Beast*). All of these developers survive within the games industry to this day, some under different guises – DMA became Rockstar North – while Psygnosis itself was acquired by Sony in 1999 after the phenomenal success of its *WipEout* series.

CINEMAWARE

If there's one developer that can be held responsible for Amiga's success as a games machine then it is, without a doubt, Cinemaware. In 1986 the company released *Defender Of The Crown* for the Amiga and blew everyone away with amazing 16-bit visuals – the likes of which nobody had even imagined until then. *Defender Of The Crown* can arguably take the credit for the phenomenal sales of the Amiga 500 in the late Eighties, but it was Cinemaware's later games that truly defined the developer. Classics like *It Came From The Desert* and *Wings* continued to do amazing things with the Amiga hardware and upheld Cinemaware's reputation for immersive cinematic experiences.

LUCASFILM GAMES

Okay, so most of Lucasfilm's classic games were developed for other systems and then ported to the Amiga, but its innovative graphic adventures were still among the best titles on the system. And we refuse to believe that there was a single Amiga owner that didn't play *The Secret Of Monkey Island* at some point. Other classic releases like *Zak McKracken, Indiana Jones, Loom* and *Maniac Mansion* made Lucasfilm one of the most cherished Amiga developers around, and paved the way for other amazing Amiga adventures like *Beneath A Steel Sky* and *Simon The Sorcerer*.

SENSIBLE SOFTWARE

Though Sensible Software attracted huge attention in its early days thanks to C64 hits *Wizball* and *Shoot-'Em-Up Construction Kit*, the developer remains best known for two incredible Amiga games to this day. We refer, of course, to *Cannon Fodder* and *Microprose Soccer*. The former is probably the only game ever made to actually make the RTS fun to play and, similarly, the latter is one of the few football games that sport haters could ever be convinced to play. Sadly, Sensible never quite got beyond these two hits. It spent 1992-2000 creating remakes until the studio closed.

ATARI ST

IT WAS THE MACHINE THAT SINGLE-HANDEDLY REVIVED THE FORTUNES OF AN INDUSTRY VETERAN. DAMIEN MCFERRAN SPEAKS TO THE MAN RESPONSIBLE FOR MASTERMINDING THE GREATEST COMEBACK SINCE LAZARUS

INSTANT EXPERT

Recording artists that have used the ST include Fatboy Slim, Mike Oldfield, UK one-hit wonder White Town and French knob-twiddler Jean Michel Jarre.

The machine was amazingly popular in Germany, where it was used predominantly for desktop publishing and CAD.

The ST was the first home computer to feature built-in MIDI ports.

Released in 1986, the 1040 ST variant was the first personal computer to include 1MB of RAM. When the price dropped to $999 it famously became the first computer to break the $1,000/megabyte price barrier.

One early tagline for Atari's ST range was 'Power without the price'.

Jack Tramiel included the Hebrew alphabet with ST's ROM character set to respectfully acknowledge his Jewish heritage.

Because the Atari ST hardware does not support scrolling, many games used large borders or frames around the playfield to reduce the amount of data that needs to be copied.

The last major gaming release for the platform was David Braben's *Frontier: Elite II*, published in 1994.

FTL's seminal real-time RPG *Dungeon Master* made its debut on the Atari ST.

The ST is home to what is arguably the world's first multiplayer first-person shooter. *MIDI Maze* used the ST's MIDI ports to permit up to 15 players to duke it out in a rudimentary 3D maze.

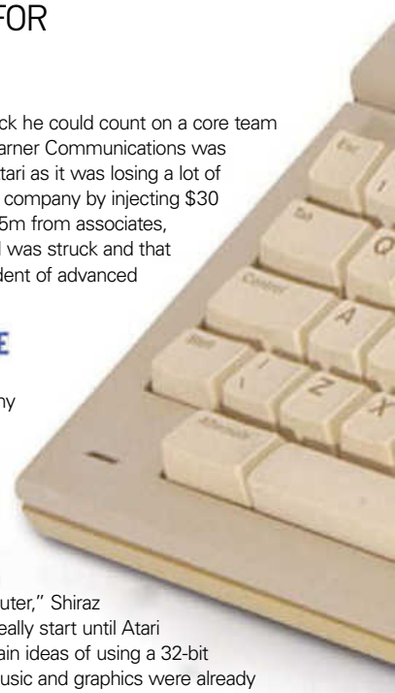
Following the videogame crash of the early Eighties, Atari was in horrifying shape. The company's failure to successfully build on the triumph of its popular 2600 console – a machine languishing in obsolescence by this point – coupled with a generally poor quality of software available had triggered a catastrophic meltdown that very nearly destroyed the entire videogame industry. After the dust had settled, Atari's parent corporation Time Warner had incurred a cataclysmic $500 million loss and was predictably keen to offload its flagging games division. What occurred next has gone down in videogame folklore as one of the most startling turnarounds in the history of the medium.

Trading Places

Ironically, the man behind the product that would resurrect the ailing Atari brand had previously been instrumental in sullying the fortunes of the company. Shiraz Shivji worked at rival Commodore during the early Eighties and helped build the C64 – the home computer that stole away vital market share from Atari's 400 and 800 range, as well as its 2600 console. "I became interested in electronics from my early childhood in Tanzania and my education in the UK," says Shiraz, when asked about how he became entangled in the fabric of Atari's history. "I attended the University of Southampton and obtained a first-class honours degree and then moved to Stanford University in the US to pursue a PhD in electronics. I was granted a master's and passed the qualifying exam but left before obtaining my degree as I was running out of funds. I started working in Silicon Valley and obtained experience in hardware and software." By 1984 Shiraz had risen to the role of director of engineering at Commodore and it was at this point that fate intervened.

Although Commodore was undoubtedly causing Atari some serious headaches, things weren't exactly harmonious in the boardroom. "Jack Tramiel was president and CEO of Commodore and Irving Gould was the chairman," explains Shiraz. "Irving was the largest shareholder and Jack was the second largest. In January 1984 there was a showdown between the two of them over the role of Jack's sons at Commodore." Polish-born Tramiel had founded the company in the Fifties after enduring a particularly difficult early life – he was interned in Auschwitz concentration camp for five years during World War II – so his insistence on 'keeping it in the family' is understandable. However, Irving refused to budge and this forced Tramiel's hand. He called a board meeting and tendered his resignation. "I was tremendously disappointed and shocked at this decision," remembers Shiraz.

However, it wasn't long before the two men were reunited. "I soon met with Jack and discussed the possibility of joining him if he was to start a personal computer company," recalls Shiraz. "There were a number of senior execs at Commodore with experience in finance, manufacturing, design, engineering, marketing and sales that felt the same way, so I told Jack he could count on a core team to start a company. At this time Warner Communications was thinking of selling or disposing of Atari as it was losing a lot of money. Jack made an offer for the company by injecting $30 million – $25m from himself and $5m from associates, such as myself. Eventually the deal was struck and that is how I came to be the vice president of advanced development at Atari."



Rising to the Challenge

Having switched sides in dramatic fashion, Tramiel had a new company to command in the shape of Atari Incorporated. He now needed a product that would get the firm back on its feet. Thankfully Shiraz and his team already had ideas forming. "The core team of engineers and developers were thinking of the next personal computer," Shiraz says. "The work on the ST didn't really start until Atari was actually purchased, but the main ideas of using a 32-bit processor as well as support for music and graphics were already important for us."

Shiraz duly started work on the new project codenamed 'Rock Bottom Price', or 'RBP' for short – an indication of Tramiel's desire to produce a cheap yet powerful home computer. "We moved everyone into the Atari facilities on Borregas Avenue in Sunnyvale in July 1984," says Shiraz, who had to dig into his own pockets to ensure development went smoothly. "I paid for airline tickets and hotel bills for my hardware team using my own personal credit cards and was not paid until much later. I think the real development began in August; we didn't usually get home until 11pm some nights, and sometimes it was well after midnight."

This punishing schedule was made even more demanding because Shiraz knew exactly what would happen if he failed to deliver the goods on time. "If we did not come through we would have had to close shop," he states, matter-of-factly. "You can imagine I really felt the very heavy burden of responsibility. We had no choice but to deliver a product that was superior in terms of performance and price." Amazingly, this intense pressure seemed to bring out the best in the team. "I felt very confident and comfortable that I and the team were up to the task," Shiraz explains to us. "After all, I had a core hardware team of four engineers from Commodore that had worked for me in the past so I knew what they could do. We integrated with people from Atari and had a very small but efficient team that worked very hard to get the hardware done in record time. Somehow, although there was much pressure on us, I did not have any sleepless nights. This is because of the trust I had in the team."

INFORMATION

Year released: 1985

Original price: £749.99/$1200 (with monochrome monitor)

Buy it now for: £10+

Associated magazines: *ST Format, ST Action, Atari ST User, ST World*

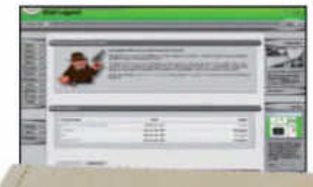
Why the Atari ST was great… Atari would still be remembered solely as the company that flushed the entire videogame industry down the toilet in the early Eighties were it not for the saviour that was the ST. It may have lost the war to the Commodore Amiga, but this legendary machine was the first true 16-bit home computer and played host to such seminal games as *Dungeon Master* and *Starglider*. It was also brilliant for bedroom tunesmiths thanks to its built-in MIDI support

COMMUNITY ATARI ST SITES TO WATCH

Atari Museum
www.atarimuseum.com
A robust archive backed by former Atari employees, this site has lots of info, images and other resources. It's well presented, with many sub-sections featuring unique layouts based on classic Atari hardware. Essential if you're interested in the ST and Atari in general.

ATARI.ORG
www.atari.org
A bustling and active community, **Atari.org** not only contains a wealth of information but also hosts several other sub-sites, run by Atari fanatics. It doesn't look like much but is easy to navigate and is a great place to keep up to date with developments in the Atari world.

Atari Legend
www.atarilegend.com
Solely focused on keeping the memory of the ST alive, Atari Legend doesn't get updated as often as we'd like but still contains a lot of interesting content, including reviews, interviews and demos. Well worth a look should you be inquisitive about Atari's home computer.



Little Green Desktop
www.atari.st
The name of this site alludes to the distinctive tint of the Atari TOS operating system; the design may hurt your eyes but the content is excellent. As well as running a spotlight on a particular game every day, it also delves back into old copies of *ST Format*.

» Borregas Avenue, Sunnyvale, California – the site of Atari's HQ during the ST years.

YOU'RE A GEM

As the hardware neared completion, Shiraz's team naturally began to look for possible operating systems to use with the machine. "The hardware was fairly easy for us to do and we beat the Amiga team to the punch although they had started at least two years earlier," says Shiraz. "The problem we both had was how to get a modern operating system." Early on in the development of the ST, Atari was contacted by Microsoft with the suggestion that the company port Windows to its new home computer. This idea was rejected as Windows was still two years away from being finished, and given the pressing need to get the ST in shops, Atari simply could not afford to waste time. Casting aside the expensive alternative of coding an operating system in-house, Atari got in touch with Digital Research – creator of the GEM system. "Commodore's Amiga team solved the OS problem by going to the UK to get a sophisticated multitasking system, but for us we really had no choice but to go with Digital Research," explains Shiraz. "We came up with a deal with Gary Kildall, president and CEO of Digital Research, to license and use GEM and to use some of his engineers to help port it on the Atari ST. We sent a team of engineers to work in Monterey, where Digital Research was located." It was a task of truly Herculean proportions, as bugs in the GEM system were still being ironed out while the porting took place, but the team (pictured above) succeeded.

VERSIONS

Atari STacy (1987)
Essentially a portable ST, this unwieldy beast ran off 12 'C' cell batteries and would grant a measly 15 minutes of use before exhausting its power supply. Ironically, it could imitate the more expensive Apple Mac Portable via emulation, and was even faster – proof that the ST's power was not to be underestimated.

ST Book (1990)
Amazingly, the STacy wasn't a complete disaster and this led Atari to produce a successor – the ST Book. Slimmer and more portable than its forebear, the ST Book was less power-hungry because it lacked a backlit display – which naturally made it hard to use in dim light.

Atari STE (1989)
The ST Enhanced was pretty much how it sounded – a slightly improved version of the original machine. It featured a larger colour palette, improved sound capabilities and a new graphics co-processor, but sadly few games were produced to take advantage of this new power, and the machine proved too little, too late.

Atari Falcon (1992)
The final entry in Atari's home computer range, the Falcon was so hurriedly rushed to market that the casing wasn't ready for launch and so it used the 1040 ST exterior instead. Discontinued after a year, the Falcon remains a popular platform for those interested in hardware modification.

The engineers at Atari originally envisaged the machine as a 'true' 32-bit computer, but eventually compromised and settled for a 32-bit processor that communicated through a 16-bit external bus – the abbreviation 'ST' actually stands for '16/32'. "We had a meeting with the CEO of National Semiconductor, who was anxious for us to use their 32-bit NS3200 processor," remembers Shiraz. "It turned out that even though the Motorola 68000 was a quasi-32-bit chip, the performance turned out to be as good, if not better than the National Semiconductor's true 32-bit chip. Motorola had a number of parts that they could not sell as one of the parameters did not fully meet their specification, but we found that this particular parameter could be relaxed in our design and so we could use these parts that would have to be thrown away, saving both us and Motorola several million dollars." Despite these cost-cutting measures, the ST still outperformed more expensive rivals. "Our design was so optimised for performance and cost you could emulate the Apple Macintosh – if you had the Apple ROMs – and an application would run faster on the Atari ST," reveals Shiraz.

As the project neared completion, Shiraz and his team started to realise just how amazing their achievement was. They had taken the ST from rough concept to final product in less than half a year, and when 85 per cent complete ST machines were shown at the CES show in 1985, it amazed the industry. "I was very proud that the team had accomplished so much in a short period of time," says Shiraz. When the machine officially launched in May, it marked the dawn of a resurgence for the previously ailing company and it speaks volumes for the popularity of the ST range that when Tramiel took Atari public in November, stock was selling for nearly triple its original price just a few months later. The ST had saved Atari from the scrapheap, and all in less than half a year.

Business or Pleasure?

It may come as a shock to learn that the man behind the ST isn't much of a gamer. "I'm not into games myself but I am quite aware of what needs to be done in the hardware to create good games," says Shiraz. "With the ST, the processor/memory bandwidth is highly optimised, leading to very fast graphical interactions. I think the entertainment software for the ST was reasonably good, but first and foremost this was going to be a consumer machine." Despite this obvious focus on business, the ST played host to some truly groundbreaking pieces of software and received sterling support from the likes of Bullfrog (*Populous*), Spectrum HoloByte (*Falcon*), FTL (*Dungeon Master*), Realtime Games (*Carrier Command*), Argonaut (*Starglider*) and David Braben (*Virus*).

The ST may have been great for games but it also proved to be a hit with musical types, too. "Right from the start we were interested in providing good musical capability," explains Shiraz. "Since we felt that the Yamaha chip in the ST was not as strong as we would have liked, we thought that we should put in an interface for external music access. We found that we could do it rather inexpensively using a Motorola serial chip and a connector for the MIDI-port. The total cost for this was 75 cents. The biggest problem was finding the space for connectors in the back. Musicians found it a great and inexpensive MIDI instrument."

Sadly, it didn't take long for Commodore's Amiga to overshadow the ST and as the Eighties drew to a close Atari's machine was starting to trail its opponent. US sales dropped off dramatically, but in Europe the machine remained a healthy success. Shiraz has his own theory on this disparity: "The reason is very simple: distribution channels. Atari did not have any distribution channels to speak of in the US. In Europe, on the other hand, we had a great cadre of ex-Commodore people and dealers that we could use."

Ironically, considering they were locked in battle for much of their lifespans, the Atari and Amiga are intrinsically linked. "Jay Miner was at Atari in the old days and was involved in the design of their products," explains Shiraz. "He left Atari to design the Amiga. Atari had funded some of this effort and had an option to buy the Amiga, and when we took over in July 1984 the first order of business was to decide what to do with this option. The problem was that the Amiga was not quite ready and would need a lot of money to fully acquire. We decided to pass, but this put enormous pressure on our own development team. Commodore, on the other hand, did not have an internally developed 32-bit graphics-oriented machine or the confidence to develop anything internally, so they ended up buying the Amiga for between $25-30 million and spent a further $20 million or so on it, releasing it a little after the launch of the ST. The roles were reversed – the Atari ST has a Commodore pedigree, while the Commodore Amiga has an Atari pedigree!"

To claw back some of the market, Atari sanctioned the release of an updated machine, dubbed the STE, with the E standing for 'Enhanced'. Sadly the ploy failed and few programs took advantage of the STE's augmented capabilities. Shiraz's involvement was minimal: "I was on my way out of Atari at that time. I left in 1989." Other versions of the computer were also put into production, including the ambitious Atari TT and Falcon, but neither of these met with any degree of success. "The problem was that Motorola had lost the processor battle," comments Shiraz. "The TT was based on the Motorola 68030, a successor to the 68000. This processor was clearly inferior to the 386 and 486 from Intel. There was no way Atari could compete with Motorola processors." In 1993, Atari pulled the plug on its range of home computers in order to focus its attention on the ill-fated Jaguar console and sank once again into a period of recession.

Having created one of the quintessential home computer platforms of the past 20 years, what memories does Shiraz hold dearest after all this time? "The teamwork was outstanding," he replies. "Even today most of the members of the team look very fondly at that time as the best years of their lives. The total hardware development was done in the space of five months. I have not seen such an accelerated development for such a complex project in that amount of time."

» The ST's TOS (Tramiel Operating System) in all its lurid green glory.

ATARI ST
PERFECT TEN GAMES

There were so many great games released for Atari's ST. Sure, many of them also appeared on its more powerful Commodore rival, but many of the games proved to be as good, if not better than the Amiga versions. See what you think…

01

OIDS

- **RELEASED:** 1987
- **PUBLISHER:** FTL GAMES
- **CREATED BY:** DAN HEWITT
- **BY THE SAME DEVELOPER:** CHAOS STRIKES BACK

01 We're willing to put our neck on the line here and say that this Thrust clone by Dan Hewitt is probably the best game of its type. Piloting a triangular V-wing fighter, your job was to travel to a variety of hostile planets to liberate the titular Oids – the planets' imprisoned android slaves. However, working against you was the strong gravitational pull of the planet's surface, which attempted to drag you into its sharp, mountainous maws. On top of this you also had to deal with hordes of rocket-spewing enemy spacecraft and your ship's rapidly depleting fuel gauge. The icing on the cake came in the form of a nifty level editor that allowed you to effortlessly mock up your own planets and galaxies to play through.

XENON 2: MEGABLAST

- **RELEASED:** 1989
- **PUBLISHER:** IMAGEWORKS
- **CREATED BY:** MARTIN DAY
- **BY THE SAME DEVELOPER:** CADAVER

02 The Bitmap Brothers' sequel to its seminal shoot-'em-up franchise was entrenched in trippy colours, eye-blistering visuals and a punchy soundtrack by acid-house musician Tim Simenon (aka Bomb The Bass). Playing slightly differently to its predecessor, however, *Xenon 2: Megablast* retained the vertical shooter ideals of the original, but would drop the vehicle-shifting and arena-setting for an unusual underwater backdrop, plus a unique vertical-scrolling perspective that allowed players to pull the camera backwards. While *Xenon 2: Megablast* feels somewhat sedate when compared to some of its Eastern contemporaries, the game still proves to be a great blast, and this Atari ST port is just sublime.

02

MIDWINTER

- **RELEASED:** 1989
- **PUBLISHER:** RAINBIRD
- **CREATED BY:** MIKE SINGLETON
- **BY THE SAME DEVELOPER:** WAR IN MIDDLE EARTH

03 Many people are put off by Midwinter's complexity, but those who invest time into the game are greatly rewarded. Set in Midwinter, a sprawling island forged inside harsh snowy wastelands, the player must try to stop a maniacal general from overthrowing the snowy islet. Playing the role of a police officer, your mission is to explore the island, evade enemy troops, and enlist the support of the islanders. Played out through a first-person perspective, *Midwinter*'s harsh environment won't be to everyone's tastes, but it's definitely a place that every ST owner and strategy fan should visit.

TIME BANDIT

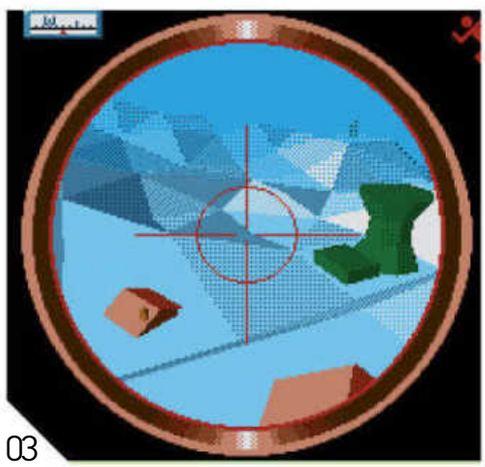
- **RELEASED:** 1986
- **PUBLISHER:** MICRODEAL
- **CREATED BY:** BILL DUNLEVY AND HARRY LAFNEAR
- **BY THE SAME DEVELOPER:** 8 BALL

04 If you're after a game that fuses elements of *Pac-Man, Bomberman, Gauntlet,* time travel and text adventures then you should track down *Time Bandit*. Debuting on the Tandy TRS-80 before being ported to the Amiga and ST, its authors, Bill Dunlevy and Harry Lafnear, set about refining it brilliantly with the extra power. As a treasure hunter, your mission was to travel to 16 distinct worlds to collect valuable artefacts. One of its neat touches is that many of the levels pay homage to classic arcade games. 'Shadowland', for example, is clearly a send-up of Namco's pill-chomping maze classic, *Pac-Man*.

NO SECOND PRIZE

- **RELEASED:** 1992
- **PUBLISHER:** THALION
- **CREATED BY:** CHRIS JUNGEN
- **BY THE SAME DEVELOPER:** ATOMIX

05 *No Second Prize* was a slick 3D motorbike racer that was clearly a few hundred CCs ahead of its contemporaries. The game featured six distinct drivers, 20 well-designed and diverse tracks and some staggeringly smooth scrolling. Bolstering its lavishness were its neat vector 3D graphics, a finely tuned difficulty curve and a sublime electro-rock soundtrack by one of the most established composers in the ST scene – oh, and you could edit your own replays after each race, too, as it was one of the earliest games to let you do that. If you're looking for a great alternative to the excellent *Stunt Car Racer* then you should really seek out this overlooked ST classic.



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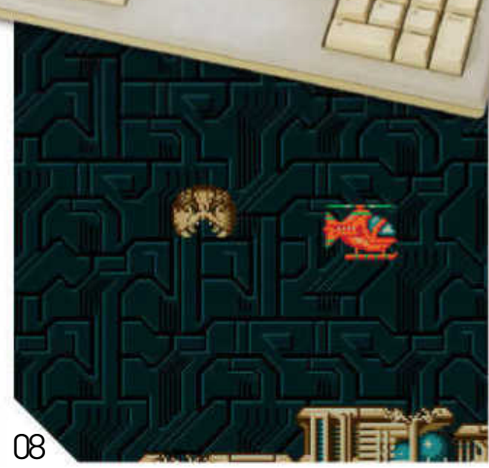


08

LETHAL XCESS

- **RELEASED:** 1991
- **PUBLISHER:** ECLIPSE SOFTWARE
- **CREATED BY:** CLAUS FREIN
- **BY THE SAME DEVELOPER:** STONE AGE

06 Yet another ST classic, *Lethal Xcess* is a masterpiece on the ST that pushes its technical boundaries to the limits. While there exist far better examples of the top-down vertical shooter, *Lethal Xcess*'s greedy looking sprites, and frenetic kill-everything-that-moves gameplay, struck a chord with ST owners. A sequel to another underappreciated top-down vertical shooter called *Wings Of Death*, *Lethal Xcess* boasted a neat two-player mode and a novel power-up system that allowed you to power up your power-ups. But even with a pal and a super weapon, this game is harder than pure maths.

CAPTAIN BLOOD

- **RELEASED:** 1988
- **PUBLISHER:** MINDSCAPE
- **CREATED BY:** PHILIPPE ULRICH
- **BY THE SAME DEVELOPER:** GET DEXTER

07 The prospect of getting sucked into your own videogame is one that few programmers would relish, but this is the dilemma facing Captain Blood, and that's only the start of his problems. After being zapped inside his own binary, Blood discovers he's been cloned and each of his doppelgangers are leeching off his life-mojo. It's up to you to travel the galaxy, decipher peculiar alien text and track your targets before it's too late. A mix of *Tron* and *Blade Runner*, with some Giger-style imagery and Jean Michel Jarre tunes thrown in, *Captain Blood* is a gloomy but atmospheric RPG classic.

BLOOD MONEY

- **RELEASED:** 1989
- **PUBLISHER:** PSYGNOSIS
- **CREATED BY:** DAVID JONES
- **BY THE SAME DEVELOPER:** DEEP SPACE

08 We were toying with putting *R-Type* on this list, but felt *Blood Money* was the marginally better side-scrolling blaster. It's smoother, looks amazing and has an innovative gameplay mechanic where certain enemies would rather pilfer your pockets than cause you damage. Sticking with the *R-Type* comparisons, *Blood Money* can best be described as Irem's game but set underwater. Controlling a chubby-looking red submarine, your mission was simple: avoid hitting the walls, shoot anything that moves, collect the coins and kit out your vessel with all manner of power-ups. *Blood Money* is simple, sublime fun. Be warned, though: it's no doozy.

09

STARGLIDER

- **RELEASED:** 1986
- **PUBLISHER:** ARGONAUT SOFTWARE
- **CREATED BY:** JEREMY SAN
- **BY THE SAME DEVELOPER:** STARFOX

09 One of Argonaut Software's earliest games, *Starglider* clearly has the company's 3D vector stamp all over it. Your mission was to traverse the planet of Novenia and blast away any and all alien craft from inside your AGAV or Airborne Ground Attack Vehicle. Inspired by Jeremy San's love of Atari's brilliant *Star Wars* coin-op, *Starglider* became a high-profile release and a big hit after it appeared in cut-down-for-telly-competition form on popular children's television show *Get Fresh*. Packed with a 64-page novella, which was scribed by fiction author James Follett, *Starglider* was an engaging space blaster that slotted nicely between the fast-paced arcade action of *Star Wars* and the immersive reaches of the more strategic *Elite*.

DUNGEON MASTER

- **RELEASED:** 1987
- **PUBLISHER:** FTL GAMES
- **CREATED BY:** DENNIS WALKER, DOUG BELL
- **BY THE SAME DEVELOPER:** HYDROFOOL

10 A sprawling and flawlessly designed first-person RPG that oozed atmosphere, bagged itself a trove of awards and went on to influence a swathe of classic RPG brilliance, including the likes of *Lands Of Lore and Eye Of The Beholder*. The game is a brilliant portent of 3D labyrinthine levels, wonderfully imaginative creature designs and accessible RPG elements. It's brilliantly intuitive mouse-controlled interface, glorious colourful visuals, fantastic strident score and real-time combat helped to make it a huge success around the world. The game has since spawned four sequels, with the latter, *Dungeon Master Nexus*, finding an exclusive release on the Sega Saturn, a game that never found a release outside of Japan.

10

NINTENDO ENTERTAINMENT SYSTEM

Nintendo's Famicom – better known in the West as the NES – turned 30 last year. To celebrate this momentous occasion, we invite you to join Damien McFerran as he delves deep into the lineage of the legendary console

NES Heroes

THE GAMING MASCOTS THAT WERE BORN ON THE NES

MARIO

Nintendo's most famous mascot, Mario has fronted a wide range of million-selling titles. Sports a bushy moustache and a flagrant disregard for fungi. Once starred in a movie, but doesn't like to talk about it.

KIRBY

Ball-like sack of air who is able to swallow enemies whole and use them as projectiles. Despite his charming appearance, Kirby is lethal when cornered. He has graced almost every Nintendo console since the NES.

MEGA MAN

Otherwise known as The Blue Bomber. Capable of stealing weapon systems from fallen enemies. Recently confirmed as the next entrant in the *Super Smash Bros* title for Wii U and 3DS.

SIMON BELMONT

Hero of *Castlevania*, Simon wields a legendary whip and counts slaying vampires and werewolves as just two of his interests. Others include needlework and stamp collecting.

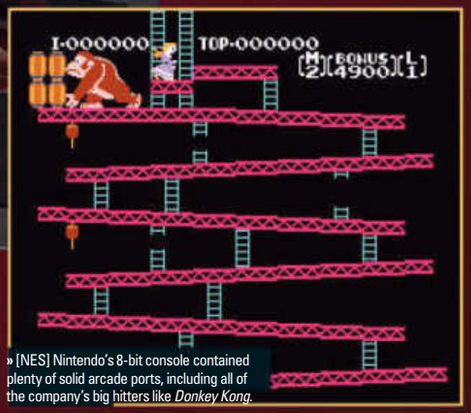
LINK

Elf-like hero of *The Legend Of Zelda* series. Feels that it's dangerous to go anywhere alone. Fondness for fairies, princesses in peril, green clothing and occasionally sailing in boats.

If your delicate childhood years were populated with games such as *Super Mario Bros, Duck Hunt, Metroid* and *Mega Man,* we're about to make you feel very old indeed: the Nintendo Entertainment System (the Japanese version, to be precise) is now over 30 years old. For many players, it represents their first ever taste of videogaming and, despite the years that have elapsed and the vast gulf that exists in technological power when compared to modern systems, the NES and Famicom continue to be held in high regard by players. Nintendo is still making some cash out of its legacy thanks to its successful Virtual Console services, which are now available on the Wii, Wii U and 3DS consoles.

Back in 1983 – the year after the home videogame market began its spectacular crash in North America – Nintendo pushed the Famicom onto Japanese store shelves and effectively birthed a legend. The Famicom remains an iconic platform in its home territory and became just as dominant in the US, where it held sway over a reinvigorated interactive entertainment arena. If you wished to simplify the history books and insist that Atari destroyed gaming in North America (which isn't really true) then it's not too much of an exaggeration to suggest Nintendo resurrected it.

Way before these events, the bumper profits and the million-selling franchises, Nintendo had an idea. Buoyed by the success of its arcade titles and the portable Game & Watch range, the



» [NES] Nintendo's 8-bit console contained plenty of solid arcade ports, including all of the company's big hitters like *Donkey Kong*.

» The Western design for the Famicom was vastly different in look, being more like an ugly looking breadbin.

company turned next to the nascent Japanese home console market, which was too small to have been impacted by the disastrous shenanigans on the other side of the Pacific Ocean. Nintendo hardware designer Masayuki Uemura set to work on a system codenamed 'GameCom', only to change the title when his helpful spouse suggested 'Family Computer' (or 'Famicom' for short), a playful variation on the Japanese description of a typical PC. Prototypes were constructed with a low-cost metal shell, but this was discovered to be too fragile, and so plastic became the material used instead. Although many have suggested that white and red plastic was used because it was cheapest to source, Uemura has recently revealed that the colours were chosen by the late Nintendo president Hiroshi Yamauchi (1927-2013), based on his own personal preference.

Viewed with modern eyes, the Famicom is a curious piece of technology. Toy-like in design and clearly aimed at young players, it's very different from the Western NES which would follow in 1985. Cost was a huge consideration during production; the Famicom's pads – complete with the now-standard D-pad controller, made famous by Gunpei Yokoi's Game & Watch range of LCD portables – were hardwired into the console's body to keep manufacturing expense down. Quizzically, Uemura included a microphone in one of the pads – an extravagance which saw hardly any use in software, but has become trendy in recent years thanks to Microsoft's Kinect and Apple's Siri. He also installed an unnecessary eject button for removing cartridges, later claiming that he thought young players would gain some simple enjoyment from pressing it. Despite these playful features, Nintendo was deadly serious about making the machine as good as it possibly could be – production of the console's cartridge connectors was carried out in-house to keep quality as high as possible.

Even so, the Famicom launch didn't go entirely according to plan. The first shipment of consoles had to be recalled due to faulty chips which caused them to crash. Like every major decision made by the company in those early days, the recall was done at the request of Yamauchi, who felt that initial sales momentum should be sacrificed in order to preserve Nintendo's public image. His instinct proved correct, and the Famicom overcame this setback and went on to sell half a million units in two months – an incredible success considering the small size of the Japanese videogame market at the time. Almost overnight, Nintendo had created an entire industry in its homeland, and the Famicom's toy-like appearance did little to dent its appeal with all agegroups – it was lapped up by kids, parents and businessmen alike.

"Nintendo had clearly taken note of the many mistakes made by others"

David Darling CBE

CO-FOUNDER OF CODEMASTERS, WHICH CREATED THE SEMINAL NES TOP-DOWN RACER MICRO MACHINES

What was it like publishing and developing games on the NES?
It was really good fun making games for the NES. We had been publishing on home computers, then we went to a trade show in America and some Japanese company we'd never heard of brought out a game machine – a little grey box. People were quite negative about it. Technical people were quite negative because they saw the Amiga as being better, and retailers were also down on it because Atari had crashed the console market previously. Retailers didn't want to hear about another console as long as they lived.

But then, after the show, Nintendo worked wonders. Over the next two years they gained traction and amazing market share, much bigger than the computers of the time. When you drove around America and visited service stations, they were selling NES games. It went completely mass market. So, we were understandably keen to do NES games, and the first one we did was *Treasure Island Dizzy*, and then we started working on *Micro Machines*, followed by the Game Genie. It was really exciting from a sales point of view because the market was exploding, and from a development point of view it's always interesting working on a new machine and trying to work out how to get the best out of it.

Do you think we'll ever see a return of the days of a hardware manufacturer holding all the cards like Nintendo did?
I don't think so. All the home computers of the period had been based on open architecture, so when Commodore launched the C64 it published the instruction booklet on how it all worked so programmers could work it all out. Because Nintendo was a toy company, they'd been used to selling their own toys – such as stand-alone LCD devices – and nobody else had anything to do with them. That's why they wanted to control it, and not be so open. When Sony came along they thought, 'how can we compete with these guys?' They saw software as more important than hardware, and struck up a much better relationship with developers to get more games and better games, so that people would want to buy their machine over Nintendo's.

That happened with the PlayStation, and Sony fostered a really good relationship with loads of developers. Apple has taken it one stage further with iOS. They've got tens of thousands of developers now. That has proven that having lots of developer support is a big advantage. I can't see that changing.

You battled Nintendo over the Game Genie and won. What was it like taking on a corporate giant?
We thought the Game Genie was so inventive we'd apply for a patent. We got that patent, licensed it to a toy company, and were really excited about it. And then Nintendo applied to get an injunction to stop the toy company selling it. It's like when a big kid kicks you in the playground, you have to defend yourself. We just defended ourselves and the toy company handled the litigation and eventually won – so we didn't really think too much about it, it was just a case of trying to be creative and then trying to protect that creative freedom.

What are your lasting memories of the NES as a gamer?
Super Mario Bros is one of my all-time favourite games. The attention to detail that Miyamoto and his team put into designing that game was incredible.

That early success would pale in comparison to the kind of figures Nintendo was posting in 1985. The reason was the launch of Shigeru Miyamoto's *Super Mario Bros*, an iconic 2D platformer that introduced the world to the concept of portly Italian plumbers leaping onto the heads of malevolent mushrooms. The game's impact was dramatic and, in the year following its release, *Super Mario Bros* would help the Famicom sell 3.9 million units in Japan. It was just one of a string of must-have titles for Nintendo's console, and would cement the company's reputation as a creator of truly world-class software.

The astonishing commercial performance of the Famicom allowed Nintendo to create a unique system of software licensing. The model adopted by Atari during the VCS/2600 era was to create all of the games internally but, by the time of the 1983 crash, that system was starting to fracture as third-party publishers like Activision started to appear. Nintendo embraced the talents of companies like Konami, Capcom, Irem, Taito and Namco, but at a considerable price – the Famicom had the market share and these companies wanted to tap into the console's audience, but to do so they had to dance to Nintendo's tune. Publishers were expected to place large production orders for Famicom cartridges and shoulder all of the risk, while Nintendo profited regardless of whether or not the game in question was a good seller.

The system was skewed to benefit Nintendo almost all of the time yet publishers rarely complained, as the Famicom's vast market share meant that gamers were desperate for new titles and quickly snapped up quality software, virtually guaranteeing that any new title would do decent business. Companies like Konami, Hudson Soft and Namco made their fortunes with the 8-bit console. Konami in particular saw its profits rise from $10 million in 1987 to $300 million in 1991 – all as a result of its fruitful relationship with Nintendo and the NES. Not everyone was content to simply roll over and play ball, however. Notoriously proud Namco boss Masaya Nakamura would famously challenge Nintendo's licensing system in 1989, deeming it a 'monopoly' and bad for the long-term health of the burgeoning industry. Yamauchi laughed off his suggestions and publicly mocked Nakamura, and shortly afterwards Namco quietly re-signed its licensing deal – such was the size of the audience that the Famicom offered, even its disgruntled business partners couldn't afford to not have its games on the system. The Famicom accounted for almost the entire Japanese games market at the time; in effect, videogaming in Japan *was* Nintendo. It shrugged off the attack from Sega's SG-1000 and Mark III systems – the latter known in the West as the Sega Master System – in the same manner an elephant would swat away an irritating fly.

In Japan, titles like *Final Fantasy* and *Dragon Quest* went beyond being something you just played on your games console. The nation's youth would clamour for information about the game, buying copies of magazines like *Shukan Shonen Jump* which ran regular articles detailing secrets, tactics and folklore from the *Dragon Quest* series. These publications had circulations that crept into the millions, largely based on the fact that they gave plenty of pages to the latest Famicom titles. Ever savvy to new ways of making cash, Nintendo encouraged such cross-promotion,

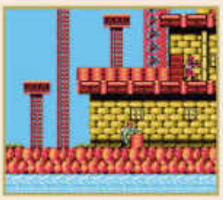
Capcom Connection

FOUR OF CAPCOM'S FINEST GAMES THAT HELPED DEFINE NINTENDO'S CONSOLE

MEGA MAN

YEAR: 1987

■ With franchise sales of almost 30 million copies, Mega Man is one of Capcom's most enduring characters, whose life started on Nintendo's 8-bit hardware. Devilishly hard, *Mega Man* is a game which demands skill, memory and unlimited reserves of patience. The character has since starred in over 50 different titles since the release of the Famicom original.



BIONIC COMMANDO

YEAR: 1988

■ A platform game where the lead character cannot jump might sound like a disaster, but *Bionic Commando*'s unique swinging ability made it stand out from the crowd. The Japanese version of the game was rife with Nazi imagery and even featured a reanimated Adolf Hitler as the final boss – needless to say, these elements were altered for the Western release.

DUCKTALES

YEAR: 1989

■ Such is the appeal of this platformer that WayForward Technologies is updating it for current generation consoles as we speak. The original was developed by key members of the *Mega Man* team, which goes a long way to explaining the overall level of polish and playability. A sequel followed in 1993 and is now hard to come by, although experts consider it to be a little too similar to the original.

LITTLE NEMO: THE DREAM MASTER

YEAR: 1990

■ An interesting case of Japanese developers tackling Western stories, *Little Nemo: The Dream Master* was based on a Japanese animated movie, which in turn took inspiration from an American comic strip by Winsor McCay. The result was a charming but often surreal romp through the world of Slumberland, riding on the backs of various animals.

knowing that for each additional magazine it helped shift, the potential lay for increased videogame software sales.

Not all of Nintendo's big money making ideas came to fruition, of course. The Famicom Disk System was launched in 1986 for a pricey 15,000 Yen, and was an early misstep for the then industry leader. This add-on device was dangled in front of consumers with the promise of cheaper software prices and better titles. Games came on diskettes which retailed for less than carts, with the bonus of being reusable – you could visit a Disk System kiosk at your local retailer and have a new game recorded onto one of your existing disks for a nominal fee. Nintendo made the product even more desirable by stating that all of its best games would be exclusive to the format. *The Legend of Zelda*, *Kid Icarus* and *Metroid* were all released on the Famicom Disk System first, although cartridge ports came later, largely because the system was not as successful as Nintendo had first envisaged.

The new disks split the market. Publishers didn't like having to make the choice between releasing a game on the Famicom Disk System or standard cartridges, and of course would have to pay additional licensing fees if they decided on supporting both. Nintendo overstepped the mark by insisting that it held half of the rights to each game published on Famicom Disk System – something which didn't apply to Famicom titles, and illustrates just how arrogant the firm had become. To cap it off, the unit suffered from crippling reliability issues. The rubber belt used in the disk drive had a tendency to snap or even melt over time and the disks themselves were incredibly delicate – a long way from the robust carts used on the Famicom. Total sales were 4.44 million – nothing to be sniffed at,

Be wise accessorise

THE ZAPPER

■ Bundled with the NES at launch, this iconic light gun was made famous by titles *Duck Hunt* and *Wild Gunman*. Originally coloured grey, it was relaunched in grey and orange. The Famicom version of the gun was based on the design of a revolver.

POWER GLOVE

■ Before the Wii came around and taught everyone how to waggle, Nintendo tried its hand at motion control with the Power Glove peripheral. Created by Grant Goddard and Samuel Cooper Davis for Abrams Gentile Entertainment and licensed to Nintendo, the controller was a commercial disaster.

NES ADVANTAGE

■ This arcade-style controller is notable for getting screen-time in the 1989 movie *Ghostbusters II*, where it was used by the spook-catching protagonists to manipulate the movements of the Statue of Liberty. Its slow-motion feature was unique for the time, but didn't work with all NES games.

U-FORCE

■ The work of publisher Brøderbund, U-Force was a controller that you didn't touch, sort of like a retro version of Kinect. It used infrared sensor panels to identify the position of your hands, but didn't work as planned – games were almost impossible to control properly. A bit like Kinect, then.

ROB

■ Known as the Family Computer Robot in Japan, ROB was instrumental in getting the NES into stores following the 1983 crash. It was short-lived, only functioning with two games: *Stack-Up* and *Gyromite*. Despite its failure, ROB is highly collectable today.

» The ports for the NES supported a variety of different peripherals, from the Zapper to Nintendo's Robotic Operating Buddy.

but way below Nintendo's lofty expectations for the console. The add-on never made it out of Japan, but such was the dominance of the Famicom in Japan, its lacklustre performance did little to impact the console's red-hot momentum.

Nintendo's incredible success in its homeland was one thing, but its next move was downright audacious. Following the crash of 1983, videogaming was distinctly out of favour with North American retailers – but Yamauchi knew that it was a vital market to crack and the risk of failure would be balanced by the tantalising chance of massive, massive profits. The Famicom was redesigned for the US market as the Nintendo Entertainment System – NES for short – and was made to resemble a high-tech VCR, complete with a funky-looking spring-loaded cartridge mechanism. Combined with toy-like peripherals, such as ROB and the iconic Zapper, the re-imagined system managed to slip under the radar of retailers still stinging from the collapse of the interactive entertainment market only a couple of years previously. Nintendo's American sales team calmed the nerves of leading stores by offering units on a sale-or-return policy, even going as far as to organise point-of-sale displays, shifting the risk away from the twitchy retail chains. The gamble worked, and while the NES didn't sell in the quantities seen in Japan, the fact that it sold at all proved that there was still a receptive audience for videogaming – the seeds of a revived market in the US had well and truly been sown.

Nintendo had clearly taken note of the many mistakes made by others. The company was

Rare Connection

THE EX-SPECTRUM DEVELOPER WAS PROLIFIC ON THE NES MAKING NEARLY 50 GAMES

WIZARDS AND WARRIORS

YEAR: 1987

■ Rare's second outing on the NES, *Wizards & Warriors* received praise for its impressive presentation and stern challenge. Although it boasted action platforming elements, the game also expected players to use their brains to overcome various puzzles and roadblocks. Sequels followed, one of which (*Fortress Of Fear*) graced the portable Game Boy console.

WWF WRESTLEMANIA

YEAR: 1987

■ Boasting digital representations of all your favourite grapplers – including Hulk Hogan, Andre The Giant and 'Macho Man' Randy Savage – *WWF Wrestlemania* was a smash hit for Rare and publisher Acclaim, the latter of which would oversee the WWF videogame licence for the next decade. Simplistic by today's standards, but still immense fun.

SNAKE, RATTLE 'N ROLL

YEAR: 1990

■ One of Rare's most critically acclaimed NES titles, *Snake, Rattle 'N Roll* is an isometric platformer which tasks the player with consuming enough items to open an exit and progress to the next level. A feat of programming genius on the part of developers Tim Stamper and Mark Betteridge, *Snake, Rattle 'N Roll* is still fondly remembered today and is a must play.

BATTLETOADS

YEAR: 1991

■ A vivid illustration of just how creative the Stamper brothers could be with new design concepts, *Battletoads* was produced at a time when the *Teenage Mutant Ninja Turtles* were captivating kids worldwide. A side-scrolling fighter with an emphasis on comedic attacks, it would also be ported to the Sega Mega Drive and Amiga. An excellent take on the scrolling fighter which spawned numerous sequels.

notoriously strict about the quality of software on the NES, concocting the now famous 'Seal Of Quality' which reassured gamers – and their jumpy parents – that the expensive cartridges they were buying weren't going to end up as landfill shortly after purchase. Nintendo of America also limited third-party publishers to just five games a year, a move which caused Konami to create subsidiary Ultra Games – the ploy worked, and the company was able to release ten games per year instead of five. There's no doubt that these companies raged at such limitations behind closed doors but, as was the case in Japan, they were only too happy to abide by Nintendo's rules – mainly because quality software could easily shift over a million units. By imposing such draconian limitations on publishers, Nintendo wanted to ensure that NES software was of the highest possible standard (although there are plenty of stinkers on the system) and companies didn't want to waste one of their five annual games on a lacklustre release.

Peerless support from some of the industry's best developers was just one reason for the success of Nintendo's hardware in the US and Japan. Then, as is the case now, it was first-party software which really pushed the console. Shigeru Miyamoto's *Super Mario Bros* was followed by *Zelda II: The Adventure Of Link*, *Super Mario Bros 2*, *Metroid* and many other exceptional games. By the time the Nineties arrived, Nintendo's aging 8-bit system was installed beneath millions of TV sets all over the world.

Such was the power of the Nintendo brand in the US that the company embarked on an incredible ambitious promotional venture with movie studio Universal Pictures. 1989's *The Wizard* is little more than a 100-minute commercial for the console, and gives prominent screen-time to many of its more popular titles – not to mention the Power Glove peripheral, a failed experiment in bringing motion control to the masses, pre-dating the Wii by a decade and a half. Although the film wasn't a commercial success – which is surprising, given that it starred Fred Savage, who was incredibly popular at the time – it has since become a cult classic and is the first place many keen NES owners caught their initial glimpse of *Super Mario Bros 3*. The game remains the biggest selling piece of non-bundled software the industry had ever seen, shifting an incredible 18 million copies and generating somewhere in the region of $500 million in revenue for its creator. Retailers must have struggled to comprehend the size of the market, a market which

Ste Pickford

ONE HALF OF THE RENOWNED (AND BEARDED) PICKFORD BROTHERS, STE HAS BEEN INVOLVED WITH COUNTLESS CLASSIC TITLES AND NOW RUNS INDIE STUDIO ZEE-3 WITH HIS SIBLING, JOHN

As a developer, what was it like working on the NES hardware?

Initially, it was a nightmare! We'd just come from working on the Amiga and Atari ST, and the NES felt like a relic. As well as the low resolution and tiny flickery sprites, it was bodgy hardware with things like panels on the screen only possible with very shonky cludges.

Then, when we got into the swing of it we realised it was, despite its age, a much better videogame platform than the Amiga or ST. You see, even though it didn't do very much, what it did do was allow you to scroll a screen around and move some sprites around at 60hz, which is what most games really needed. The more 'advanced' graphics of the 16-bit computers weren't matched by the grunt of those machines, so even though NES games weren't as pretty, they were fast and responsive, and the NES controller was way better than any joystick or keyboard available for home computers.

It was an early lesson in frame rate being more important than anything else for playable videogames, and graphics being secondary to feel. A lesson which has since been forgotten by most triple-A game publishers.

What are your thoughts on the system from a gamer's perspective?

There were two important points about the NES from a gamer's perspective. Firstly, the games were insanely expensive. In the UK at least, NES games were £40 at the time when Mastertronic games were on the shelves for £1.99 (and plenty of those were decent games). The price was too high, but the games were on cartridges, and cartridges were really nice things to own. They had instant and reliable loading, which was great.

The second thing was that the games were really, really good. Not just the Nintendo games – *Mario*, *Zelda*, etc which were worth £40, if you could afford it – but pretty much every game on the system was actually much, much better than any home computer games at the time. The Nintendo Seal of Quality actually meant something. It was hard to convince Nintendo you were good enough to make a game for their system, and then the quality bar you had to pass just to get a game released was very high. Every developer had to be on the top of their game just to get a game out. Games regularly were non-approved for not being good enough, so we really had to work hard to make the very best games we possibly could.

So, although the games were very expensive, Nintendo created a system where you could buy any game on the shelf and be certain that it was going to be really good and worth the money. I don't think there's been a system before or since with such a consistently high quality catalogue.

What do you think the system's lasting legacy will be in the industry?

For better or worse the NES defined the console era – the limited, curated game library controlled by a gatekeeper, and a very restricted ability to develop for the platform. That system was copied wholesale by Sony and Microsoft, and we had a few years where it worked well, but I think we're coming to the end of the useful life of that business model. It worked brilliantly for the NES, but it's left us today with a conservative and imploding triple-A console business, locked into timidly producing only a small number of marketing-driven, high-budget glossy sequels based on about five franchises.

» It's got a great D-pad, but the NES and Famicom pads aren't too comfortable to hold for long periods of time.

less than a decade ago had pretty much been at death's door.

One region where the NES's power was curiously ineffective was Europe, and Nintendo seemed reluctant to conquer the territory. This left the door wide open for rival Sega, which released its Master System console to extremely encouraging sales. Despite losing the battle in both Japan and North America, Sega's 8-bit platform had gamers all to itself in Europe. Some gamers were growing tired of their ZX Spectrums and Commodore 64s, and proved to be perfect fodder for this new gaming system fresh out of Japan. Arcade conversions such as *Hang-On*, *Space Harrier* and *Wonder Boy* helped Sega gain a robust foothold, and when the NES was launched in the region in 1987 it had a mountain to climb, despite possessing what was arguably a far superior library of software. Nintendo's lack of enthusiasm for Europe cost it dearly during the 8-bit days, and allowed Sega to build a power base which would pave the way for the 16-bit Mega Drive. However, it goes without saying that the flood of profits in America and Japan more than softened the blow.

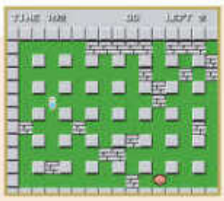
The impact and influence of the NES simply cannot be overstated; even after all these years and five generations of new hardware, the console remains a classic system, its collection of games intimately familiar to players who weren't even born when they were released. Franchises like *Zelda*, *Metroid*, *Castlevania*, *Super Mario Bros* and *Mega Man* all found fame on the 8-bit console, and these names continue to be insanely popular even today. *DuckTales*, a classic NES platform title based on a Disney cartoon series, is currently being updated for an entirely new generation as *DuckTales Remastered*, proof of the enduring quality of the NES library. On the Wii U, developer Yacht Club Games is creating *Shovel Knight*, a brand new indie platformer title that wears its NES inspiration proudly on its sleeve. On the 3DS, NES titles are getting a new lease of life thanks to the Virtual Console distribution system, which allows owners to download classic titles from the console's back catalogue.

Iconic systems invariably become appealing targets for collectors. The colourful nature of Famicom cartridges – combined with their low cost – has created a thriving second-hand market thanks to online auction sites and retro gaming retailers. The NES is equally popular with those looking to reconnect with their past. That spring-loaded cartridge dock may have caused reliability issues over the years, but the boxy console is arguably one of the finest examples of videogaming retro-chic, and its weird and wonderful menagerie of odd peripherals only adds to its collectibility. Of course, it also helps that many of the format's most popular games are based on franchises which continue to find favour even today. For older players, it's fascinating to see how characters like Mario and Link have evolved as the decades have progressed, while newcomers will be intrigued to see what these famous faces were up to when they made their first tentative steps into videogame superstardom.

Without the NES, the videogame arena would be vastly different today. Nintendo may have kept Japan's best development talent on a tight leash with its grossly unfair licensing agreements, but the incredible profits those same studios made via the Famicom and NES allowed them to become the heavyweight giants of the future – Capcom, Square, Enix and Konami all made their respective fortunes on Nintendo's 8-bit console, and UK studio Rare used the NES to establish a reputation for quality software which would later result in it being purchased by Nintendo itself. However, the dominance of the system, and Nintendo itself, created a less appealing legacy. The licensing system put in place by Yamauchi was almost criminal, yet it is only

Hudson Soft Connection

WITH NEARLY 30 GAMES TO CHOOSE FROM IT'S HARD TO PICK FAVOURITES, BUT WE'LL CERTAINLY GIVE IT A GO



BOMBERMAN

YEAR: 1985

Hudson's explosive-loving mascot may have done his best work on the PC Engine, but his first console outing was on Nintendo's 8-bit NES hardware in 1985. With its maze-like structure and addictive gameplay, the series would go on to become one of the medium's most enduring classics. To date, the character has starred in over 70 different games on a wide range of platforms and systems.

MILON'S SECRET CASTLE

YEAR: 1986

Regarded by some players as overly difficult, *Milon's Secret Castle* is nevertheless a cult classic among many NES devotees. Despite the cute visuals and jolly protagonist, this platformer is brutal at times – there are no save points and losing your life results in a game over. It has since been re-released on Nintendo's Virtual Console service, an illustration of its level of fame.

FAXANADU

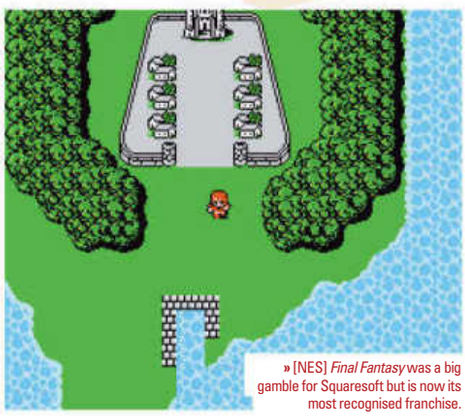
YEAR: 1987

Faxanadu is part of Falcom's Dragon Slayer series – the title is a combination of 'Famicom' and '*Xanadu*', which was the subtitle of the second *Dragon Slayer* release. Best described as an RPG with platforming elements, *Faxanadu* found favour with players thanks to its gripping gameplay, subtle visuals and surprisingly atmospheric music, composed by the hugely talented Jun Chikuma.

PRINCESS TOMATO IN THE SALAD KINGDOM

YEAR: 1988

Something of a cult classic, *Princess Tomato* is a text adventure with vegetables in leading roles. Placed in the role of the brave Sir Cucumber, the player must navigate through various sections of the game using text commands to save Princess Tomato from the clutches of Minister Pumpkin. *Call Of Duty*, you say? Never heard of it.



» [NES] *Final Fantasy* was a big gamble for Squaresoft but is now its most recognised franchise.

"Shifting an incredible 18 million copies and generating somewhere in the region of $500 million"

SUPER MARIO BROS 3 DID GOOD

Konami Connection

THE JAPANESE DEVELOPER HAD HUGE SUCCESS ON THE NES, RELEASING MANY CLASSIC GAMES

GRADIUS

YEAR: 1986

Konami's near-legendary shooter got one of its first domestic ports on the NES, and the game more than lived up to its arcade parent. Crude visuals hide a tricky experience that is harsh but always fair, and boasts a weapons upgrade system that was revolutionary for the time. Controlling the Vic Viper ship, your mission is to eradicate various aliens – some of which resemble 'Moai' statues. Don't ask.

CASTLEVANIA

YEAR: 1987

Although *Castlevania* appeared on the Famicom Disk System first, under the title *Akumajō Dracula*, it was the American NES port that transformed the series into a household name. Famous for its fantastic music, creepy visuals and punishing challenge, it would be followed by two equally beloved sequels. The series continues to attract a large audience today, thanks to entries on the Xbox 360 and 3DS.

METAL GEAR

YEAR: 1987

Hideo Kojima's *Metal Gear* made its debut on the MSX2, but Western players will have been introduced to the franchise by the NES port – a somewhat butchered version of Kojima's original vision. Despite being a less-than-perfect conversion, *Metal Gear* nevertheless gained a positive reaction from many North American gamers, paving the way for future instalments such as *Metal Gear Solid*.

CONTRA

YEAR: 1988

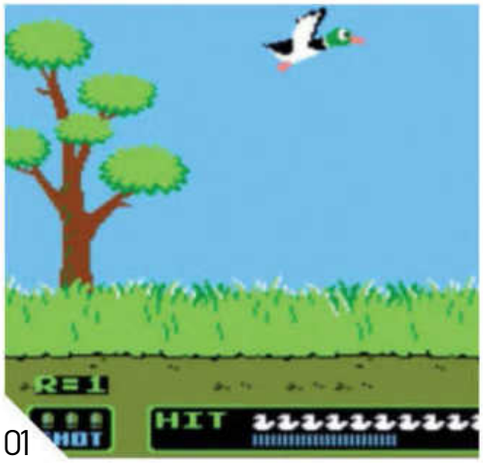
Possibly the most famous run-and-gun title in videogame history, *Contra* was an arcade smash in 1987 before being ported to the Famicom and NES in the following year. In Europe, the game would famously be retitled *Probotector*, with the human heroes transformed into robot warriors – a strange trend which would continue until 1996's *Contra: Legacy Of War*, on the PlayStation.

now being torn apart by the arrival of services such as the iOS App Store and Android-based Google Play market, where the power rests with the publishers and developers, and not with the hardware makers.

Of course, at the time, players were less concerned with Nintendo's business practices and more bothered about seeing if they could shoot the dog in *Duck Hunt*, or trying to find all the secret warp zones in *Super Mario Bros 3*. Those lucky enough to have been introduced to the medium of gaming via Nintendo's console are unlikely to forget its incredible impact and influence. It's the platform that enabled a company that started out manufacturing playing cards to straddle the global entertainment arena like a colossus, challenging the brand power of companies like Disney and Pepsi, and matching the movie and music industries in terms of revenue and cultural recognition. Although the gaming market has grown in size dramatically since the Eighties, it's unlikely that any single console format we've seen since will become as intrinsically linked to the medium of interactive entertainment as the NES was. You didn't play games back then, you played Nintendo, and that tells you everything you need to know about how big this console was. Not bad for a system which started out as a rather unassuming slab of white and red plastic in its native Japan.

NES PERFECT TEN GAMES

For owners without the cartridge cleaning kit; here are ten of the best wedges of grey plastic you'll ever blow into



01

DUCK HUNT

» **RELEASED:** 1985
» **PUBLISHED BY:** NINTENDO
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** DONKEY KONG

01 Billed as the quintessential game for the clunky NES Zapper, Nintendo's repetitive duck-murdering simulator allowed gamers to test their aim with the aid of canine cohort Mr Peepers. It was his job to startle a ball of petrified feathers into the air and yours to sight them in your pistol's crosshair. You had three shots per target and the later levels, which included tiny clay pigeons, called for either a swift dead-aim or the cowardly act of pressing the gun barrel against the television. The game had a neat feature, which allowed duck-welfare enthusiasts to control the direction of the fleeing birds with a second pad and save them from a good buckshot stuffing.

SUPER MARIO BROS

» **RELEASED:** 1985
» **PUBLISHED BY:** NINTENDO
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** F-ZERO

02 It was the block-punching, pipe-travelling exploits of two Italian plumbers that finally administered the medicine to the videogame crash of the Eighties, ridding it of the noxious aftertaste of Atari's *ET*. Shigeru Miyamoto knew how to conjure up golden game icons, and the Mario brothers are two of his most prolific. Placing the plumbers into a daring princess/mushroom rescue mission, inside a vivid, smooth-scrolling fantasy world, the game pioneered concepts such as level warping and head stomping. *Super Mario Bros* encapsulates everything that makes a game timeless: catchy theme, fluid gameplay, iconic characters and a hot princess.

02

RIVER CITY RANSOM

» **RELEASED:** 1985
» **PUBLISHED BY:** TECHNOS
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** DOUBLE DRAGON

03 Punch-bags meet sick-bags when Alex and Ryan receive a note from evil crime lord Slick informing them that their city is being held to ransom and Ryan's girlfriend has been abducted. Welcome to River City, a place of tongue-in-cheek humour, cartoon violence and hard-up vomiting freshmen. Using anything they can lay their fists on, our protagonists set about the streets, fighting through Slick's army of students. Their strategy: force them to 'barf', and pocket their loose change. *River City*'s unique fusion of a scrolling beat-'em-up and a subtle RPG make it a superlative NES classic.

MEGA MAN 2

» **RELEASED:** 1989
» **PUBLISHED BY:** NINTENDO
» **CREATED BY:** CAPCOM
» **BY THE SAME DEVELOPER:** DEVIL MAY CRY

04 Don't let Mega Man's mountainous energy bar fool you. Trying to finish *Mega Man 2* is like trying to stay alive without any kidneys. This is an unforgiving platform blaster where each level demands pinpoint precision and patience. The order in which you blast through Dr Wily's levels is up to you, but don't think you can use the easier stages to stockpile lives. Each level houses a bionic boss whose special power can be acquired. These abilities give Mega Man an advantage over another boss, so choosing your route through the game was how you maintained a healthy blood pressure.

PUNCH-OUT!!

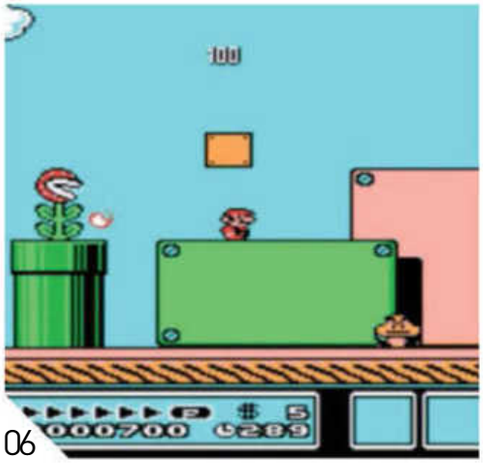
» **RELEASED:** 1986
» **PUBLISHED BY:** NINTENDO
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** LYLAT WARS

05 Nintendo's port of its popular Eighties arcade puncher was somewhat lost in translation when it appeared in its 8-bit glory. The arcade's transparent fighter was omitted and in his corner stood a pale, pint-sized pugilist on a mission to topple heavyweight hard-man Mike Tyson. It quickly collected acclaim for its accessibility and colourful roster of cartoon boxers, who were forced to sop up each blow of the game's trademark playability. The NES homes the finest version of *Punch-Out!!*, still managing to pack more punch than its technically enhanced SNES sequel and arcade counterpart.

03


04

05



06


07


08

SUPER MARIO BROS 3

- **RELEASED:** 1990
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** PILOTWINGS

06 Mario's goodbye gift to the NES is a marvel. It encapsulated all the qualities of the first game while introducing new elements now as essential to the series as Mario's flat cap and black moustache. *Super Mario Bros 3* incorporated sub-bosses, multiple routes and mini-games, while embracing the notions of secrets and level warping. In fact, the game's so great that millions of Americans stood in unity to create a large image of his head using colourful T-shirts. Visible from space, it was a warning to ET to never release another game on our planet.

METROID

- **RELEASED:** 1986
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SUPER METROID

07 Long before Ms Croft raided her first tomb, there was another tough female playing a central role in an iconic franchise. Donning unflattering yellow armour and forced to wear a red spaceship on her head, you really couldn't tell whether Samus Aran was man, woman or beast. But one bash of the B button, sparking her elegant flip, gave us all the proof we needed. *Metroid* is a landmark NES title. The space shooter introduced password saves, non-linear levels and multiple endings. Its dark, menacing setting housed some truly freaky inhabitants, and the Giger-style levels really helped create a bleak, lonely atmosphere from inside the grey box.

CONTRA

- **RELEASED:** 1988
- **PUBLISHED BY:** KONAMI
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** METAL GEAR

08 It must be written into our genes that when visited by an alien it's customary to either destroy them or try to adopt them. *Mario Bros* on steroids, the home port of Konami's arcade hit *Contra* is considered to be the finest run-and-gun on the NES. It tells the story of two marines who are assigned the mission of welcoming an alien species by unloading an ungodly amount of ammunition into their deformed domes. The game presents some inspired character and level designs, the most memorable being the breach of an alien base, which switched the perspective from a side-scrolling blaster to a *Cabal*-style shooting gallery.

09

DOUBLE DRAGON II: THE REVENGE

- **RELEASED:** 1989
- **PUBLISHED BY:** TECHNOS
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** N/A

09 Taking on a darker tone than its predecessor, *Double Dragon II* still follows the theme of the Lee brothers' ill luck with the opposite sex. After an abducted girlfriend, Marian, is callously killed by Shadow Warrior, the brothers are forced into action. It's widely considered to be the finest of the three *Double Dragon* games released on the NES, due to its intuitive controls. It also introduced a much-requested two-player co-op option and iconic moves like the Whirlwind Kick and the Hyper Uppercut – which looked a lot cooler than Billy and Jimmy's usual technique of pushing an enemy's head into their groin.

THE LEGEND OF ZELDA

- **RELEASED:** 1987
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** YOSHI'S ISLAND

10 Sheathed inside a majestic gold cartridge, *The Legend Of Zelda*'s tale of a nefarious powermonger, an ensnared princess and an elfin boy, bound together by unlikely heroism, was a chameleon of game genres that pioneered open-ended gameplay. Link's first quest not only popularised adventure games, it established pivotal precedents that spoke out to all platforms. It outmoded high-score tables by exposing a greater desire in gamers for exploration and completion, and encapsulated perhaps the most respected and well-loved games ever created. It was fathered by Nintendo with a proud tenderness and the NES was there to videotape the birth.

10

Year released: 1986 (US), 1987 (UK and Japan)

Original price: £99/$160 (Core Pack)

Buy it now for: £15/$24+

Associated magazines: *Mean Machines, Computer & Video Games*

Why the Master System was great: With a far brighter colour palette than Nintendo's NES and some superb arcade conversions, the Master System proved to be a cracking purchase if you were a die-hard Sega fan

MASTER SYSTEM

SEGA MAY NOT COMPETE IN THE HOME CONSOLE ARENA ANY MORE, BUT ITS MASTER SYSTEM ARGUABLY PLAYED A SIGNIFICANT ROLE IN INTRODUCING MANY GAMERS TO THE CONCEPT OF THE 'HOME ARCADE'. DAMIEN MCFERRAN TAKES A FURTIVE LOOK AT ONE OF SEGA'S FIRST FORAYS INTO THE DOMESTIC HARDWARE MARKET

The Sega Master System is something of an enigma. One of the most powerful home consoles of its time, the machine is barely worthy of a footnote when it comes to deconstructing the history of the American and Japanese gaming industries. It sank almost without trace in these two key territories, failing to make even a dent in the seemingly impregnable armour of Nintendo's NES (or Famicom). However, in other parts of the world – most notably Europe and South America – it was a tremendous success, winning hordes of fans and establishing Sega's reputation as a first-rate purveyor of arcade smash hits in the process.

Founded in 1940, Sega (an abbreviation of 'SErvice GAmes') initially gained renown for its unique brand of automated coin-operated arcade games. Having plenty of experience in the field of amusements, the company was perfectly poised to compete when 'true' arcade titles like *Pong* and *Space Invaders* started to appear. Thanks to games like *Future Spy* and *Zaxxon*, Sega soon garnered a reputation as something of an expert when it came to arcade thrills and spills.

As the Eighties began to unfold, the videogame industry seemed unstoppable. Encouraged by the sterling performance of its coin-op division, and the amount of money American company Atari seemed to be making from the VCS/2600, Sega decided to enter the home entertainment arena. Released in 1983, the SG-1000 was Sega's first attempt at cracking the console market. However, it was not the triumph the company had hoped for. To make matters significantly worse, Atari managed to successfully flush the US home videogame market down the toilet in the same year, causing the first worldwide videogame crash. Sega's assets were hit badly in the ensuing fallout, but salvation came from American David Rosen, who had previous ties with Sega, and Japanese businessman Hayao Nakayama. They stopped the firm from collapsing into the hole created by Atari's poor management.

After a period of stabilisation, Sega was purchased in 1984 by Japanese corporation CSK and subtly re-christened 'Sega Enterprises'. Despite the abject failure of the SG-1000, plans were made for a successor in the shape of the updated SG-1000 'Mark II'. Sega, like fellow Japanese company

INSTANT EXPERT

A clone of the SG-1000 Mark I was produced by Telegames that could also play Colecovision software.

The Master System possessed a pair of 3D glasses that simulated depth of vision by using a shutter system on the right and left lenses.

The Power Base converter allows you to play Master System games on a Mega Drive console, although it acts only as a 'pass through' device, as all the necessary hardware to run Master System software is already included inside the 16-bit machine.

The first SG-1000 did make it out of Japan, albeit in small quantities. It was distributed in Italy and Spain, as well as a few other countries.

The Japan-only computer SG-3000 is actually a SG-1000 Mark II with a built-in keyboard. A keyboard could be added to the SG-1000 to bring it in to line with the SG-3000.

Tec Toy released several games in Brazil, like *Street Fighter II* and *Dynamite Headdy,* long after the Master System had ceased to be a force elsewhere in the world.

The Brazil-only Master System Compact uses a wireless RF signal to connect to the television. A pink version was also released called the Master System Girl.

The final commercial Japanese release for the Master System/Mark III was 1989's *Bomber Raid.*

Built-in software was often a feature of Master System hardware, with games such as *Hang On, Alex Kidd In Miracle World, Sonic The Hedgehog* and the famous 'hidden maze game' – turn on the machine without a cartridge in the slot and press up and both buttons at the same time – all being included inside different variants of the console.

Sega first used Opa-Opa from *Fantasy Zone* as its mascot, but Alex Kidd was soon drafted in as a replacement. Kidd was popular – there was even a Japanese board game based on his exploits – but he, too, would be dropped in favour of a certain blue hedgehog.

MASTER SYSTEM

Bundle of Joy

If you thought the current confusion over Xbox 360 and PS3 bundles was a new occurrence in the console industry, think again. Back in the late Eighties, the Master System was produced in three different packs: the 'Base' System – think '360 Core' and you're on the right track; the 'Plus' system, which added the all-important Light Phaser; and the 'Super' System, which was the same as the 'Plus', but also added the short-lived 3D Glasses. Although the existence of these different bundles undoubtedly resulted in several youngsters feeling inadequate when they got the 'Base' unit for Christmas, the peripherals that were included with the more expensive packs were not convincingly supported. The Light Phaser only enjoyed a handful of games and the 3D Glasses were dropped altogether when the Master System II hit the market – the lack of a card slot meant the remodelled console could not support the unique add-on.

Nintendo, knew that although the crash of 1983 had damaged confidence in the videogame industry, it had created a void that simply begged to be filled – in Japan, at least. The Mark II struggled to shift units at retail, but this hardware would eventually evolve into 1985's SG-1000 'Mark III'. Bar a few technical differences, this was the Master System in all but name.

It was around this time that Sega's rivalry with Nintendo, which would later bloom into a full-scale war when the Mega Drive and SNES arrived on the scene, became apparent. Sega's machine was more powerful than Nintendo's, but when the Mark III and Famicom went head-to-head in Japan the former was given a rather humiliating beating. Nintendo's popular console trounced Sega's technically superior hardware thanks to a wealth of third-party support. Developers were infamously forced to agree that they would not publish their NES titles on rival hardware, which left Sega in a rather tight predicament – it could only rely on its own home-grown arcade titles for so long. The solution was to obtain the rights to 're-program' the games of other developers – a process that PC-Engine creator NEC also indulged in, ironically converting many of Sega's key arcade hits to its own 8-bit format – but even this strategy wasn't perfect. Many of the licensed titles were distinctly lacklustre compared to the 'cream of the crop' that the NES enjoyed.

Undeterred by the underwhelming performance of the Mark III on home soil, Sega decided to release the hardware in the US, where it was radically re-styled and rebranded as the impressive-sounding 'Master System'. Released in 1986 – a year after Nintendo performed the same trick with the Famicom, which became the big loveable slab of grey plastic known as the NES – the Master System found itself in a similar predicament to the one experienced in Japan. Nintendo had spent the previous year busily promoting its new console and had snapped up key developer support from Capcom, Konami and Taito. Again, Nintendo requested that developers keep their games 'NES exclusive', and given the unassailable position the console enjoyed, few had the will to defy this request. Despite possessing technically superior hardware, Sega had, unfortunately, come to the party too late, with the Master System also crippled by a meagre software library. Compared to the multitude of third-party developers that supported the NES, Sega was only able to call upon the allegiance of two in the US: Activision and Parker Brothers.

By 1988, Sega's Japanese overlords had decided that enough was enough. Keen to offload the under-performing console, the questionable decision was made to sell the US distribution rights to toy firm Tonka. While the company was the indisputable king of the bright yellow plastic digger, it, sadly, had no experience whatsoever of effectively selling a cutting-edge electronic entertainment system. Tonka immediately made some puzzling choices regarding software choices and vetoed the localisation of several key titles, many of which were selling like hot cakes elsewhere in the world. Compared to the stunning collection of software available on the NES, the result was something of a foregone conclusion. Despite Tonka taking over the distribution duties, the Master System continued to perform poorly and was all but ignored by American gamers.

A rather pointless Japanese release of the Master System hardware followed in 1987, with the console being treated with the same level of disdain as its predecessor – unsurprising when you consider that it was effectively the same machine that had been released to general apathy in 1985. It was eventually discontinued in Japan two years later. Any other company would have capitulated in the face of such a dismal performance, but Sega wasn't about to give up without a fight. Carefully scanning the globe for possible conquest, the stubby finger of fate fell on Europe – the one region where Nintendo's influence had yet to be felt. Nintendo had released the NES in Europe towards the end of 1986, but poor promotion coupled with a lofty price point meant that the market penetration enjoyed by the machine was decidedly unimpressive. Sega saw the opportunity and pounced.

Ably distributed by UK company Mastertronic – previously famous for releasing budget games for the 8-bit home micros – the European variant of the Master System was unleashed in time for Christmas 1987. Spurred on by adverts that promoted the console as 'an arcade in the home', and supported by a range of killer coin-op classics such as *Hang On*, *OutRun*, *After Burner* and *Space Harrier*, the Master System quickly mopped up the market share that Nintendo had been too slovenly to secure. Gamers weaned on the Spectrum and C64 suddenly saw the attraction of owning a home console – rather than playing bumbling, half-arsed conversions of their favourite arcade hits by Western companies only concerned with cashing in on popular titles, fans could indulge in highly accurate

OTHER VERSIONS – WHEN ONE MACHINE ISN'T ENOUGH...

SG-1000 Mark III

Only released in Japan, this was the precursor to the Master System and is almost technically identical, although the FM sound chip in the Master System was an optional extra with the Mark III. Because it faced off against Nintendo's Famicom in Japan, it didn't sell particularly well and was swiftly dropped when the Mega Drive hit the market.

Master System (Mk I)

The 'classic' machine. The attractive casing features a slot for card-style games and also allows you to use the 3D Glasses. Although it's possibly the most well-known design in fan circles, it's actually harder to track one of these down in the wild than you'd imagine; because of this, second-hand prices are on the rise.

Master System II

A revision that allowed Sega to manufacture the machine more cheaply, the Master System II lacks the card slot that the original machine had. The design isn't fantastic but it's a lot smaller than its predecessor. This is probably the most common variant of the console in the West and can be found with ease at car-boot sales.

Game Gear

Released to compete with the Game Boy, it was essentially a portable Master System. Many of the games were ports of home titles and the machine was even able to play Master System carts thanks to the 'Master Gear' converter. The Game Gear was battery hungry and suffered from a blurry screen – resulting in its downfall.

COMMUNITY – SEGA WEBSITES TO WATCH

Sega8bit
www.smstributes.co.uk
One of the best Master System websites, here you'll find heaps of content including reviews, forums, hints on where to purchase a system and even regular competitions. A clean, neat and easy-to-navigate design rounds things off nicely. Highly recommended if you find yourself bitten by the Master System bug.

Sega Master System Museum
alexkidd.com
Although it's not updated particularly often, this is an excellent site for information and features a design that complements that of the original Mk I console. It's also packed with loads of reviews and represents a handy one-stop resource for fans of the machine.

SMS Power!
www.smspower.org
The home of a group of Master System fans dedicated to preserving and documenting the history of their beloved system. The site has been around since 1997 and continues to perform valuable work in regards to keeping the memory of the console alive. Check out the excellent scan archive!

The Sega Master System Junkyard
segams.blogspot.com
A blog that takes a rather wittier look at Sega's classic console than the other sites here. Within the Junkyard you'll find links to a variety of amusing content, and unlike the vast majority of Master System fan sites out there, this looks to be getting regular updates – which is nice.




ports produced by Sega itself. "The Master System raised the bar in terms of arcade-style home gaming," explains Neil West, former editor of *Sega Power* magazine. "The hardware was a leap forward from the home computer systems we'd all been used to." It was with the Master System that many UK gamers experienced instantaneous loading – an astonishing revelation after years of waiting for tapes to load on the home computers.

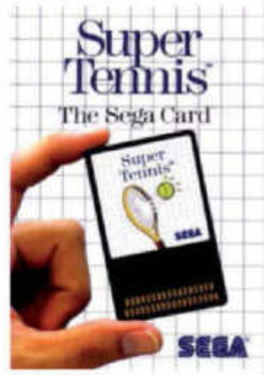
Such was the success of the machine that Mastertronic soon found that the Master System was accounting for nearly its entire yearly turnover. Such spectacular performance attracted the attention of Richard Branson's Virgin, who eventually acquired the firm, which was renamed Virgin Mastertronic, and, therefore, the European distribution rights to Sega's hardware and software. It was a timely intervention and a shrewd business move, as the Master System's successor was on the horizon and it would prove to be even more successful.

When the Mega Drive/Genesis was released, it spelt the end for the Master System in the US and Japan, despite a remodelled alternative appearing in the shape of the Master System II. Sega reacquired the US distribution rights for its products from Tonka, and set about promoting the new-look Master System, possibly in the hope that the frenzied public interest in the 16-bit Genesis would somehow trickle down to its 8-bit stablemate. Sadly, it wasn't to be, and the final game to be published in the US was *Sonic The Hedgehog* in 1991. Compare this to Europe, where the Master System II was a big success and helped the format cling on to its significant market share. As the Mega Drive started to gather momentum, Sega Europe wisely kept the 8-bit console ticking over with a drip-feed of quality titles like *Streets Of Rage II*, *Mercs* and *Sonic 2*. Support finally died away in the mid-Nineties.

Another market where the Master System enjoyed almost unchallenged success was Brazil. Traditionally a region where console technology trails that of the US, Europe and Japan, the machine was released in 1989 but remained wildly popular well into the following decade, marketed with impressive skill by Tec Toy. The company even went as far as to release a wireless variant of the Master System hardware, dubbed 'The Compact'.

When you consider this rather sketchy history, which saw the Master System fail catastrophically in two of the three key worldwide markets, it begs the question: is the console really worthy of a reassessment? The answer is simple. Without this criminally undervalued machine, Sega would not have enjoyed the considerable success it had with the Mega Drive. The Master System allowed Sega to experiment with arcade conversions, original IP and even create a mascot in the form of the loveable monkey boy Alex Kidd. Without the Master System, we also wouldn't have *Phantasy Star* – one of Sega's most well-known and best-loved franchises. Developers like Yuji Naka and Naoto Oshima cut their teeth on Sega's 8-bit hardware. Although it couldn't boast the sheer volume of classic titles possessed by Nintendo's NES, the Master System is still worthy of praise. Those gamers willing to stick with their machines back in the late Eighties were treated to a commendable selection of games, including *Wonderboy III: The Dragon's Trap*, *Psycho Fox*, *Power Strike* (aka *Aleste*), *Golvellius*, *Phantasy Star* and many, many others.

The fact that Sega was so dominant in the coin-op arena also meant that the machine played host to some commendable ports, as Neil West reveals: "The console came at a time when Sega enjoyed huge influence and power in the coin-op world, which meant a lot of games were available for conversion." Although it could be argued that the promise of 'an arcade in the home' wasn't fulfilled until the advent of the Mega Drive, the Master System nevertheless created a solid foundation to build on and gave gamers an insight into the fascinating world of Sega. This was a company that in the subsequent years would scale the heights of the world videogame industry, only to fall from grace in spectacular fashion almost as rapidly. In that respect, the Master System serves as a remarkable historical piece – with this much-maligned console, Sega tentatively tested the waters that it would ultimately flounder in.



» Some early titles were released in both cartridge and card forms, with the latter usually being sold at a budget price. As games became bigger the card format was eventually dropped due to insufficient memory.

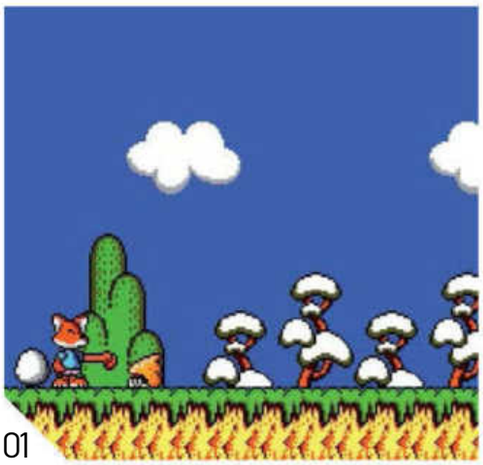
"ANY OTHER COMPANY WOULD HAVE CAPITULATED IN THE FACE OF SUCH A DISMAL PERFORMANCE"

» Towards the end of its life the Master System played host to some ambitious conversions – some far more successful than others.

MASTER SYSTEM

PERFECT TEN GAMES

It was home to the ugliest game cartridges, was cased in the most god-awful package design that you could imagine, but boasted some cracking games nonetheless. Join us as we look back at ten Master System games that you can't possibly be without



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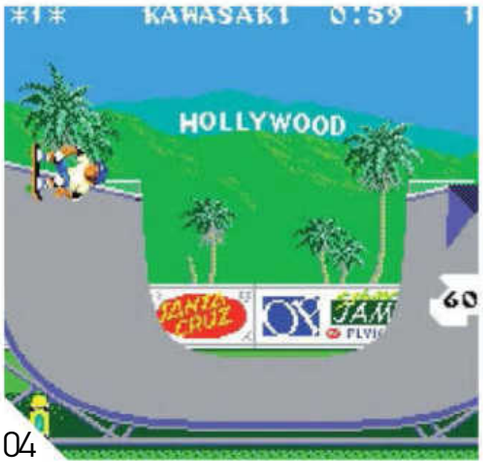

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PSYCHO FOX

- **RELEASED:** 1989
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** CRAZY TAXI

01 It's not the greatest platformer ever made, but it was one of the few Master System titles that became synonymous with the system. And any game about a fox battling a god has to make it onto some kind of list. Apparently the prequel to the awesomely entitled *Magical Flying Hat Turbo Adventure*, which later became known as *DecapAttack* in the West, *Psycho Fox* is a wonderfully vivid platform adventure that's quite a bugger to master. Boasting *Mario*-style warping and the funniest attack in any videogame ever: a punch that looks a little like Psycho Fox is continually getting enamoured and knocking things out with something that resembles a hairy slowworm chewing on an apple. We'll let you guys fill in the blanks.

ALEX KIDD IN MIRACLE WORLD

- **RELEASED:** 1986
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** VIRTUA RACING

02 The coolest videogame character ever was doing the heavy-fringed, shell-suited look long before the words 'our' and 'kid' were annoyingly put together. Living inside the Master System II, this game would be hailed as the greatest freebie in videogame lore until *Christmas NiGHTS* was given away with a magazine, and by default became the console's quintessential platformer. Big-fisted Alex Kidd must traverse imaginative worlds to compete in the Paper, Scissors and Stone World Cup. He's up against competitors that have had intense plastic surgery to make themselves look like a piece of paper, a pair of scissors and a fleshy rock, in the hope it will give them an edge in the competition. Jerks.

OPERATION WOLF

- **RELEASED:** 1990
- **PUBLISHED BY:** SEGA
- **CREATED BY:** TAITO
- **BY THE SAME DEVELOPER:** BUBBLE BOBBLE

03 Taito was faced with the very difficult decision of which direction to steer this project in. It could either take the veterinary arcade simulator route with an emphasis on saving wolves, or create a game about one man with a gun taking on a coconut shy of angry soldiers while helping to liberate terrified hostages. Taito decided to roll with the latter option – the correct decision, we reckon. With the Master System's chunky Light Phaser controlling your shooting and a second pad providing the trigger for your grenade attacks, playing the game while sitting on a tumble dryer – thus replicating the sensation of the arcade cab's recoil – all made for a really great home conversion of this warfare classic. Quite possible the Master System's finest arcade conversion.

CALIFORNIA GAMES

- **RELEASED:** 1987
- **PUBLISHED BY:** SEGA
- **CREATED BY:** EPYX
- **BY THE SAME DEVELOPER:** IMPOSSIBLE MISSION

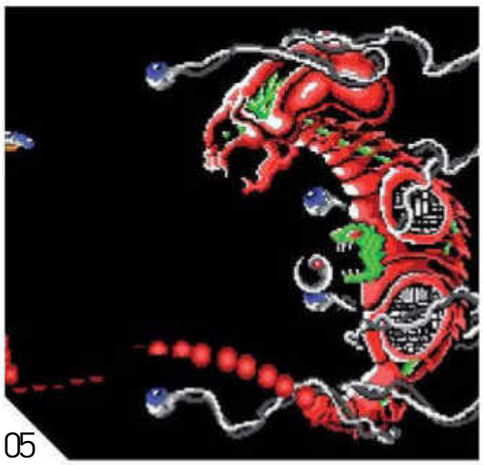
04 The 8-bit consoles weren't really renowned for their fantastic sporting titles, and the Master System had some of the worst examples on any system. If anyone has ever been unlucky enough to play any of the machine's 'Great' series of sports titles (*Great Football, Great Soccer*, Great juxtaposition of the word Great) you'll know exactly where we're coming from. And don't even get us started on *Basketball Nightmare*. However, you may well remember the Earth tilting slightly on its axis after the release of Epyx's brilliant *California Games*. While playing through the game's six events had a tendency to make you feel like one of those annoying kids from *Saved By The Bell*, in its own goofy way it offered a nice slice of sun-kissed sporting action, and it looked fantastic to boot.

R-TYPE

- **RELEASED:** 1987
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IREM
- **BY THE SAME DEVELOPER:** IN THE HUNT

05 The force is strong in this conversion. Irem's classic side-scrolling blaster is still one of the finest examples of the genre. Apart from the annoying flickering of the enemy characters, the Master System port offers an incredibly faithful reproduction of the game's stunningly bleak Giger frames and its myriad of bullet-spewing enemies. *R-Type* is teeming with memorable sections, but arguably the most iconic is the encounter with the game's first boss, Dobkeratops. When those lights faded and you encountered death's alien glare in the form of an ugly-looking giant shrimp, you knew those Bydo boys weren't the type of evil intergalactic federation to just roll over and hand you the keys to their demise. A utterly fantastic conversion that even boasts its very own secret level.

PERFECT 10: MASTER SYSTEM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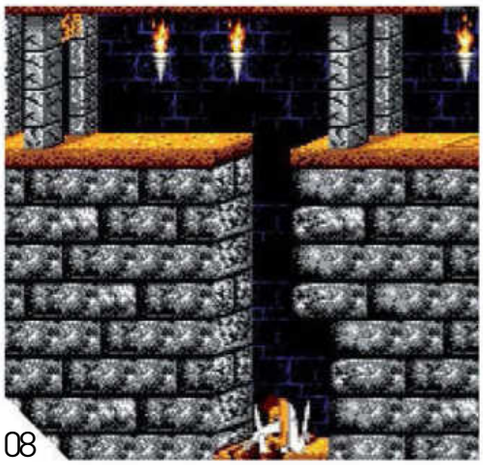
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BAKU BAKU ANIMAL

- **RELEASED:** 1998
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SPACE HARRIER

06 **Yes, it's another tried and tested take on *Tetris*, but Sega's excellent *Baku Baku Animal* was a puzzle game that finally gave those faceless regimented sprites a touch of character.** The falling tiles were made up of either types of food or animal faces, and the aim was to simply bunch the falling groceries together and get the corresponding animals to consume them. So the dogs were grouped with the bones, the monkeys with the bananas, the rabbits with the carrots and the pandas with the… well, we're sure you get the idea. It's an incredibly enjoyable little puzzle game that is also extremely addictive. It certainly cocks a leg and whizzes over the Mega Drive yawn-fest that is *Columns*. Arguably the Master System's best puzzler.

WONDER BOY III: THE DRAGON'S TRAP

- **RELEASED:** 1989
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SHENMUE

07 **Regarded as the best in a long and highly convoluted myriad of multi-titled games, *Wonder Boy III: The Dragon's Trap* was another addition to this stable of run-'n'-jump-cum-adventure-type outings.** This one is the most finely tuned in terms of gameplay and despite its length it somehow maintains a great pace throughout. Within its first few minutes you enter a castle, blind some cyclops, uncover a strange dungeon and battle a dinobot that turns you into a dragon with its dying breath. After that you're turned into a variety of different animals, which gradually allows you to explore the huge game world. A great adventure that every Master System fan needs to own.

PRINCE OF PERSIA

- **RELEASED:** 1989
- **PUBLISHED BY:** BRODERBUND
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** WHERE IN THE WORLD IS CARMEN SANDIEGO?

08 **You have 60 minutes to find a way through this Persian rat-maze to try to stop the evil Grand Vizier Jaffa from marrying your girlfriend and fooling around with her on a giant, rotating heart-shaped bed.** This will be no easy feat, however, as the route is precarious and the pitfalls are plenty. But with a game so fluid and colourful, seeing your Arabian protagonist drop a thousand feet and hit the ground like a sack of potatoes was one of the most charming-looking deaths on the Master System. This conversion – like all the rest – looks great. The only bad point to be found is that the Master System's doughy D-pad isn't really a fan of precision. It's still a cracking platformer, though, and is arguably one of the greatest on the system. If only it wasn't so hard.

SONIC THE HEDGEHOG

- **RELEASED:** 1991
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** OUTRUN

09 **Up, down, left, right, A, B, C, Start, sadly proved impossible to perform on the Master System's cumbersome control pad, but the most well-known level-select cheat ever wasn't the only thing that was altered for the Master System port.** Due to the graphical 8-bit chasm that presented itself, *Sonic*'s first – and second, for that matter – outing on the system was a complete overhaul of its 16-bit sibling. However, the Master System version was all the better for it and proved to be a stunning platformer in its own right. It also meant that those who owned both a Master System and a Mega Drive would be treated to two slightly differing classic *Sonic* adventures. Now surely that can only ever be seen as a very good thing?

PHANTASY STAR

- **RELEASED:** 1988
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** RISTAR

10 **Sega's freshman RPG epic would smite its first winged eyeball on the Master System.** There's a tiring amount of features, strategy and powering-up in the game, and the 3D tunnel effects were dazzling. *Phantasy Star* was a more than worthy sparring partner to Miyamoto's prevalent *Zelda* and Square Enix's *Final Fantasy* series, mainly because it chose a setting that was instantly at odds with the generic fantasy worlds of *Zelda* and *Final Fantasy*. It's a beautifully constructed game, boasting a fantastically epic planet-hopping storyline polarised around one girl's quest to seek revenge for the untimely death of her nosey brother. However, unlike Sega's sophomore retribution epic, the original *Phantasy Star* doesn't pick up its football and disappear home in the 89th minute.

MEGA DR

Sega's Mega Drive – better known as Genesis in the US – is one of history's most special games machines. Stuart Hunt celebrates the most popular Sega console ever made and talks to the people who made it burn so brightly for so long

Despite the Master System's inability to break Nintendo's kung-fu grip over Japan and the US, and the collateral damage caused by the commercial collapse of the Mega-CD, the fact remains that each and every one of Sega's machines made important contributions to the videogames industry, helping to shape it into the billion-dollar beast it is today.

Sega's Master System is memorable for marking the company's first attempt at taking 'home gaming' global, and despite the console's inability to break Nintendo's vice-like grip over the US and Japan, it allowed Sega to penetrate territories where the Big N had struggled – most notably in Europe and South America. The Japanese version (the SG-1000 Mark III) is also noteworthy for being one of the few consoles to offer backwards compatibility out of the box, with the third version of the machine compatible with both Mark I and Mark II software. Plus, the system introduced, in a loose sense, a 'budget' range of console software, with the credit-card sized MyCards in 1985, and Opa-Opa and Alex Kidd pioneered the idea of a Sega mascot before Sonic the Hedgehog was even a spiky glimmer in Yuji Naka's eye. More importantly than all that,

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though, the Master System turned Sega's focus away from the arcade and home-computer markets and set it firmly on the road to console development.

When Sega launched the Mega Drive in Japan on 29 October 1988, the company faced stiff competition from a firmly established Nintendo, still riding high from the popularity of the Famicom, and the new, sleek-looking 8-bit powerhouse called the PC Engine – a joint hardware venture by Japanese electronics companies Hudson Soft and Nippon Electronics Company (NEC) that was allowing some of the most popular arcade games, including several Sega licences, to be played in the home.

At the time, the main ambition of Hayao Nakayama, then head of Sega, was to create an arcade system for the home, similar to how NEC had positioned the PC Engine. Despite the obvious direct competition that would present, it was a decision that made sense for two reasons. First, Sega's amusement division was producing some of the most popular arcade games of the day, and, second, the internal specs of the Mega Drive were based on a revision of Sega's System 16 arcade board. With the machine's development overseen by Sega technician Hideki Sato, the Mega Drive's arcade

Trip Hawkins

Founder and former CEO of Electronic Arts

Many people feel that EA was instrumental in the Mega Drive's Western success.
There's no question about it, considering that EA had about 50 per cent of the software business for the Mega Drive and expanded the market with EA Sports, *Populous* and *Road Rash*.

What was your relationship with Sega like?
To this day, there is a high degree of mutual respect and class in my relationships with David Rosen, the founder of Sega; Nakayama, who acquired and modernised Sega in the digital era; and Tom Kalinske, who was president of Sega of America during its heyday. That said, we did go toe-to-toe when we negotiated deals and it was no holds barred. In hindsight, I imagine for all of us that we consider each other among the more entertaining characters we have had the opportunity to do business with in our lives.

What were those little yellow tabs for on EA carts?
It was just for a bit of colour and visual interest and it probably kept the cartridge from cracking open. It's amazing that you remember something so silly!

Many EA games were far better on the Mega Drive than they were on the SNES. Why was this?
It's pretty simple really. If you only wanted to do a paintbox program or a beautiful landscape for *Mario* that scrolled slowly, the SNES was great. But for conventional games with conventional animation needs, the Mega Drive was the clear winner.

Which EA Mega Drive game do you feel best took advantage of the machine and why?
TH: It's hard to argue with *Madden Football*, *Populous*, or *Road Rash*. I also loved *PGA Tour Golf*.

What's the best non-Electronic Arts Mega Drive game you've played?
My personal favourite would probably be *Rampart*, and I also really liked *ToeJam & Earl*. The most successful non-EA game would of course be *Sonic*, but that's not my favourite genre.

Why do you think the machine remains so popular with gamers?
Plug and play, two players head-to-head, graphics that are good enough, your favourite sports. What's not to like?

» In Sega's determination to find a mascot for the Mega Drive, this duo was mooted. ToeJam and Earl were a dysfunctional pair of aliens who appeared in one of the most original and colourful games on the machine.

» The gritty cyberpunk adventure *Flashback* struck a chord with plenty of Mega Drive owners on its release – not that Conrad would ever remember.

The EA Connection Americans love sport and war sims, and thanks to EA the Mega Drive did, too…

ROAD RASH

Sometimes the clumping together of two game genres can have less than desirable results; you often end up with a game of two halves with neither feeling strong enough. Not so with *Road Rash*, a game that mixed the brutal dust-ups of *Streets Of Rage* with the exhilarating driving of *Super Hang-On* with astonishing aplomb. Spanning a series of three games for the Mega Drive, *Road Rash* proved a popular racing series on Sega's machine and a hugely successful franchise for EA.

JOHN MADDEN FOOTBALL

To say *John Madden Football* was as important to the Mega Drive's Western dominance as *Sonic The Hedgehog* is no understatement. With American football the most popular thing in the US since the hamburger, this game's success was secure. Rushed through development at the behest of Sega, who was desperate to have a Mega Drive football game on its machine, EA cemented Sega's fortunes by helping the Mega Drive find its way into millions of US homes.

DESERT STRIKE

Desert Strike caused a bit of a stir following its release after some loopy members of the press criticised EA's game for attempting to capitalise on atrocities of the Gulf War – we, of course, side with EA and believe that war games have and always will have their role to play in videogames, contemporary or otherwise. *Desert Strike* was an isometric take on the classic POW-rescue classic *Choplifter*, and like its popular Apple II muse, mixed elements of action and strategy brilliantly.

FIFA INTERNATIONAL SOCCER

The most eagerly anticipated 16-bit football game of all time, *FIFA Soccer* had a similar effect on us European Mega Drive owners as *John Madden Football* had on our American cousins. While its isometric perspective meant *FIFA* wasn't the most intuitive or slickest of football titles of the day, the game did boast some wonderfully detailed-looking player and stadium graphics, immersive sounds, and wrapped everything up in a nice little 'official' package.

» One of the slickest-looking games to ever appear on the Mega Drive, *Earthworm Jim* was bestowed the honour of Game of the Year by a chuffed as punch Sega.

David Perry

Shiny Entertainment founder

From a game programmer's point of view, what would you say were its strengths and weaknesses?
Scrolling with sprites was what these machines were designed to do. I guess our angle was the way we compressed up animation and could still get it to display fast. We also had come up with a way to use really good pencil animators and get those pencil drawings, coloured and compressed into our funky format, and then gave a lot of control to the animators so they could tweak to their heart's content.

Many feel that Shiny was instrumental in the Mega Drive's Western success. Do you agree?
I was in the right place at the right time. I flew from England to the US to make *Global Gladiators*, then surprisingly it won a Game of the Year award from Sega, just as I was planning to go back to the UK. So I stayed and made *Cool Spot*, Sega ended up liking that, so they gave us *Aladdin*. *Aladdin* ended up winning a ton of awards and was even boxed with the hardware. So how could I leave? That's when I started the *Earthworm Jim* team in Laguna Beach and those guys rocked. Once Sega saw that, we got Game of the Year again. So I guess my point is that it just fit together. If I'd left and gone back to the UK, who knows how this would have played out.

Were there any developers writing software for the Mega Drive that you respected and admired?
I finally got to meet Yuji Naka, he was my hero at the time. There were plenty of other great teams around, but Treasure scared me. They also were somehow getting more out of the hardware than just about anyone else. *Gunstar Heroes* was one of my favourites at the time and I always lived in fear of their next game. That pushed us to keep trying harder.

Was there any reason why you 'appeared' to favour developing for the Mega Drive over the SNES?
I had a friend called Nick Jones who was a fantastic SNES programmer, so I felt he had that machine covered. Back in those days we, as a group, all worked on different hardware and did conversions for each other. I was Spectrum, then Amiga, then Atari ST, then Genesis. He was Commodore 64 and then SNES. Another friend was PC. I guess if he had grabbed the Genesis, I'd have ended up on the SNES. It's funny how things work out.

Why do you think Sega's Mega Drive has remained so popular?
It's where a lot of us grew up, and really bit into some fantastic games. There was such a wide library of cool games. Just thinking about it makes me want to go and fire up my old Nomad.

What is your best memory of the Mega Drive?
Walking into the room for the *Aladdin* launch. Over 1,000 of the world's press at CES coming to see our game. The platform had really hit the 'big time'. 15 years later, I've still never seen an equivalent press launch; anything remotely as spectacular just for a videogame. So those *were* the days!

beginnings meant it would produce wonderfully accurate arcade ports and also prove an easy platform for third-party developers to work with. Also, it seemed Sega was looking to the Mega Drive as a cost-effective path to generate sequels to its arcade hits and to create franchises. When Sega released the Mega Drive in Japan, it was launched with three such – albeit not great – games, all of which supported this thinking: *Space Harrier II* and *Super Thunder Blade*, with *The Revenge Of Shinobi* following a few months later.

Despite its promising-sounding software lineup and technical credentials, sales of the Mega Drive proved slow in Japan, and the machine's inability to break the country proved the source of much frustration for Nakayama and his team. It's possible that the Mega Drive's battle to strike a chord with Japanese gamers could be largely down to the very same reason it would later prove such a hit in North America.

NEC released the PC Engine in Japan on 30 October 1987, almost a year earlier, to the day, than Sega would roll out the Mega Drive. This 12-month head start on the market, coupled with the fact that NEC was reportedly pumping almost $4 billion into R&D and that Japanese gamers were said to be thirsting for a 16-bit machine, gave NEC the perfect opportunity to capitalise on demand. By the time Sega was finally ready to launch the Mega Drive across Japan, the PC Engine had overtaken the Famicom to become the bestselling console in the country. NEC had captured almost a third of the market. Perhaps it was this realisation that saw Sega hurry the Mega Drive's US release a year later, the same time NEC was planning to make its assault in America armed with a re-skinned version of the PC Engine.

And so began a ferocious battle between marketing men and women, as both Sega and NEC fought to beleaguer Nintendo's hold over the North American videogames market. It was a battle that Sega would win thanks to a pair of aces up its sleeve. First, the Mega Drive – rebranded the Genesis in the US – was supported by a selection of launch titles – *Altered Beast* and *The Revenge Of Shinobi* – that found an instant appeal among young Western gamers, which is unsurprising; you need only look at the curious Western appearance of Joe Musashi in *Shinobi* or breathe in the Americana dripping from the exhaust of *OutRun*'s red Ferrari to see that Sega had always demonstrated a great proficiency in melding Eastern and Western cultural influences into its early arcade games. The other advantage Sega had was that it also had one hell of a marketing arm to drive the Mega Drive in the US – a team that was astonishingly apt at capturing the tastes and moods of the market.

Sega of America began as a distribution company, with hardware, software, and key decisions, such as the unpopular need for regional lockout in the Genesis, being made in Tokyo and filtered across to its Redwood City offices in California. Thanks to Nintendo's heretical

“A wave of EA titles began appearing at a rapid rate”

approach to business, and the stringent licensing agreements it imposed on software developers, the Japanese giant quickly built up a bit of bullish reputation in the West. This would prove beneficial to Sega. Under the guidance of Michael Katz, the then-president of Sega's US arm, the popularity of the Genesis gained momentum quickly as developers started seeing Sega's new machine as a viable and potentially profitable platform. Scot Bayliss, who joined Sega of America as a technical director in 1992, explains:

"At the time, Nintendo was notorious for having this insufferably arrogant attitude towards third-party publishers. To be fair, I question how much of that was by intent, but the perception of software makers here in North America and in Europe was that Nintendo was heavy handed, capricious and unfair in its treatment of the West. That single factor probably drove the creation of more good software on Sega's hardware than anything else. To third parties, we were the good partner and some of the most important titles in the West came to us first, exclusively or just better as a result. Later, Sony positioned themselves against both Sega and Nintendo as the first party who would step up to helping third-party publishers. They essentially replicated Sega's strategy of being the friendly face to developers – only they did it better. And the results spoke for themselves."

It's a well-known fact that Electronic Arts, through its popular range of sports titles, would prove instrumental in helping the Mega Drive secure an early success in the US. After it was discovered that EA had reverse engineered the Genesis hardware, a cocksure EA threatened to release unlicensed software on the platform unless a favourable licensing agreement could be met. Sega, possibly fearing the bad publicity this could throw up, baulked at the threat and Electronic Arts got its wish. The first wave of EA titles began appearing on the machine at a rapid rate, which was of course great news for a new console with a relatively small amount of software on its shelf. The sweet irony, of course, is that the speed at which EA was able to turn out its titles for the Mega Drive could only be attributed to Trip Hawkins reverse-engineering the Genesis in the first place. But, as Bayliss explains, EA wasn't the only company who worked out how to circumvent Sega's security measures and tried to use it to their benefit.

"There were quite a few third parties that figured out how to bypass the Mega Drive's security checks," he says. "Probably most notorious among these rogue publishers was Accolade. And, of course, Sega sued. And there was much wailing and gnashing of teeth. But the reality is that opening up the platform like that, while it certainly cut into Sega's direct licensing revenue, it may well have helped them hit critical mass far more quickly."

So what was the attraction of the Genesis from a development standpoint? And what was it that Trip Hawkins saw in the Mega Drive that persuaded him to bet so heavily on the hardware? We contacted the Electronic Arts founder to find out.

"The 8-bit systems weren't powerful enough and the 16-bit computers cost too much," says Hawkins. "The Mega Drive was the first affordable consumer product with an MC68000 processor. I was involved in one of the first commercial uses of that processor at Apple back in 1979 and after I founded EA we began working

The Sega Connection

We look at some of the Sega franchises that turned SNES owners green with envy

STREETS OF RAGE

After Nintendo had secured the licence for *Final Fight* for the Super Nintendo, Sega set to work on its own brawler. And while *Final Fight* clearly had the graphical edge over its scruffy rival, in terms of gameplay, depth of moves and enjoyment, *Streets Of Rage* knocked Capcom's game out cold. Sega quickly followed up its efforts with *Streets Of Rage II*, a game that ramped up the moves, the graphics, the bosses and the soundtrack of the original, and a third game that rounded off the trilogy brilliantly – although we advise you to get the Japanese version as it has a better story, skimpier outfits, better colour palettes and a difficulty level that wasn't set by a masochist.

SONIC THE HEDGEHOG

In terms of gameplay we don't think any sane person could argue with us that Sonic's adventures were better than Mario's – however, what those seminal *Sonic* games do they do flawlessly well. *Sonic The Hedgehog* ushered in a new dawn of platform game; an exhilarating dash-and-smash approach that wowed and dazzled like only the very best Sega games do. Following the game's success, Sonic Team quickly set to work on a sequel, and added a popular sidekick in Tails, a two-player mode and some nifty new moves to Sonic's action repertoire, producing what many consider the pinnacle of platformers on the Mega Drive.

SHINING FORCE

It was a close call between this and *Phantasy Star* but if we had to pick one definitive RPG series on the Mega Drive then the *Shining* series wins by a nose. As one of the earliest examples of the strategy RPG to come to Europe, *Shining Force* and its sequel introduced Mega Drive owners to a whole new way to enjoy the role-playing genre. Taking the tactical gameplay of chess and expanding it into a fantasy environment, with the story and character growth of a *Dungeons & Dragons* game, it mixed several pre-existing elements to make something fresh and interesting. That the series survives 18 years on is testament to its enduring appeal.

ECCO THE DOLPHIN

When poor old Ecco's pod is mysteriously sucked out of the ocean by a malevolent twister, it falls to the young bottlenose dolphin to uncover what has happened by solving puzzles and interrogating wise schools of fish. *Ecco The Dolphin* boasted some of the most impressive visuals ever seen on Sega's Mega Drive, but due to the fact that it wasn't your typical action/adventure game many would sadly pass *Ecco The Dolphin* off as a game for children simply because it featured a cute little dolphin on its box. But those who took the time to scratch at its glorious seabed would find one of the trickiest and most endearing games to find a release on the Mega Drive.

SHINOBI

Joe Musashi had quite a turbulent life on the Mega Drive. First, his wildly popular arcade game never got a Mega Drive release, his brilliant second adventure, *The Revenge Of Shinobi*, had to go though all sorts of revisions when it was released in the US because it had bosses who resembled Spider-Man, Batman, Godzilla, the Hulk and the Terminator, and finally, for the Mega Drive conversion of *Shadow Dancer* poor Joe was forced to replace his own son. Geez! At least Sega made it up to Joe in *Shinobi III: Return Of The Ninja Master*, which included amazing bosses, fantastic horseback and surfing sections and a greater emphasis on moves and combat.

> **“It was great for programming our EA Sports games”**

with it in 1982. Later the Mac, Amiga, and Atari ST used the MC68000, and so did coin-op arcade games. But all of that equipment was too costly for most consumers. Of course, the Mega Drive also had custom silicon to speed up the graphics and sound. It was a great sprite machine so it was good for programming our EA Sports games. We could use a little bit of 3D for the playing field and then have nicely scaling sprites for the players. It was also plug-and-play and had two joysticks. All of that made up for the limited RAM and lack of read-write storage.”

The Mega Drive offered consumers an affordable way to experience the type of games that were wowing Amiga and Atari ST owners at the time. And thanks to EA’s background in software development for home computers, games such as *The Immortal*, *Powermonger* and *Populous* began appearing on the Mega Drive, which would have undoubtedly ensured it wider appeal. It’s no coincidence that the Mega Drive was successful in North America and Europe, the two territories where the Amiga and Atari ST were also very popular. But not everyone was as convinced in the all-conquering potential of Sega’s 16-bit machine.

“After the Mega Drive debuted in Japan in 1988, I decided to have Electronic Arts bet heavily on it because it just made perfect sense to me,” remembers Hawkins. “But, to be fair, most of the industry and most of the world figured that when Nintendo finally deployed their 16-bit response they would again roll over and crush Sega in their sleep.”

In 1990, Tom Kalinske famously took over the presidential reins of Sega of America and built brilliantly on the promising foundations that Katz had laid down. But while the US climate couldn’t be rosier for Sega going into the Nineties, in the Land of the Rising Sun things couldn’t have been more different. A dormant leviathan was about to reawaken as Nintendo slovenly entered the 16-bit fray. Backed by two leading Japanese developers, Square and Konami, and with a machine that, it was said, would blow the competition out of the water, many felt the Mega Drive’s days were soon to be numbered. Expectantly, the Mega Drive was hit hard in Japan by the Super Famicom’s popularity, but thankfully for Sega, when the time came for Nintendo to release its machine in North America a year later, Sega had gained a considerable lead in the market, and by 1991 the success of the Mega Drive in America was sealed.

Starting out life with the name ‘Mr Needle Mouse’, a blue hedgehog, in keeping with Sega’s corporate colour, belied the most dazzling and slickest platform games ever created, capturing the hearts and minds of an entire generation of gamers. Sonic, as we would come to know him, would become a global superstar and a vital pawn for Sega in the ensuing console war. Despite initial reservations by Sega’s American execs – apparently many of them didn’t even know what a hedgehog was – the impact that Sonic the Hedgehog would have on the fortunes of the Mega Drive was unprecedented. Not only did Sonic give a face to Sega in the same way that Mario had given one to Nintendo, but the Blue Blur also stirred imaginations and creativity among developers, and caused many to sit up and take notice of what the Mega Drive was capable of. Shiny Entertainment founder David Perry recalls the first time he ever saw Sonic dart through

Readers’ Comments Favourite Mega Drive Moment

Zerocool
All hell breaking loose on Level 3 of *Strider*, and changing into a werewolf for the first time in *Altered Beast*.

Mike Haggar
Booting up *Sonic* for the first time and hearing ‘Seeee-gaaa’.

DPrinny
Playing Master System games on it. Or seeing it getting all its holes filled with useless add-ons and things. It was like some strange kinda orgy.

Havantgottaclue
Buying one in Gamestation in Poole about three years ago and kick-starting my retro-console-collecting fetish.

Lorfarius
The awesome moment while playing *Altered Beast* when you first realise you can change into the werewolf.

psj3809
Beating my best mate on *John Madden Football*! It was the last play of the game, I just threw the ball up and hoped for a bit of luck and somehow my player caught it to win the game on the final play!

Tepid Snake
The Mega Drive is also directly responsible for getting me back into retro gaming – after we sold our first one, I got lucky and found another Asian Mega Drive at a boot fair for £15, and I’ve been getting the collection back ever since…

Rabiteman
The thrill ride that was *Gunstar Heroes*’ Seven Force boss.

djcarlos
The first time I summoned the police car in *Streets Of Rage*… mwahahahahahahaha.

timewarpgamer
Plugging the ugly 32X on top of my model one Genesis (in addition to the original Mega-CD expansion), and enjoying *Space Harrier*, *Virtual Racing* and *NBA Jam* for the first time at home. The 32X may have sucked overall, but those titles rocked my console world back then. And they still do.

The Disney Connection

Sega invested a lot to secure big videogame licences, one of which was Disney...

CASTLE OF ILLUSION

With Mario leading the charge for Nintendo, it was obvious that Sega was going to need a pretty big platform star to pull in the kids; and who bigger than Mickey Mouse? The first in a series of surprisingly brilliant Disney-licensed games to appear on the Mega Drive, *Castle Of Illusion* was a sugary platformer with jaw-dropping cartoon graphics and slick animation. It proved an early warning shot to the commercial pull and technical prowess of Sega's machine.

QUACKSHOT

Another Disney classic, this time starring Donald. With an *Indy* theme, *Quackshot* wasn't your typical platformer. While its gameplay still involved lots of running and jumping, progression through the game's stages rested on Donald finding the correct items and using them in the right instances. While it might not sound that impressive today, back then it marked a succinct change to the usual style of action/platformers and led to *Quackshot* getting some pretty high review scores.

FANTASIA

Released to tie in with the operatic Disney feature of the same name, *Fantasia* took one scene from the movie and built a game around it. While it looks great, its visual slickness belies cumbersome gameplay and irksome combat – issues that is are said to have arisen from the game being rushed. It's a shame because it could have made for a fabulous quartet of Mega Drive appearances for Mickey. 'Quartet?' you cry. Lest we forget *Mickey Mania*?

WORLD OF ILLUSION

The natural conclusion for the early wave of Disney-licensed games found Mickey and Donald teaming up in a colourful platformer. As the name suggests, *World Of Illusion* is the sequel to *Castle Of Illusion*, and the gameplay is very similar. The main difference is that *World Of Illusion* is essentially three games in one. You can play out Mickey's adventure, Donald's, or a co-op mission. But it's not a lengthy affair; like all these Disney games, their simplicity and short length let them down.

the Day-Glo delights of the Green Hill Zone, a moment he would never forget.

"When I saw *Sonic*... I really didn't know how the *heck* Yuji Naka managed to get so much out of the hardware," says Perry. "Who is this guy? It was as fantastic as it was a real kick in the pants. From that point on, we started to think a lot bigger."

The success of *Sonic The Hedgehog*, coupled with the popularity of EA's highly successful sports series and throwing millions of dollars at high-profile endorsements, was enough to see Sega become the 16-bit victor, and by 1992 the company had grown its market share from eight per cent to an astonishing 55 per cent. It had finally toppled Nintendo, taken control of the market and achieved its lofty goal. It was a truly momentous time.

"In retrospect it seemed a little surprising to the folks in the trenches," admits Bayliss. "One day I saw this email from Tom Kalinske announcing a celebration and I was like, 'Huh? We won? When did that happen?' We were so heads down, fighting the fight, we literally didn't notice."

And how did Sega celebrate the auspicious occasion?

"There was this all-hands company meeting – they had to do it in the parking lot," remembers Bayliss. "We were still in the Shoreway building in Redwood City at the time and there just wasn't enough room indoors. There was a little speechifying and they handed out varsity jackets and watches with Sonic emblazoned on them. Very cool swag. Believe it or not, I still have both."

But Bayliss also reveals that the real impact of that moment actually happened afterwards.

"There was this mood of near zealotry in the company," he says. "Nintendo had been the big dog for a while and we were the scrappy upstarts – well at least we thought of ourselves that way. When we overtook Nintendo of America it kind of kicked us into high gear. For two years, it seemed like we would stop at nothing to put the boot into the Nintendo gang whenever we could. I even remember the original copy for those Mega-CD ads they ran in the 25th anniversary edition of *Rolling Stone*, which specifically took a shot at Nintendo. It was the company jihad."

Nintendo's entrance into the 16-bit market generated the most passionate and high-profile console war ever seen. From boardrooms to playgrounds, the SNES versus Mega Drive conflict, which actually proved mutually beneficial for both parties, became a global maelstrom. It was an exciting time to be playing videogames and just as exciting a period to be making them. The 16-bit era marked a period that saw many precedents set in the industry as the extra power that Sega's Mega Drive and Nintendo's SNES brought to the table spurred many developers to experiment and attempt to push envelopes even further.

"SNES versus Mega Drive became a global maelstrom"

Paul Davies

Ex-editor of Emap's Computer & Video Games

Can you recall the first time you ever saw a Mega Drive running, and what was your first impression of the video game machine?

Me and a mate went halves on an import Japanese Mega Drive in 1989. We had no idea what it was capable of other than seeing a couple of screenshots in a *Mean Machines* guide to consoles. We bought it with *Altered Beast* and *Ghouls 'N Ghosts*. We played them both to death! *Ghouls 'N Ghosts* became an obsession. The first game I ever played until 4am without realising what had happened!

What is your all-time favourite Mega Drive game and why?

Ghouls 'N Ghosts, because it was so tough but full of great special effects and lots of detail to reward playing through it over, and over, and over...

What is your favourite Sega series and why?

This has to be *Virtua Fighter*. It has such authority now thanks to its flawless history and, despite being spectacular, is also quite graceful in a Zen sort of way. I admire its precision and fluidity. On the Mega Drive? I really enjoyed the *Shining Force* franchise because you could see the game's heroes upgrade their armour and weapons.

Which game do you feel best took advantage of Sega's machine and why did it do so?

Gunstar Heroes, without a doubt – almost my favourite game of all time. It was the first, and probably only, game to outperform the Super Nintendo with rotating sprites and a ton of colourful characters on screen. One particular boss – the Seven Force – morphed into amazing forms that included a robot panther thing and a giant automatic pistol.

Why do you think the Mega Drive has remained as popular as it has with gamers around the world?

Almost every new game brought a new idea, especially those games from Treasure, such as *Dynamite Headdy* and so on. Sega produced some great role-playing games, there were also some awesome shoot-'em-ups such as *Hellfire*, *Zero Wing* and *Bio Hazard Battle* (aka *Crying*). It represents an era when Sega was at its most bold and experimental – some of the Mega-CD games were very ambitious if not always pretty (games like *Sewer Shark*).

What is your best memory of the Mega Drive?

Taking turns at getting through the shoot-'em-ups with my mates back home. Treating each new game as a real challenge and playing them right to the end without using continues. We even played *Moonwalker* like that. The Mega Drive was my training ground.

Richard Leadbetter

Ex-Editor of Emap's Mean Machines Sega

Can you recall the first time you ever saw a Mega Drive running, and what was your impression of the machine?
Yes, the first time I saw the Mega Drive, I was being interviewed for a position on *C&VG* by Julian Rignall. That would've been June 1990. Up until that point, I'd been strictly a C64/Amiga man, and had been put off the consoles after I saw how poor my favourite coin-ops – *OutRun* and *After Burner* – were on the Master System. The first games I saw in EMAP's dingy games room were *Golden Axe* and *After Burner*. Both were still some way off arcade perfect, but both were a clear leap ahead of the conversions I was playing on the Amiga. I think it was when I saw *Super Shinobi – Revenge Of Shinobi* in the West – that I realised that we were looking at a truly phenomenal machine.

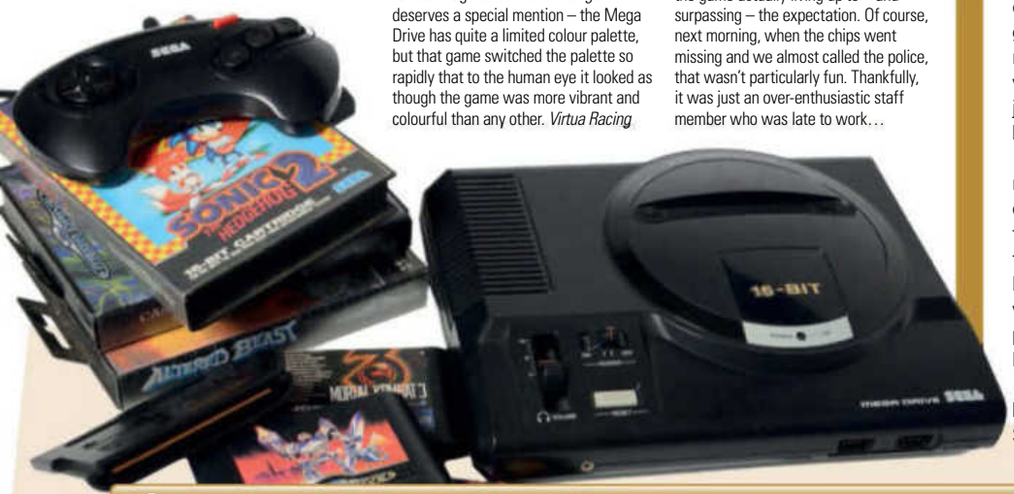
What is your all-time favourite Mega Drive game and why?
Treasure's *Gunstar Heroes* is probably my favourite. It oozes playability and is technically unbelievable, but more Treasure at its height, almost exploding with pure creativity. *Dynamite Headdy* is another solid-gold classic almost as good as *Gunstar Heroes*.

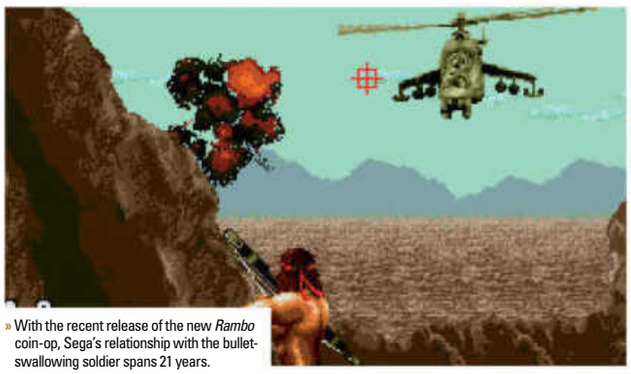
What is your favourite Sega series and why?
The problem with all the Sega series, certainly on Mega Drive, comes down to the fact that pretty much all of them declined, sometimes rapidly. *Sonic 3* wasn't a patch on its predecessor, or indeed, *Sonic CD*. In fact, even today, the franchise is now a bit of a joke. *Streets Of Rage* is another series that disappointed badly after the brilliant second game. Even *Ecco The Dolphin* had *Ecco Jr.*.

Which game do you feel best took advantage of the machine and why?
Treasure and Konami really pushed the hardware with games like *Castlevania, Contra/Probotector, Gunstar Heroes, Dynamite Headdy* and *Alien Soldier*. These games were massively more advanced than their equivalents earlier on in the console's life cycle. Outside of Japanese releases, the *Vectorman* titles were also quite, quite awesome, and while the gameplay wasn't exactly top-notch, the Dave Perry games like *Terminator, Cool Spot, Global Gladiators* and the likes were also great showcases for the Mega Drive. I think *Ranger X* deserves a special mention – the Mega Drive has quite a limited colour palette, but that game switched the palette so rapidly that to the human eye it looked as though the game was more vibrant and colourful than any other. *Virtua Racing* also deserves a special mention, of course: the only Mega Drive title to run with custom hardware inside the cart. Compare and contrast with the Super Nintendo, where tons of the games were boosted with custom chips as a matter of course.

Why do you think it has remained so popular with gamers?
I'd say that there are a couple of reasons behind this. We saw Sega at its creative high points during the 2D era, and the games still stand up pretty well today – which is how Sega can get away with emulated *Sonic* and *Streets Of Rage* games on Xbox Live Arcade. But there was also the fact that the console was such a huge sales success. It brought about a volume of titles that ensured that everyone had a favourite, or a nostalgic game experience they can still relate to.

What is your best memory of the machine?
I think it must have been when Sega sent over a *Sonic 2* cartridge to the *Mean Machines* office. The way things worked back then you'd get sent a whole bunch of flashed ROMs you'd need to stick into a cart-shaped motherboard that slotted into the console. The anticipation back then was immense, and it was superb to see the game actually living up to – and surpassing – the expectation. Of course, next morning, when the chips went missing and we almost called the police, that wasn't particularly fun. Thankfully, it was just an over-enthusiastic staff member who was late to work…





» With the recent release of the new *Rambo* coin-op, Sega's relationship with the bullet-swallowing soldier spans 21 years.

"We had some fun times," recalls Perry. "Like *Terminator* was probably one of the first photoreal games, meaning it's actually us – the developers – photographed, scanned and used in the animations. And *Global Gladiators* was probably one of the first Mega Drive games with 'real' sampled musical instruments. It took a lot of memory and most developers wouldn't give the audio guy that much space. But it was Tommy Tallarico and he was keen to push the limits, so I gave him the space and he just went crazy. I think he got an award for that."

The early Nineties marked such a great time to be a gamer. It was a period where everything felt bold, new and exciting. The great 16-bit console war between Nintendo and Sega had brought gamers together and pushed videogames further into the public eye. From *Sonic 2* to *Super Mario World*, *Street Fighter II* to Sega's gore-ticking port of *Mortal Kombat*, with every new high-profile release the continual tipping of the scales was almost tangible. It was a fertile and memorable time, with everybody from gamers to journalists to developers staunchly picking a side to see how the battle would play out.

"Generally you were on one side of the fence or the other," remembers Perry. "The machines were similar, but with enough differences to divide programmers into two camps. I was one of the early developers on the Mega Drive, I got the original badly translated manuals from Japan and quickly fell in love with the hardware. This was one of the last series of machines where you were responsible for everything going on inside the machine. We programmed 100 per cent assembly language and pushed it to its limit. That was *fun*!"

And apart from the obvious early licensing deal that was struck between Sega and EA, what else drew Trip Hawkins to side with Sega and the Mega Drive?

The Capcom Connection

Some of Capcom's best-loved arcade conversions on the Mega Drive

STRIDER

Strider is by far one of the most popular arcade conversions to ever appear on the Mega Drive, and at a colossal 8MB, it was also one of the largest earlier Sega carts, too. As a result, the acrobatic wall-affixing Strider Hiryu helped shift plenty of Mega Drive units for Sega on its release. Sadly, though, US Gold's Mega Drive sequel, *Strider Returns*, failed to live up the brilliance of its predecessor – although it hasn't affected Darran's worrying love for the ninja.

GHOULS 'N GHOSTS

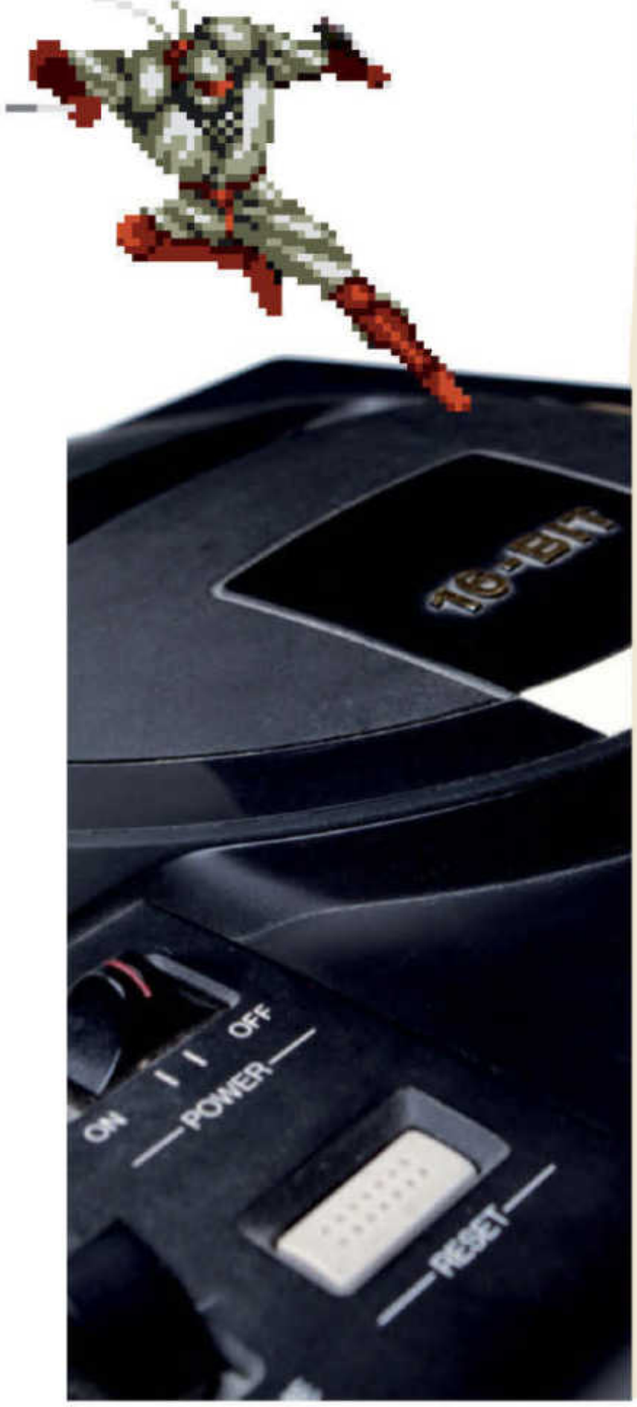
For a time *Ghouls 'N Ghosts* stood as the quintessential platform game for Sega's machine – not surprising when you consider it was programmed by Yuji Naka; the programming talent behind *Sonic The Hedgehog*. While the game is terribly unforgiving, Naka did at least do Mega Drive owners the courtesy of making this version easier than Capcom's devilish arcade game. *Ghouls 'N Ghosts* is a solid conversion of the classic coin-op, and a must for any Mega Drive collection.

FORGOTTEN WORLDS

Forgotten Worlds forms the final game in Capcom's *Jetpac Hero* series; a trio of games which also include *Section-Z* and *Side Arms Hyper Dyne*. Beginning life in the arcades, *Forgotten Worlds* found two nameless musclemen fighting an evil alien race. Armed with bad dialogue and a cannon that could be spun 360 degrees, our heroes were tasked with slaying gargantuan bosses against a thumping rock soundtrack. The Mega Drive is home to the best conversion, too.

MERCS

The sequel to Capcom's run-'n'-gun classic *Commando* was a curious conversion. With multiplayer annoyingly ousted, Sega decided to gear the game around the single-player experience and stop the potential street riots by including two versions of the game. The first is a straightforward port of the arcade game, while the all-new brilliant Original mode had the player fighting through seven new stages and freeing Mercs, which then became playable. Good one, Sega!



The Treasure Connection

Wowing gamers, Treasure created some of the best games on the Mega Drive

GUNSTAR HEROES

Few companies have debuted with a game as spectacular as *Gunstar Heroes*. Made up of disgruntled Konami employees, Treasure's first game set an impossibly high standard of innovative gameplay and astonishing visuals that became a standard for the company for years to come. Mixing the hardcore blasting of the *Contra* series with a wicked dose of humour, *Gunstar Heroes* is a frantic, rollercoaster ride of a game that stills plays brilliantly today. Little wonder then that it had a compilation named after it in Japan.

MCDONALD'S TREASURE LAND ADVENTURE

Trust Treasure to take a licence based on a burger chain and actually turn it into a bloody good game. While it lacks the depth of other Treasure titles, *McDonald's Treasure Land Adventure* is still head and shoulders above similar licences and proves that it's possible to make a great game out of anything. Yes, it's rather bland for a Treasure game, but it remains a beautiful-looking title that definitely deserves more recognition. Just don't confuse it with *Mick & Mack: Global Gladiators*.

DYNAMITE HEADDY

If *McDonald's Treasure Land Adventure* showed us the business side of Treasure, then this utterly nutty platformer released a year later proved that its surreal sense of humour was still well and truly intact. With its gaudy visuals, huge bosses and hardcore action, *Dynamite Headdy* was a return to the Treasure that had made its name with *Gunstar Heroes* and delivered an unforgettable protagonist who had a different head for seemingly any occasion. Why he's never appeared in a sequel we'll never know.

ALIEN SOLDIER

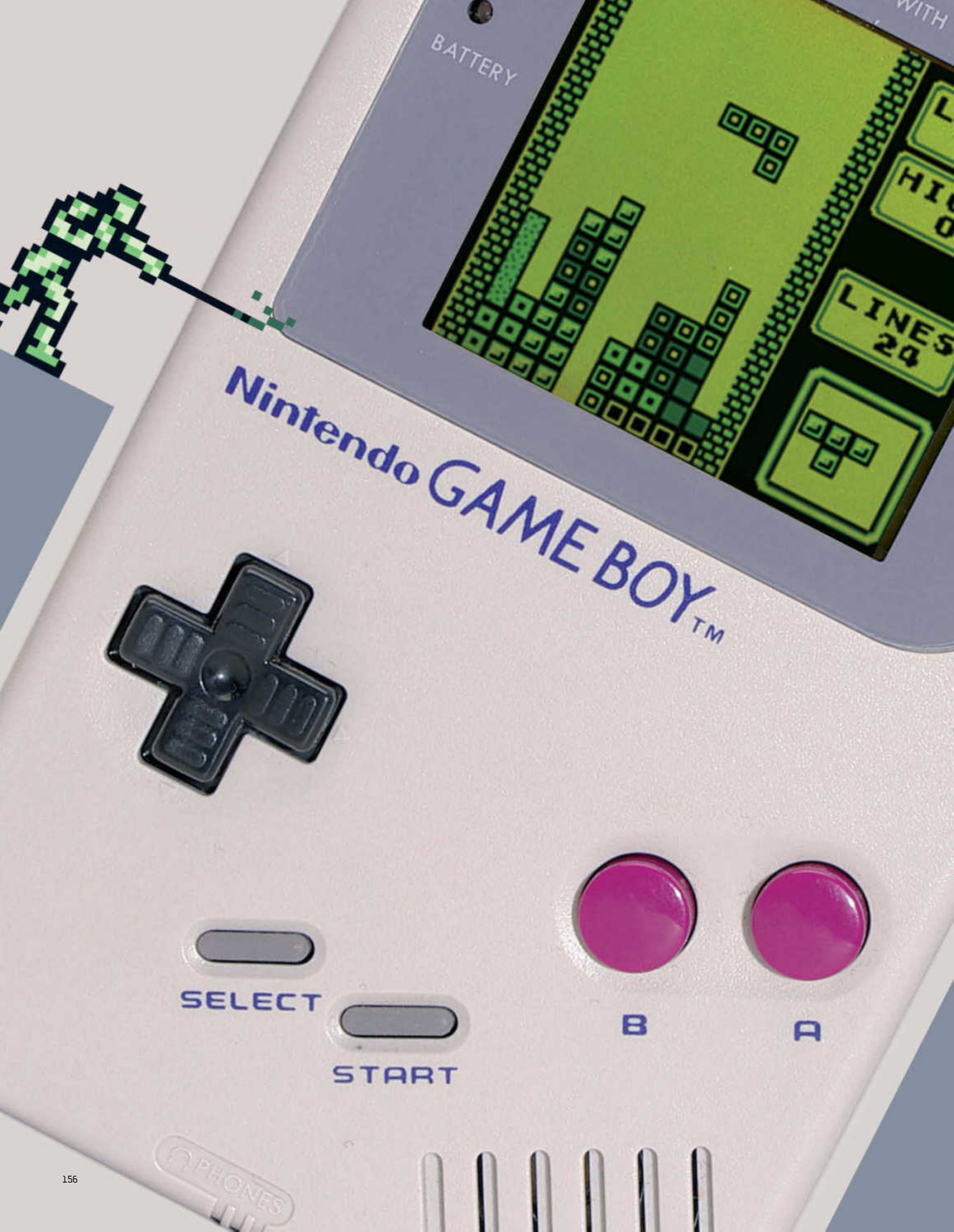
As well as being noted for their amazing aesthetics and exceedingly clever gameplay, many Treasure games have also made a name for themselves due to their insane toughness. *Alien Soldier* is no different and we're ashamed to admit that even now, well over a decade after its original release, we've never completed it on a single credit. Effectively little more than a boss rush – a format Treasure is rather fond of – *Alien Soldier* remains one of the company's most challenging games. We still love it, though.

"I think everyone knows by now that we had a better deal with Sega, but EA put plenty of games on the SNES," he says. "The reality is that Sega got to market much earlier and they had a better machine. Nintendo lost time because they were trying to make the SNES backwards compatible. This resulted in the poor choice of the 65010 processor that could run the 6502 instruction set. But they never got it to work. What you ended up with was a slower machine with baggage that it was lugging around that had no purpose. The SNES did have more colours but it animated too slowly, so who cared about the extra colours?"

Selling an astonishing 30 million units, the Mega Drive was the most important console Sega released in its 20-plus years in the videogame hardware market. It marks a period of dizzying and magnificent heights that the company would never quite reach again. But while the Mega Drive can be attributed to Sega's successes, it can also be entwined in the company's protracted departure from the hardware market. When Sega looked to extend the life of the Mega Drive with two life-support add-ons – the Mega-CD and 32X – it would prove a damaging and costly misstep for the company. While the add-ons brought with them some fantastic and ambitious titles, such as the astonishing delights of *Sonic CD*, *Sylpheed*, *Jurassic Park*, *Star Wars Arcade* and *Virtua Racing Deluxe*, the quantity of must-have games just wasn't there – and in the case of the 32X, almost nonexistent. Many of the games that appeared on the Mega-CD were spruced up carryovers from the Mega Drive as developers hurried to get games to the platform quickly, and the public was quick to realise. This would have a seriously damaging effect on Sega's strong corporate image and also lead to a loss of confidence among the loyal customer base the Mega Drive had built up for Sega.

"Companies feel like they have to try to extend the life of a great brand with these kinds of gimmicks," explains Hawkins. "The Mega Drive had only 128KB of RAM. Realistically, the Mega Drive could not pretend to be 32-bit when there was nothing 32-bit about it. And it could not rationally use CD storage without much more memory and a completely different architecture."

With the recently released *Mega Drive Ultimate Collection* proving so popular in early 2009, it's clear that the Mega Drive has kept its fair share of fans and followers after Sega eventually pulled the plug on the console. And with a dedicated community across the web, and the impressive quality of homebrew efforts such as *Beggar Prince* and *Pier Solar* reminding us of how accessible a platform the Mega Drive is to program for, it looks like Sega's 16-bit saviour will continue to remain in our minds for many more generations and console wars to come.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During the early-Nineties, portable gaming was dominated by an unassuming monochrome console. **Damien McFerran** fires up his copy of Tetris and attempts to uncover the story behind one of Nintendo's most significant hardware releases

GAME BOY

The origins of this seminal console can be traced back to one of Nintendo's early portable success stories – the Game & Watch range. Created by assembly-line engineer turned design guru Gunpei Yokoi and his highly talented team at Nintendo Research and Development 1, the pioneering line of LCD handheld games showcased basic technology but utilised it in innovative ways, ensuring mass appeal and gaining its manufacturer mountains of cash in the process. Yokoi concocted the idea of 'Lateral Thinking of Withered Technology', a design philosophy that focused on using inexpensive and familiar components in new and interesting ways. This model carried through to Yokoi's next project, which made the success enjoyed by the Game & Watch franchise look almost inconsequential by comparison.

By the time the Eighties were drawing to a close, Nintendo's standing in the videogame industry was impressive. The NES had single-handedly saved the world console market from extinction following the cataclysmic crash of 1983, and the aforementioned Game & Watch range was still shifting a highly respectable number of units. However, Yokoi knew that the technology behind these LCD games was beginning to look out-of-date when placed alongside the experiences offered by the NES and other 8-bit home computers, and so he began his quest to create a successor. As was the case with the Game & Watch, this new machine wouldn't use revolutionary features to get itself noticed. Yokoi's design beliefs were too strong: he knew that if he attempted to create a console that was at the cutting edge of technology, it would be expensive and therefore lack mass-market appeal. Instead he looked at building a device that was economical to manufacture and perfectly suited for its purpose, that of mobility.

This new console was shown in prototype form in 1987 and later demoed at various trade shows. The effect it had on the development community was electrifying. "It was really pretty amazing and exactly what we needed," says Rare's Paul Machacek, who coded the fantastic Game Boy title *Donkey Kong Land*, and still works within the firm as a program manager. "We had expectations about a handheld gaming system when Rare founder Tim Stamper went to Consumer Electronics Show in the US, but he returned with news about a completely different handheld gaming system. This was in the days before the internet and you couldn't just pick up the latest photos and news from the show floor on websites like today. I can't remember whether we had to wait for a monthly magazine or got something shipped from Japan, but the first time I saw a Game Boy I just thought it looked like a little arcade cabinet in your pocket."

This new machine inherited one vitally important design aspect from its ancestor the Game & Watch – an 8-way

COMMUNITY GAME BOY SITES TO WATCH

Euro-Asia Game Boy

http://www.eagb.net/gameboy/index.html

Although sadly no longer updated, this site is well worth a look if you're after reviews and news relating to both the original Game Boy and its colour sibling. Staffed by Game Boy fans from all over the globe, it offers a truly international perspective on Nintendo's beloved handheld.

LittleSoundDJ Workshop

http://www.gieskes.nl/lsdj/

This is an ingenious homebrew music application that turns your humble 'breeze block' handheld into a fully fledged sound studio. Developed by the super-talented Johan Kotlinski in 2000, it's still being worked on now and also functions on the Game Boy Color and Game Boy Advance.

Nintendo Life

www.nintendolife.com

Although it's not strictly focused on the Game Boy itself, this is an excellent one-stop resource for all things Nintendo, including some excellent retro-themed features relating to the company's past exploits. The site's retro section is expanding too, so expect more stuff in the future.

World of Game Boy

http://www.world-of-video-games.com/gb/game_boy.shtml

Again, this is another fan site that hasn't been updated in a while but it's handy if you're after some Game Boy-related information. There's a section that showcases game endings and also some neat tips and tricks if you happen to be hopelessly stuck on a particular game.

INFORMATION

Year released: 1989

Original price: £69.99/ $112

Buy it now for: £15/ $25

Associated magazines: *GB Action, C&VG Go! supplement, Mean Machines, Nintendo Magazine System*

Why the Game Boy was great… It offered true portability in an era when manufacturers were seemingly falling over themselves to produce battery-hungry behemoths that required you to carry a power supply with you at all times. With excellent support from practically every software publisher on the face of the planet, the Game Boy effortlessly overcame its monochrome shortcomings to become one of the most successful pieces of videogame hardware the world has ever seen

digital pad, or 'D-pad' as it's more commonly known. We take this interface for granted now, but it was Yokoi and his team at Research & Development 1 that expanded upon the concept. Sensing that joysticks would impinge on a handheld's essential portable nature, Yokoi conceived the D-pad – a flat controller that would not protrude from the casing of any handheld to which it was attached. The concept also found its way on to the NES, where it was equally successful. The NES in turn influenced several other aspects of the Game Boy interface – the familiar A- and B-buttons were present, along with the Select and Start buttons. And this shared control method was beneficial in two ways: first it allowed NES owners – and trust us, there were plenty of them – to effortlessly pick up the play this shiny new portable, and second it also made it easy to port popular NES franchises to the machine.

As the Japanese release date approached, Nintendo confessed that it had high hopes for the device. President Hiroshi Yamauchi confidently predicted that it would sell over 25 million in the first three years – a bold claim, for the time. A few people might have scoffed at such optimism, but when the machine effortlessly sold 300,000 units in its first day on sale in Japan in 1989, such scepticism seemed foolishly misplaced. It was painfully obvious that Nintendo – and Yokoi – had struck gold once again.

> "Battery life helped the Game Boy to win the war"

Software played a massive role in this victory, and no game is more significant in shaping the Game Boy's history than the ultra-addictive puzzle title *Tetris*, created by Russian programmer Alexei Pajitnov. Although this legendary game was already widely available on PC at the time, its appearance on the Game Boy is arguably the reason it is remembered so fondly today. Former CEO for Nintendo of America Minoru Arakawa witnessed a demonstration of the puzzler at a trade show in 1988 and moved quickly to ensure *Tetris* became the Game Boy's first killer app. It was included as a pack-in title in every region except Japan and became instrumental in cementing the console's reputation as a must-have gadget in America, where the initial shipment of 1 million consoles sold out within a matter of weeks.

As was the case with the Game & Watch, the Game Boy made use of LCD technology, but instead of static images, it boasted a dot-matrix screen and could therefore display 160x144 individual pixels. It was monochrome, lacked lighting and could only display four different shades of grey, but it is without a shadow of a doubt one of the main reasons that the console was such an enormous success. It meant the machine was incredibly energy efficient by the standards of the time, and although it's rumoured that several of Nintendo's executives put pressure on Yokoi to adopt a more visually impressive colour screen, his approach was ultimately vindicated when rival manufacturers released their full-colour, backlit portable machines on to the market shortly after Nintendo's handheld launched. Their dismal battery life definitely helped the Game Boy win the war. "Kids hate replacing batteries. It requires having to ask your parents for something," chuckles Dylan Cuthbert, former Argonaut Games employee and managing director of Q-Games. "The longer a machine can run, the more people enjoy themselves and want to play more games on it."

However, while it was easy on power consumption, the Game Boy's simple screen wasn't adored by everyone and even at the time there were rumblings of discontent over its blurriness. Fast-moving objects were incredibly hard to see, which made some games difficult to play. "You didn't want lots of the screen to have a lot of detail that was moving continuously," explains Rare's Chris Sutherland. "It meant keeping the backgrounds plainer or ensuring there were pauses in the scrolling. Objects like bullets had to be made larger or with significant outlines so that players could more easily spot them." This problem was aggravated by the fact that the screen functioned best when viewed in direct light. To tackle this problem, a wide variety of bolt-on peripherals were developed that not only added light sources but also magnified the display. The usefulness of such devices was questionable at best: when installed they rendered the Game Boy distinctly unportable.

More software followed, with early hits such as *Super Mario Land*, *Baseball*, *Castlevania II: Belmont's Revenge* and *Contra* helping to maintain interest in the console. As had been the case with the 8-bit NES, the Game Boy enjoyed a superlative degree of third-party support with all the big names in the industry backing the console with their software. Konami, Square, Capcom, Irem and Hudson – not to mention plenty of other publishers and developers – all pledged their support for Nintendo. This resulted in an avalanche of software and made it very hard for such rivals as Atari and Sega to gain a foothold, despite their more technically powerful Lynx and Game Gear hardware.

As the years rolled by, the Game Boy's popularity remained buoyant while opposing handhelds fell by the wayside. This

» With the Game Boy, you could now play your games anywhere, alone or with friends.

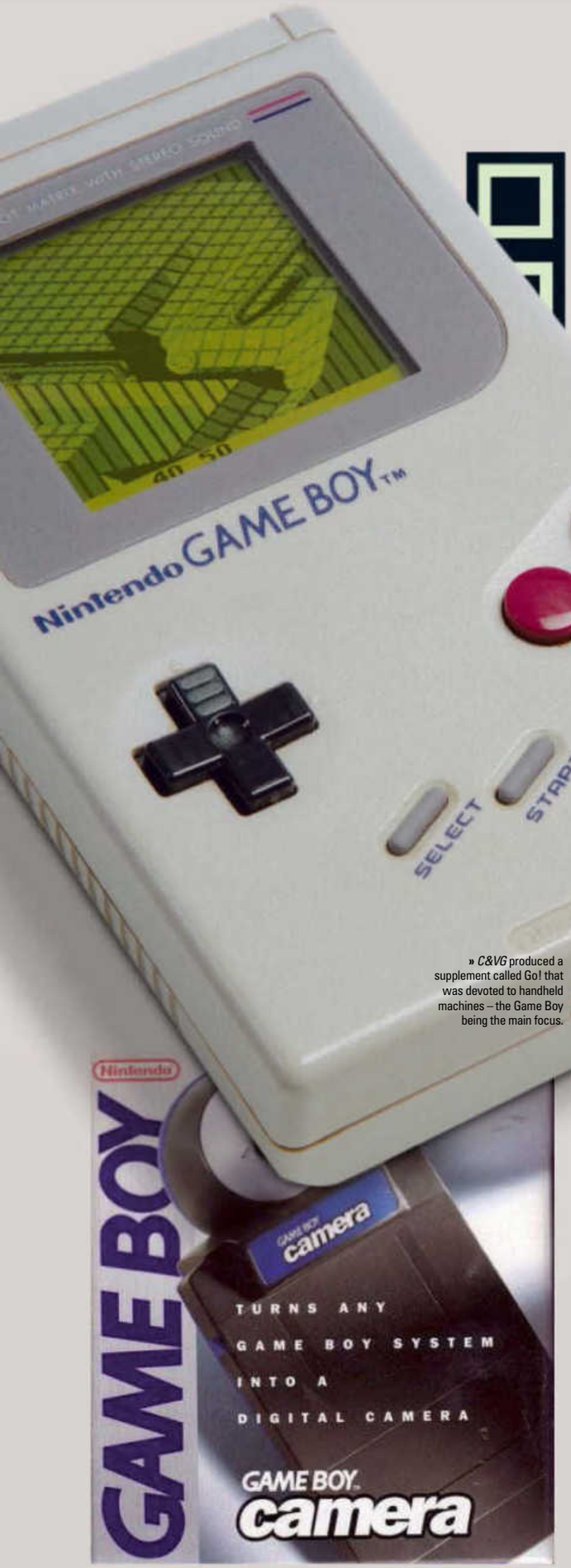
» An advert for Irem's Game Boy conversions of *R-Type* and *Kung Fu Master.*

success was no doubt assisted by quality games such as *The Legend Of Zelda: Link's Awakening*, *Super Mario Land II*, *Donkey Kong Land* and *Metroid II: Return Of Samus*. However, it was the Japanese release of the first *Pokémon* title in 1996 that catapulted the Game Boy into uncharted realms of commercial triumph. Sadly, this second wind was something of a double-edged sword for the monochrome marvel. It resulted in Nintendo looking into successors for the ageing hardware – albeit without the help of Yokoi who left the firm in disgrace after the failure of the Virtual Boy and later met a tragic end in a road traffic accident – and the first baby steps were made with the Game Boy Pocket in the same year that *Pokémon* made its Japanese debut.

Essentially a scaled-down version of the machine that boasted a sharper screen and ran on two AAA batteries, the Game Boy Pocket revitalised hardware sales and represented a much-needed aesthetic update to kept the console relevant in the increasingly fashion-conscious PlayStation era. However, another upgrade wasn't far off and this time Nintendo enhanced the concept far more convincingly – the Game Boy Color delivered the bright and attractive visuals that fans had been clamouring for since the early-Nineties and although the machine was based heavily on the existing Game Boy tech (in fact it was backwards compatible with existing black-and-white software), it essentially spelled the end for the original 'breeze block' version of the machine. As the Color variant gained popularity, over 50 million of its monochrome siblings were relegated to the back of drawers and cupboards the world over.

Given the massive popularity of the Game Boy, finding programmers with experience in creating software for the machine is like shooting ducks in a barrel. "I first encountered the Game Boy the first day I started working at Rare back in mid-1989, and it hadn't even been released then, so it was definitely a surprise," recalls Sutherland. "Although the original looks a bit bulky nowadays, back then it seemed impressively compact."

However, in those early days, coding for the Game Boy wasn't exactly a walk in the park. "Part of the challenge in developing for Game Boy was that there was limited documentation; it was usually some very basic hardware information that was translated from the Japanese," continues Sutherland. Thankfully the CPU that powered the portable was at least known to programmers. "At the Game Boy's heart was a castrated Z80 – a CPU I was very familiar with from the Spectrum and Amstrad CPC," explains Jon Ritman, the legendary coder behind *Head Over Heels* and the superlative *Monster Max* on Game Boy. "They had taken out a few useful features such as the 16-bit instructions and they had also removed most of the registers. The memory was paged in and out to give you access to a lot of memory – far more than a Spectrum could address. However, it was great that it had far more memory than I was used to."



» The camera add-on enabled you to take grainy monochrome pictures.

» *C&VG* produced a supplement called Go! that was devoted to handheld machines – the Game Boy being the main focus.

Explaining the inner workings of any games machine in layman's terms is tricky, but Rare's Machacek is happy to run through the basics. "It boasted very simple screen architecture with a single character-mapped screen that you could scroll," he says. "A small bank of characters for background, a similar-sized bank for sprites and a third similar-sized bank shared between background and sprites. We were always fighting with that one because it was a juggling act between optimising the background enough to free up space to include the sprites you needed. Just to get this juggling in perspective, if each unique character available in both of those banks for the backgrounds were only displayed once on screen, you'd only fill a quarter of the visible screen space. Just like the NES, you really had to use a lot of repeated characters to fill the background. If you were doing a long scrolling level with lots of unique scenery then massive amounts of downloading to the banks had to take place."

Many programmers found that working on the Game Boy was preferable to coding for other popular platforms, including its domestic brother, the NES. "I learned to program on a 6502 processor system, rapidly switching to Z80 ones before joining Rare in 1988," remembers Machacek. "Working initially on the NES brought me back to 6502, but the Game Boy allowed me to return to Z80, which I preferred. In some ways the Game Boy seemed a step up from other systems I had used – the Amstrad CPC 464 had no sprites and the ZX Spectrum, which I love to bits, had attribute problems. Aside from the lack of colour, it was a very similar format to the NES that we were already working with."

In fact, the machine's four-shade greyscale screen was seen as a bonus by some programmers. "I had been making games for the Spectrum that were using the screen as just two colours, so monochrome didn't phase me at all," comments Ritman. "Four shades was heaven for me; it was two more than I had been using on the Spectrum." Over time, various tricks were developed in order to work around the display's shortcomings. "We were very clear that sprites needed to stand out clearly from backgrounds, and the backgrounds would blur a bit when you scrolled quickly due to the lag on the display," says Machacek. "Efforts were made to give important sprites like the player character strong outlines to help delineate them from the rest, though."

On the audio side of things, the Game Boy offered an additional challenge for coders. "The sound chip was interesting," comments Cuthbert. "It had a 'user wave table' of something daft like 20 entries, each of which was 4-bit, so if you could refresh it quick enough it could play sampled sounds, albeit very lo-res. It also had a more regular FM-style chip and a noise generator."

Getting the most out of this humble setup was, by no means, an easy task. In fact, it proved to be quite the contrary. "The engineers at Rare dabbled with the basic sound effects that our own wave-based audio system could supply," recalls Machacek. "Most of the engineers at Rare didn't understand it that well, I think Mark Betteridge was the only one of us who really knew how to get the sound he wanted. Later we did incorporate some sound sampling into some titles and were able to play back low-quality sampled audio for specific purposes."

INSTANT EXPERT

The Game Boy isn't actually the first machine to use interchangeable game cartridges – Milton Bradley's Microvision, released a decade before in 1979, has that honour.

The Game Boy version of *Tetris* has shifted an astonishing 33 million units worldwide – although this includes all copies bundled with the machine itself.

The link cable allows simultaneous multiplayer gaming, but it had other uses. For example, *Pokémon* used the cable to exchange data between game packs.

Over 450 million Game Boy games have been sold during its lifespan.

Although the Game Boy has a reputation for being a system aimed at younger gamers, Nintendo's early strategy was to target older users, and the first adverts reflected this stance.

Nintendo developed an accessory called the 'Work Boy', which featured a mini keyboard and a cartridge that held programs such as a calendar, measurement conversion tool and a phone book. It was never released.

The four AA batteries required by the Game Boy provide roughly 35 hours of play time.

One of the most creative peripherals released for the system was the Game Boy Camera, which allowed users to take 128x112 pixel black-and-white shots, and then print them out using the Game Boy Printer.

Famous Game Boy owners include Robin Williams, Vanilla Ice, Will Smith, Bruce Willis and, er, Danny Baker.

A four-player adapter was also released which allowed games to support more than two players. Linking several of these up allowed 16-player skirmishes in *Faceball 2000*.

» The sheer range of games, including great third-party support, gave the Game Boy the edge over rivals.

» With this add-on you could print out images from the camera and certain games.

» The Game Boy's ad campaign pushed all the right buttons…

When coding for the Game Boy, many developers found that its similarity with the NES was immensely beneficial. "It was obviously a little less powerful, but many tricks we used on the NES translated well," recalls Machacek. "Having pseudo scrolling screens by using a repeating character pattern in places and downloading a repeating 'texture' to them, which appeared to scroll was often seen. We always crammed in lots of carefully timed parallax-scrolling effects as well. Access to the video RAM was limited, and the space for characters and sprites was small so you constantly had to download artwork to the video RAM, but could only do a little bit per frame. Trying to super-optimise your download code so that it wasted no time and shifted as much data as possible really paid off. I think, between judicious use of H-Blank as well as V-Blank downloading I managed to shift about 24 characters per frame, which allowed us to do the sort of animations that appeared in *Donkey Kong Land* in 1995." Based on the groundbreaking CGI-rendered SNES hit *Donkey Kong Country,* this highly enjoyable platformer is arguably the title that pushed the original Game Boy to its absolute limits, and Machacek is proud of what he achieved. "I deliberately sat down and spent three weeks doing nothing but engine work to get it to a point where it could handle anything we threw at it," he remembers. "At that time many games were downloading about six to eight characters a frame to the video bank and *Donkey Kong Land* needed much more than that with all of the rendered artwork it had to drive. I do know that my lead artist got fed up with waiting for me to finish this work. It was techy stuff that was invisible to him, and you have to understand that three weeks to write an engine seemed like an age when we had put out the Game Boy version of *WWF Superstars* in three months flat – including testing – a couple of years earlier. But the *Donkey Kong Land* engine was able to shift 24 characters a frame by the end, and suddenly we were able to drive a lot of rendered artwork. I don't think anyone complained after that, especially when it sold 4 million units."

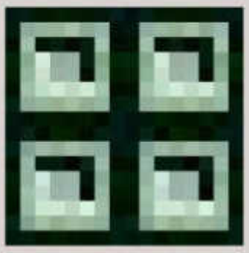
"That perfect marriage of Tetris and the Game Boy found a new audience"

PAUL MACHACEK, PROGRAM MANAGER, RARE DESIGN

They played an integral part in the success of this near-legendary console by coding some of its most memorable titles, it seems almost churlish to ask what made the Game Boy so popular, but we'll do it anyway. "In the Eighties there were plenty of dedicated handheld, battery-powered gaming machines," says Machacek. "You'd buy a *Space Invaders* handheld, or a *Pac-Man* one, or whatever. Here we had a single device that you could buy lots of games for and carry them all around simply. It was far superior to those other machines in every way and even came with multiplayer capability.

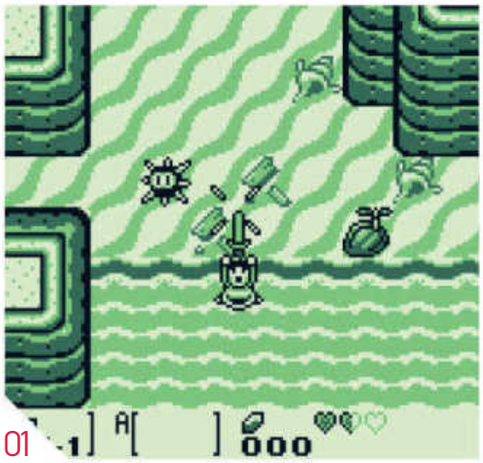
Traditional gamers were now on the move. But at the same time, that perfect marriage of *Tetris* and the Game Boy found a new audience that wasn't necessarily into videogames, and probably didn't even realise that you could buy more games, but simply bought the 'toy that plays that funny little blocks game' that their friends had. Unlike home computers and consoles, the Game Boy could be taken to schools or offices. Combined with the low price, this was enough for non-gamers to get sucked in too." The legacy of the Game Boy is considerable and some insist that Yokoi's design ideals continue to influence Nintendo's thinking even today. "Arguably Yokoi's philosophy has continued with the Wii," states Sutherland. "The lower spec and price point meant it has a larger initial potential audience, but remember the games are always what actually drive the sales – that's why people buy it, not because of the hardware. *Tetris* was to Game Boy what *Wii Sports* is to Wii."

» **"There's nowhere you can't play it"** – this print advert once again confirmed that the Game Boy was targeting 'cool' gamers rather than kiddies.



PERFECT TEN GAMES

There's a worrying number of licensed platformers on Nintendo's handheld, but also a lot of genuine gems. If you're thinking of buying a machine or adding to an existing collection, make sure you own the following…



01

THE LEGEND OF ZELDA: LINK'S AWAKENING

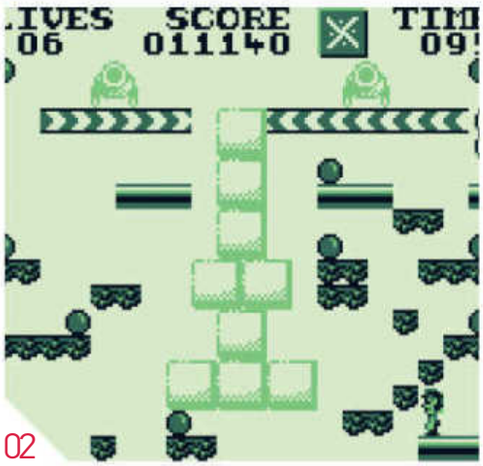
- **RELEASED:** 1993
- **PUBLISHER:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** F-ZERO

01 Although it features an ending that's the Linkian equivalent of finding Bobby Ewing in the shower, this charming adventure remains one of the Game Boy's best titles. Set on the island of Koholint, *Link's Awakening* has the intrepid adventurer trying to awaken the mystical Wind Fish. His trials take him through some fantastically designed dungeons, see him battling some impressive bosses and generally meandering around a beautifully detailed world. The lack of certain *Zelda* elements – it's not set in Hyrule and Ganon is nowhere to be seen – may upset some, but you'll be doing yourself a grave disservice if you turn your nose up at Link's first portable adventure.

BILL & TED'S EXCELLENT GAME BOY ADVENTURE

- **RELEASED:** 1991
- **PUBLISHER:** LJN
- **CREATED BY:** BEAM SOFTWARE
- **BY THE SAME DEVELOPER:** TRANSFORMERS: ARMADA

02 Licensed platformers are often nothing more than a cheap cash-in at the expense of whichever movie they're based upon. Nobody passed this information on to Beam Software though, for which we're eternally grateful. Playing like a Nineties update of *Chuckie Egg*, *BATEGBA* is quite frankly fantastic fun and should be sought out by anyone with a love of platformers. Yes it looks incredibly basic, but the cunning level design, incredibly tight controls and overall slickness more than make up for its graphical shortcomings. Perfect proof that you don't have to be Nintendo or rely on well-known videogame stars in order to make a genuinely excellent (sorry) portable platformer.



02

R-TYPE

- **RELEASED:** 1991
- **PUBLISHER:** IREM
- **CREATED BY:** BITS STUDIOS
- **BY THE SAME DEVELOPER:** LAST ACTION HERO

03 Although superseded by the incredibly polished *R-Type DX*, this remains the best blaster on the Game Boy. An astonishingly polished port, *R-Type* looks and sounds amazing due to its accurately drawn sprites – right down to a near-perfect miniaturised version of Dobkeratops – and impressively authentic music, and plays like a proverbial dream. Sure, it's just as annoyingly tough as its arcade parent, but the stunning level design, exceptionally constructed bosses and addictive gameplay will keep bringing you back for more. It's one of the best arcade ports the Game Boy ever had – essential for shoot-'em-up fans.

SUPER MARIO LAND

- **RELEASED:** 1989
- **PUBLISHER:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** DONKEY KONG

04 Its successors certainly boasted far more spit and polish, but in terms of fantastic gameplay, hardly anything else on the Game Boy comes close to Mario's first handheld outing. Bowser has been replaced by the sinister-sounding Tatanga while Luigi and Princess Peach are nowhere to be seen, but don't let that put you off as *Super Mario Land* is as good as anything that appeared on Nintendo's home systems thanks to its cleverly designed levels, perfect controls and polished gameplay. Mario even finds time to jump into a sub and plane for some fun shmup action. A superb platformer that sold 18 million copies.

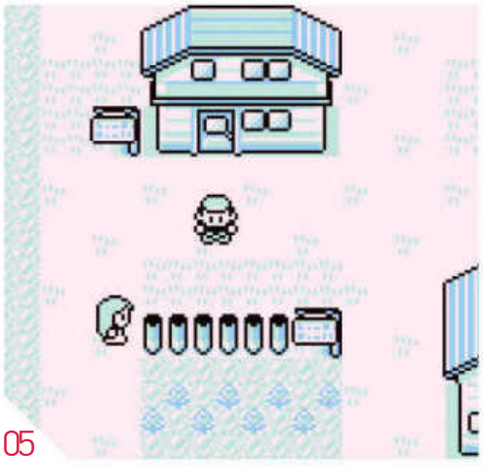
POKÉMON RED/BLUE

- **RELEASED:** 1996
- **PUBLISHER:** NINTENDO
- **CREATED BY:** GAME FREAK
- **BY THE SAME DEVELOPER:** MARIO & WARIO

05 By the time UK gamers were able to sample Game Freak's ridiculously absorbing RPG, both *Pokémon Red* and *Blue* had already been available in Japan for three years. The lengthy wait was well worth it, however, and while the series has since gone on to become a global merchandising phenomenon, it's important to remember that Game Freak's first two games were as captivating as they were original. Full of charm and recapturing the trading card craze that used to sweep schools, it took a serious amount of patience and strategy (not to mention a few friends) in order to capture all 151 of Game Freak's cute critters.

03

04



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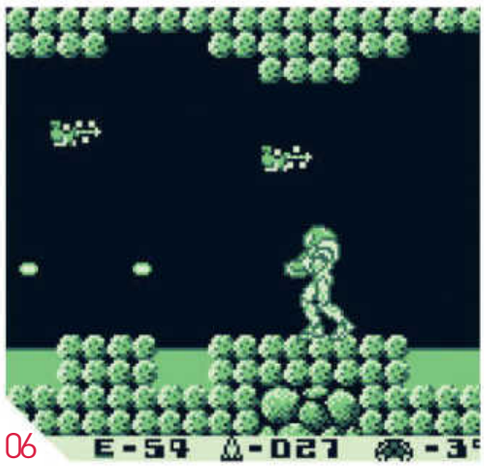

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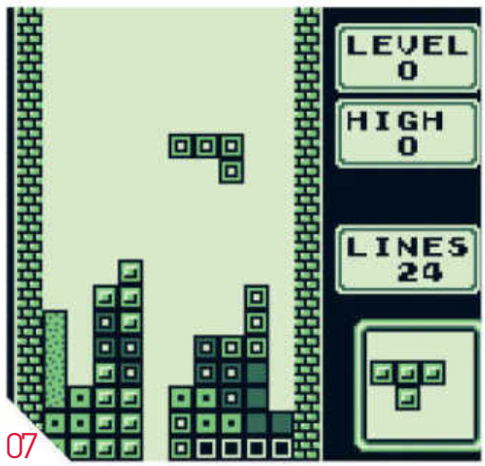


07

08

METROID II: THE RETURN OF SAMUS

» **RELEASED:** 1992
» **PUBLISHER:** NINTENDO
» **CREATED BY:** INTELLIGENT SYSTEMS
» **BY THE SAME DEVELOPER:** ADVANCE WARS

06 **Samus's second outing is generally considered to be one of her worst, but we'd have to disagree**. Sure the graphics take a hit on the Game Boy's tiny screen, and the environments are bland as hell, but it's the gameplay that matters and *The Return Of Samus* delivers in spades. Huge and sprawling, it rewards exploration and expands on the gameplay that made the original *Metroid* so enjoyable. Add in some impressive boss fights and a more refined Samus who's far easier to control than her NES counterpart and the result is a wonderful adventure that just keeps on giving.

TETRIS

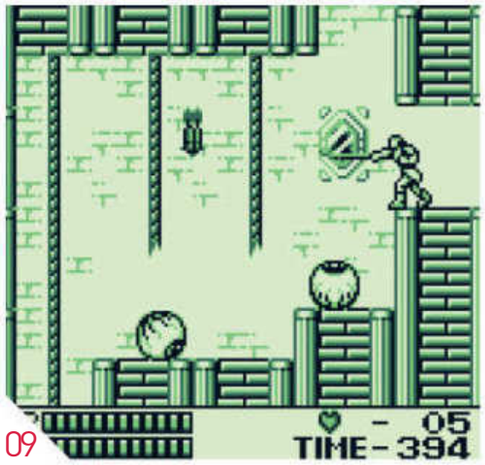
» **RELEASED:** 1989
» **PUBLISHER:** NINTENDO
» **CREATED BY:** BULLETPROOF SOFTWARE
» **BY THE SAME DEVELOPER:** YOSHI'S COOKIE

07 **With Nintendo now being hailed as the saviour of gaming due to the Wii and DS ensnaring brand new gamers, it's easy to forget that it managed to do exactly the same thing with the Game Boy and *Tetris***. Everyone from your best mate to your granny was playing Alexei Pajitnov's classic puzzler back in 1989, no doubt helped by the fact that it was bundled with the Game Boy. Worryingly addictive and sporting that 'one more go' factor, it was a true killer app for the machine and proved that you didn't need flashy graphics or even colour to captivate the masses.

FACEBALL 2000

» **RELEASED:** 1991
» **PUBLISHER:** BULLETPROOF SOFTWARE
» **CREATED BY:** XANTH SOFTWARE F/X
» **BY THE SAME DEVELOPER:** GATO

08 **What do you get when you cross forum emoticons with *Doom*?** This gem of a first-person shooter still looks astonishing on the Game Boy's tiny screen, despite its slow pace. A port of the Atari ST's *Midi Maze*, *Faceball 2000* can support death matches for up to 16 players. The solo mode is effectively a take on *3D Monster Maze* where you have to guide your HAPPYFACE (Holographically Assisted Physical Pattern Yielded For Active Computerised Embarkation) through 70 increasingly complex mazes, but it's the multiplayer where *Faceball 2000* truly shines. Of course finding 15 other players may be a little tricky now...



09

CASTLEVANIA II: BELMONT'S REVENGE

» **RELEASED:** 1991
» **PUBLISHER:** KONAMI
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** MYSTICAL NINJA

09 **If the only Game Boy *Castlevania* you've ever played is the god-awful original, then don't be put off by this sequel**. Realising what a hash it had made with the series' first portable debut, Konami went back to the drawing board, meaning that *Belmont's Revenge* is not only worthy of the franchise, but easily one of the best examples of the genre to be found on the Game Boy. Although there are only four levels, they're extremely large in size, brilliantly designed and feature a range of familiar enemies and bosses. Audio is also impressive, easily matching the excellent tunes that appeared in the NES games. In short, an essential addition to your Game Boy.

KIRBY'S PINBALL LAND

» **RELEASED:** 1993
» **PUBLISHER:** NINTENDO
» **CREATED BY:** HAL LABORATORY
» **BY THE SAME DEVELOPER:** ADVENTURES OF LOLO

10 **We came oh so close to nominating the excellent *Revenge Of The Gator* here – also by HAL Laboratory – but *Kirby* is just the better pinball game**. Featuring superior physics, a total of three different tables to battle on – each with its own mini-game – and some extremely lush-looking visuals, *Kirby's Pinball Land* is a great title that will bring out the score-attack fiend in everyone. The lack of a multiplayer mode is a little annoying, but this has been put together with so much care and attention that it's impossible not to love. Worryingly addictive and likely to give you extremely sore thumbs, it's another essential game that your Game Boy shouldn't be without.

10

Year released: 1989 (US)/1990 (UK)

Original price: £189.99/$189.95

Buy it now for: £15+

Associated magazines: No dedicated commercial magazines, but there were many fanzines, most were based in the US including *Portable Atari Gaming System* and *Wild Cat*

Why the Lynx was great… With its great full-colour screen and addictive games, Lynx was ahead of its time. And although it had poor battery life, titles such as *Chip's Challenge*, *California Games* and *Klax* were worth charging them up for

ATARI LYNX

A FULL-COLOUR SCREEN, 16-BIT TECHNOLOGY AND ADDICTIVE GAMES. EPYX THOUGHT NINTENDO WOULD JUMP AT THE CHANCE OF SNAPPING UP 'THE HANDY', ITS FLEDGLING HANDHELD CONSOLE. BUT AS DAVID CROOKES REVEALS, EPYX WAS IN FOR A BIT OF A SHOCK...

"Grab your suit and passport." Dave Needle looks up. It's three o'clock in the afternoon and standing in his office is David Morse, the CEO of Epyx, with an urgent look on his face. "I need you to join me on a flight to Japan. The plane leaves in three hours." Needle glances at his watch and then dashes home. Uncertain of exactly what is happening, he nevertheless grabs his best suit, takes his passport from his drawer and heads to San Francisco airport.

Morse and Epyx board member Joe Horowitz are waiting for him. They board the plane, making their way to the upper deck of the half-empty jumbo jet heading for the Land of the Rising Sun. As the plane takes off, Morse begins to explain what's happening. A private meeting has been set up with Nintendo head Shigeru Miyamoto, with one simple goal: selling the Handy. The handheld console that Needle and colleague RJ Mical have been working on needs to be sold. Epyx doesn't have the available finances to take the product to market, and it might just be possible that Nintendo can be persuaded to buy it and put it out as one of its own products.

As they snack on shrimp, cheese and caviar, Needle begins to feel uneasy. Something isn't quite right. 20 years on, he recalls exactly what he was thinking: "We didn't have a planned presentation", he says. "I felt it wasn't the sort of pitch that you made off the cuff. It would take a lot of work to present it properly. It was Japan. I had dealt with this sort of stuff before, and if we were going to be on their playing field we must play by their rules." Needle's instinct was right. Horowitz was convinced that they would be able to force their way into Nintendo's pocket. And while Morse remained sceptical, he was powerless to call a halt to the proceedings. The flight to Japan was to prove a lengthy one.

The meeting had been set up by Henk Rogers, a Dutch-born videogame designer and entrepreneur known for successfully winning the handheld and console licences of *Tetris* from the former Soviet Ministry of Software and Hardware. Rogers had snatched the rights from under the nose of *The Mirror* chief Robert Maxwell. At this moment in time, however, he was helping Epyx make its pitch. He

INSTANT EXPERT

The Lynx was the world's first colour handheld console and was initially sold with *California Games*.
It came packaged with a case, a ComLynx cable and AC adaptor (later replaced by six rapidly depleting AA batteries).
The handheld was developed by Epyx, using the talents of Dave Needle and RJ Mical, and attracted Atari's interest even though both had been members of the Amiga design team.
Needle and Mical had based the Lynx developer's kit around an Amiga.
With a 3.5-inch screen, the Lynx visually packed a punch. The screen could even be flipped to allow for left or right-handed play.
There was a two-inch speaker (the Lynx II had two speakers) and an eight-directional joypad.
The console had two basic chips named Mikey and Suzy. Aw. Both were 16-bit custom CMOS chips running at 16MHz and were run via an 8-bit CPU.
While Mikey ran the sound and video driver, Suzy looked after the blitter, sprite rendering and hardware scrolling.
Game cartridges could hold up to 2MB of data that was loaded into the Lynx's 64K of memory. Most of the cartridges, however, were 128K.
Up to 18 players could link up using the ComLynx cable as long as they had their own copy of the game. Infrared was going to be used initially.

ATARI LYNX

» In an attempt to boost sales, Atari reduced the price of the Lynx to just a whisker below $100.

» Atari's Lynx catalogue showed off the large number of games.

knew the president of Nintendo extremely well, and Epyx figured this would be a fundamental contact in the whole business.

What Epyx hadn't predicted, however, was the aggressive pitch put forward by Horowitz. "We were in the presence of Nintendo," Needle recalls. "Joe tried a hard sell, and as he spoke, David and I felt our faces turn red. It carried on for some time, and before long we were ordered out of the building. It was just too strong. Yet it didn't stop Joe – he got even louder. Luckily, Henk intervened and put an end to the pitch. Nintendo then allowed us to remain for a moment so the reps could show us something."

A pair of small boxes were brought into the room. They were placed upon a table and opened in front of us. Needle, Morse and Horowitz glanced across at each other nervously, uncertain of what was about to be revealed. Inside each box was a set of handheld videogame consoles. There was a communications cable that enabled them to be played together, and it was ready to go to market immediately. "We were the first non-Nintendo people to learn of the existence of the Nintendo Game Boy," Needle says, recoiling even at the memory. "We were crushed. Joe was infuriated. The Nintendo boss left the room and we just sat there, wondering what to do next."

"IT WAS JAPAN. I'D DEALT WITH THIS SORT OF STUFF BEFORE, AND IF WE WERE GOING TO BE ON THEIR PLAYING FIELD WE MUST PLAY BY THEIR RULES"

The Handy was an ambitious project. A full-colour, 16-bit handheld games console that was so far ahead of its time, it took 12 years before anyone bettered it. It was devised by Morse, Needle and Mical, working with a large, talented team at Epyx and had been drawn up on napkins in August 1986 while the trio were enjoying a meal in a plush little cafe in the affluent Foster City, California. They were already heavily involved in the computer industry: Morse had been the mastermind of the Amiga home computer, and Mical and Needle were members of that team and had played a large part in its creation. It was time to start something new.

"We were really intrigued by the idea of creating a handheld console," says Needle. "We knew it was possible and so we cracked on with it straight away." As for the 'Handy' name: "I can't remember how we got the name," says Mical. "Everyone was popping up with clever stuff in those days. They were heady times filled with promise and productivity. Man, we jammed."

Before long, Epyx had assembled a team large enough to look after the software, hardware, industrial design and audio facilities of the console. Morse, who had been installed as Epyx's CEO after founder Jim Connelley decided to leave, put the entire process together and led the project from the start.

The first prototype of the Epyx's handheld had a black-and-white screen. "But it didn't have the 'zing' we thought it ought to have," says Needle. "Many people in the group wanted us to stick to black and white. They said the cost, battery life, weight and viewability effects of changing to colour would hurt the product." Yet Needle and Mical stuck to their guns and the project shifted to colour – 4,096 of them, the same number as the Amiga. "It was a continuation but we weren't creating a handheld Amiga," says Mical. "The leading-edge display was the most expensive component, so the colour choice was one of economy." Needle adds: "If the low-cost glass and drivers would have supported a million colours, I would have done it." It was decided that the 65C02 chip would be used since it outperformed the rest and the Handy also became the first gaming console with hardware support for zooming and distortion of sprites. It allowed for fast pseudo three-dimensional games and made life easy for programmers.

"Many engineers knew it and would happily program in assembly for it," Mical says. "There was a large existing body of code because the 65C02 was in popular systems such as the Apple II and the Commodore 64. Best of all, though, it was cheap and fast. Needle explains: "I invented the technique for planar expansion/shrinking capability for an arcade game I had done several years before. It was a space alien/earth attack game with a 3D rotating planet, 3D giant robots, ground-tracking shadows and was pretty cool. We also came up with a way of avoiding filled polygons by taking a triangle and sizing it as you wished. It's not as great as a real polygon, but this way the surfaces had full texture all the time with absolutely no performance penalty."

While work progressed on the hardware, Epyx continued to produce videogames such as *Chip's Challenge* and a Handy department was created. At one point it was sealed off from the rest of the building for security purposes. It was decided that cartridges would be used for the games. Although there had been reports that games were going to be loaded from tape, Mical says there was no truth in them.

Yet by the time the machine was ready, Epyx had hit financial problems. The Commodore 64 market, which was Epyx's core

A Lynx To The TV

When the Atari Lynx was being created, the team pondered whether or not it should be possible to hook it up to a television. The idea was cast aside, however, because it was thought it would prove too limiting to the architecture if the handheld needed to produce a TV-compatible image.

"Things like frame rate, aspect ratio, line count, colour saturation limits and so on were just too limiting," explained Dave Needle. "So we declared that no work would be done for any TV capability at all. The downside was that it was hard to do screenshots for the press. The upside had a surprise, in that Sharp, our first selection for the LCD manufacturer, had refused to help us because it feared that the final product could be used as a TV and thus hurt its LCD TV sales. The architectural impossibility of a TV version gave us the needed inroads. In the end, we used the Citizen LCD, although it had similar concerns."

One idea to allow the Lynx to be used with a television was also rejected, mainly due to the fact that the Lynx screen was not up to broadcast standard.

OTHER VERSIONS...

Lynx II

One of the hallmarks of the Atari Lynx (other than poor battery power and the ability to flip the screen upside down so that left-handers could play) was its size. It was enormous. So when Atari decided that competition from the more compact Game Boy meant that the Lynx needed a revamp, one of the first things it did was cut it down to size. But that's not all. As well as making the rubber hand-gripped Lynx II smaller, the battery power was enhanced, it added stereo sound and it had a power-saving pause option that turned off the improved screen. It was also cheaper, retailing at £99, although it didn't come with any accessories or a game. "By removing the games cartridge, we have brought the price down below the psychological £100 price point," Atari spokesman Peter Walker said at the time.

COMMUNITY – ATARI WEBSITES TO WATCH

The Atari Times
www.ataritimes.com
Since 1996, this site has been an essential Atari resource and is packed with Lynx features, including reviews of both commercial and homebrew games. With reviews updated as and when new games arrive, the site is a brilliant place to start when reading up on the latest for the handheld.

Atari Age
www.atariage.com
If you are trying to track down and play some games for your Lynx, Atari Age has not only a great many intricate details – from the three different cartridge styles and company profiles to tips and cheats – it also has an excellent rarity guide, listing every Lynx game created. Not to mention its bustling forum.

Songbird Productions
http://songbird-productions.com
When the Atari Lynx died a commercial death, its fan base took over in much the same way as with the majority of retro machines. Songbird Productions was set up in 1999 to produce games such as *Loopz* and *Total Carnage* for the Lynx and Jaguar. You can also browse its catalogue via the website.

Matthias Domin's Atari Lynx Page
www.mdgames.de/lynx_eng.htm
If you're pretty nifty in the coding department, then Matthias Domin has put together a fine selection of tools that will be of great assistance when taking the initial steps and using your talents to create new Lynx content. There are also some little games on there to try out.

audience, wasn't pulling in the cash any more. It had also invested in VCR games but with little success. Staff levels were falling from around 200 at its peak to just 20 employees. If the Handy was ever going to be released it would need the backing of another company. Hence, the ill-fated journey that led the group to knock at the hallowed doors of Nintendo…

When that fell through, Horowitz decided to approach Atari, and made a phone call to Jack Tramiel, the chief executive at that time. Atari had already tried its hand at producing a portable machine – the Atari 2200, which was based on the Atari 2600 – but it just couldn't seem to get it right. As time went on, however, Atari began to ignore the growing stature of consoles and had become heavily involved in a business war against Commodore. Tramiel finally realised the worth of consoles when the NES stormed onto the market – so he was rather taken by the Handy, believing it to be a great way back to console dominance.

Soon after Horowitz approached Atari, Jack's son Sam went to Epyx. He was greeted by Joe and shown around. They then sat in an office and discussed some terms. It was eventually decided that Atari would manufacture and market the handheld console and Epyx would create the videogames, getting paid by Atari for each title produced. However, in the contract was a clause that issued Epyx a deadline. For example, the company had 60 days to fix any bugs that Atari said needed to be rectified. Needle says: "Atari routinely waited until the end of the Epyx time period to comment on the Epyx fixes. There was then inadequate time for Epyx to make the fixes." According to Needle, Atari decided to "punish" Epyx by withholding payment. In the end, this sent Epyx into financial turmoil, leading to its inevitable bankruptcy. Atari did hold out a lifeline – paying Epyx but only on the condition that it handed over the Handy.

The deal obviously upset Mical and Needle. They asked their lawyers if they could leave Epyx, but they were advised that it would be seen as an overt action by them to damage Atari and that they would almost certainly be sued. The pair remained at Epyx until the hardware handover was complete, turning down an offer from Sam to work at Atari.

With Morse, Mical and Needle's involvement in the project coming to an abrupt halt, Atari took the Handy and renamed it the 'Lynx'. It was two years before the company released the console in September 1989, however, and by that time Nintendo's Game Boy had also been released. "Looking back, if we had decided not to go colour," says Needle, "We would have been a zero. The Game Boy really would have trounced us." As it was, the colour feature of the Lynx kept the machine in the limelight, although it wasn't plain sailing. The Lynx cost $189.95 and the Game Boy retailed for $89.95. Many felt the Lynx was too expensive at the time and there was a vicious circle of too few purchases, putting off third-party developers, which in turn led to fewer and fewer purchases.

As sales continued to fall, Atari tweaked the machine and created the Lynx II. It retailed for half the price of the original and was smaller and cheaper to make. It also had the addition of stereo sound as well as better battery life and a pause option that allowed the screen to be turned off, thus saving power.

Needle wasn't too convinced with the changes, however. "During the handover, [Atari's] mechanical engineer made some seemingly pointless changes," he said. "The guy told me that he always liked to put a piece of himself in any product he worked on. He changed the backlight electronics and the transformer design and reduced the battery life. But he also changed the high voltage capacitor to one with considerably more leakage at the oscillation frequency and it generated considerable heat. The new load on the batteries caused them to overheat." Nevertheless, sales picked up and it seemed Atari was onto a winner.

Then along came Sega, who introduced us to the Game Gear in 1991. For Lynx, this meant the end was nigh. Although the Lynx remained the superior machine, the Game Gear benefited from Sega's advertising drive and the Japanese company's resources. What was more frustrating was Game Gear's similarities to Lynx.

"Game Gear was an interesting issue," Needle remembers. "Sega was shown all of the Handy's innards and schematics and specs as part of an attempt to partner with them after the Epyx marketing fiasco. And to see what I consider to be pretty much a copy of the Handy was a bit infuriating." He continues, "I had become friends with one of the engineers at Sega, and during the last development stages of the Game Gear, after I had already left Epyx, Sega hired me to help with a few lingering product issues. I went to their Japan facility and they showed me the problems they were having. Some issues were just weak engineering on their part, showing me that they did not understand the functionality of the hardware they were copying. They had the output palette wrong, among other things."

Despite the problems, Dave Needle remains proud of the Lynx, "always have, always will", he says. Among his favourite games for the once groundbreaking handheld are *Chip's Challenge*, *Gates Of Zendocon* and *California Games*. "It's a matter of pride that no one created anything better for 12 years," he adds. When it comes to what went wrong, Mical maintains that "All the Lynx needed was low cost and a huge library of software. But I place the blame for both of these in Atari's lap…"

» *Checkered Flag* was a top racer for the Lynx and highly sought after.

» Wonderful puzzler *Chip's Challenge* was one of the Lynx's most endearing titles.

» Colourful games such as *Toki* made full use of the Lynx's colour capabilities.

Anti Red-Eye
Although RJ Mical was happy with the Lynx, saying: "We got exactly what we set out to create", one feature he would have liked was infrared. Named RedEye, the infrared capability was demonstrated in the lab but it was decided to go for the ComLynx instead. "RedEye would have been cool," says Mical. "You would need to maintain line of sight between players, though, and that could have been a problem. We dreaded the feared 'crossing legs' boy who would cross his legs and block his unit from the network."

ATARI LYNX

PERFECT TEN GAMES

It may have been KO'd by the Game Boy, but Atari's Lynx was still home to some wonderful games and arcade conversions. Don't believe us? Then check out this lovely little selection of classics

01

CHIP'S CHALLENGE

RELEASED: 1989

DEVELOPED BY: EPYX

BY THE SAME DEVELOPER: SUMMER GAMES

01 Puzzle games are almost ten a penny on the Atari Lynx, but when the standard is as high as it is on *Chip's Challenge* you don't tend to mind them cluttering up the console. While the concept itself is not particularly original – you basically have to move Chip around each maze in search of a set number of computer chips – it has been put together with so much love, care and attention that you can't help but become smitten with it. Chip himself may be only a couple of pixels high, but he's bursting with character and you just can't help feeling for him as he carries out his tricky quest. It may have been ported over to a number of different machines since its release, but the bite-sized puzzles make this perfect fodder for Atari's handheld.

KLAX

RELEASED: 1990

DEVELOPED BY: ATARI

BY THE SAME DEVELOPER: GAUNTLET

02 *Klax* is easily deserving of a place in our top ten and it's not just because it features the sexiest videogame voice of all time. Converted from the popular Tengen coin-op, *Klax* is an almost perfect arcade adaptation that not only captures the authenticity of the original arcade game but also proves that the Lynx was no slouch when it came to hosting brilliant puzzlers. *Klax* is deceptively simple to pick up and play – all you have to do is stack three tiles of the same colour on top of each other, either horizontally, vertically or diagonally – and it was perfect proof that you didn't need to own a handheld with a monochrome screen in order to appreciate one of the world's greatest puzzle games. And yes, that does mean we like this just as much as *Tetris*. Ooh, the controversy…

02

RAMPART

RELEASED: 1991

DEVELOPED BY: ATARI

BY THE SAME PUBLISHER: BATTLEZONE

03 It might not match the majesty of its arcade parent, but there's still plenty to love about this extremely slick Lynx conversion. While it suffers from the obvious lack of a trackball, it still plays surprisingly well and doesn't let you down on later levels once the action speeds up. The mix of *Tetris*-styled wall building and strategic blasting works perfectly and makes for a very unique experience. It's a lot tougher than the arcade original (mainly because all of the enemy ships can now drop off ground forces) and the loss of the third player is a bit of a shame (the Lynx should easily be able to handle it), but this is an otherwise cracking conversion and a healthy addition to the Lynx's library.

LEMMINGS

RELEASED: 1993

DEVELOPED BY: ATARI

BY THE SAME PUBLISHER: PAPERBOY

04 *Lemmings* has appeared on virtually every console and computer that has ever been made, so it should come as no surprise that the loveable mop-tops also found a home on the Atari Lynx. What is surprising, though, is just how good an adaptation of *Lemmings* this actually is. Despite the small screen and lack of a mouse there are no problems with this spot-on conversion. Your little fellas are perfectly animated and full of character, the levels are easy to navigate and it's incredibly easy to select each class. In fact, the only thing that is likely to put fans off is that you're going to be extremely unlikely to find a copy of the game for under £60.

S.T.U.N. RUNNER

RELEASED: 1991

DEVELOPED BY: ATARI

BY THE SAME DEVELOPER: CHAMPIONSHIP SPRINT

05 If anyone doubts the power of Atari's Lynx, simply shove a copy of *S.T.U.N. Runner* under their noses and watch them go into serious denial (we've tried it and it's fun). While it obviously can't hope to match the insane slickness and plentiful polygons of the arcade original (we still have dreams about that sleek, sexy cab), this Lynx conversion is amazingly polished and perfectly captures the atmosphere of its larger peer. Granted it's far more unforgiving than its bigger brother – you'll find the controls a little sensitive to begin with – and the gameplay is rather simplistic, but if you're looking for a thrilling racer on Atari's handheld you won't find anything better.


03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BLUE LIGHTNING

RELEASED: 1989

DEVELOPED BY: EPYX

BY THE SAME DEVELOPER: IMPOSSIBLE MISSION

06 ***Blue Lightning* may well have been one of the earliest titles to show off the Lynx's graphical grunt, but that's not to say it wasn't a superb game in its own right**. Essentially Atari's answer to *After Burner* and *Star Fox*, *Blue Lightning* put you at the stick of an advanced military jet and required you to shoot down wave upon wave upon wave of enemy fighters. Sure it gets repetitive, but the action is always fast and frantic, the nine levels have a variety of nice environments to fly through and the scaling effects are truly fantastic. If you're looking for a good blaster then set your sights on *Blue Lightning*. It's far better than our rather naff pun.

XENOPHOBE

RELEASED: 1992

DEVELOPED BY: ATARI

BY THE SAME PUBLISHER: BILL AND TED'S EXCELLENT ADVENTURE

07 **While the Lynx had many fine conversions, it was only really *Xenophobe* that managed to notably improve on its arcade original**. For starters, the controls were streamlined and far easier to use (the arcade's three-button joystick was quite cumbersome), new items like the jetpack enabled you to fly around the space station without taking damage, while several new multiplayer modes kept the gameplay fresh and exciting. Add in some cartoony visuals that perfectly mimicked their arcade parents' and the end result is a highly enjoyable multiplayer experience that proves hunting down aliens can actually be a lot of fun.

ALPINE GAMES

RELEASED: 2004

DEVELOPED BY: DURANIK

BY THE SAME PUBLISHER: NATIVE DEMO

08 **Now, we don't wish to upset anyone by featuring a homebrew title in this Perfect Ten, but *Alpine Games* is so brilliant that it would have been criminal not to include it.** Essentially a homage to Epyx's sports games of old (why only *California Games* was released on the Lynx is beyond us), *Alpine Games* ups the ante considerably by featuring nine different events, nifty digitised music and some astounding-looking visuals that push the Lynx further than we've ever seen. The bobsleigh, in particular, looks absolutely amazing, but it's the finely balanced gameplay that really manages to impress. It may cost over £20, but no Lynx owner should be without this fantastic title.

09

TODD'S ADVENTURES IN SLIME WORLD

RELEASED: 1992

DEVELOPED BY: EPYX

BY THE SAME PUBLISHER: WINTER GAMES

09 **We were going to go with *Bill And Ted*, but decided that *Todd's Adventures* is slightly better (it was a really close call, though)**. Anyway, *Slime World* sees you thrown into a series of caverns in search of precious Slime Gems. Sadly for Todd, *Slime World* is covered in gross icky enemies so you'll need to constantly keep his water gun filled up so you can clean up the pulsating planet. Like many Lynx titles, *Slime World* is very pretty and the slime-coated caverns that Todd explores are constantly in motion. *Slime World* itself is absolutely huge and it will take an age to fully explore this *Metroid*-styled adventure.

ZARLOR MERCENARY

RELEASED: 1990

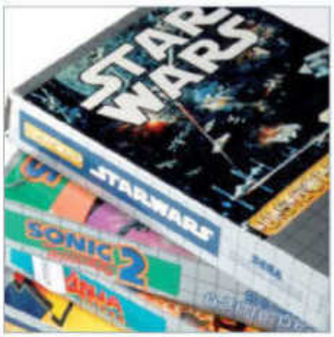
DEVELOPED BY: EPYX

BY THE SAME DEVELOPER: CALIFORNIA GAMES

10 **With *Robotron: 2084* just missing out due to its overly complex control system, *Zarlor Mercenary* quickly swoops in and deservedly steals the last position in our prestigious top ten**. Set across six huge and incredibly varied levels, *Zarlor Mercenary* doesn't do anything astoundingly new, but what it does do is exceptionally well polished. Destroyed enemies release coins that can then be spent on power-ups, there are some genuinely tough bosses to topple and the pseudo-3D visuals used throughout the game are very effective. There's even a superb multiplayer option that enables you to team up with three other pilots to take on the enemy forces together.


10

Special thanks to **atariage.com** for providing screenshots



Year released: 1990 (Japan), 1991 (US and Europe), 1992 (Australia)

Original price: £99.99 (£129.99 bundles) /$149.99

Buy it now for: £20+/$30+

Associated magazines: *Mean Machines Sega, Sega Pro, Sega Power, Sega Force, Sega Zone, CVG Go! Handheld*

Why the Game Gear was great… With full-screen colour, a host of arcade Sega classics and an expansive Master System back catalogue to take advantage of, the Game Gear provided hours of entertainment, great design and a dazzling range of first-class software

GAME GEAR

IT WAS BIG, CLUNKY AND GUZZLED BATTERIES BY THE DOZEN, AND YET THE GAME GEAR WAS LOVED BY SEGA FANS FOR ITS VARIETY OF SOFTWARE. KIM WILD LOOKS AT THE HANDHELD THAT TOOK ON THE GAME BOY BUT ULTIMATELY FAILED TO SUCCEED

The Nineties followed what had been an interesting decade for Sega. The company had a profitable arcade division which released the likes of *OutRun, Shinobi* and *After Burner,* as well as the Mark III console to compete with the Famicom. When the Famicom launched in America in 1986 as the rebranded NES, Sega followed with its own machine, the Master System (a redesigned Mark III console), which failed to surpass Nintendo's dominance despite a following in Europe.

In 1989, Nintendo released its handheld, the Game Boy, and not to be outdone, Sega began work on its own machine, which was to be "everything the Game Boy wasn't." Sega had a penchant for naming all its consoles after planets during the development process – later machines like the Genesis were called 'Project Venus', the 32X 'Project Mars', and the Saturn 'Project Saturn', the only console to retain its original codename – and so development began on 'Project Mercury', later renamed as the 'Game Gear.' In order to cut down on the development time and get the console out into stores quickly, it was decided that the handheld would use technology from the Master System, with the major difference being the colour palette: the Game Gear had 4,096 colours as opposed to the Master System's paltry 64 colours.

The handheld launched in Japan on 6 October 1990 with a successful debut, shifting 40,000 units in its first two days. Within a month, 90,000 consoles had sold and back orders exceeded 600,000. In 1991, Sega launched the Kid's Gear in Japan, a repackaged version of the handheld aimed at the younger end of the market, focusing on children's titles although it was still compatible with Game Gear software. This handheld, like many special-edition models remained firmly in Japan. Regarding the American launch, Robert Botch, Sega's marketing director for the Game Gear, remarked: "There is clearly a need for a quality portable system that provides features other systems have failed to deliver. This means easy-to-view, full-colour graphics and exciting, quality games that appeal to all ages." His words seemed to ring true when the Game Gear arrived in America in 1991 priced at $149.99, with sales reaching 500,000 for the launch year and 900,000 by 1992.

Europeans and Australians would once again come last in the list of priorities as the Game Gear was originally scheduled for release in spring 1991 but wouldn't actually reach these shores until 1992. The delay resulted in keen importers forking out £200 just to get their hands on the latest technology. At the time of the Game Gear's announcement in 1991, distributor Virgin Mastertronic revealed that the handheld would retail at around £100: more expensive than the Game Boy (£69.99), but more affordable than the Atari Lynx (£179.99). However, in response to the competition, Atari dropped the price of the Lynx to £129.99 before the Game Gear's launch so that when Sega's machine finally arrived priced at £99.99, it only had a slight price advantage over its colour rival.

A New PlayPal

The last few years have seen the re-emergence of the Game Gear, this time in the form of a portable alongside Master System titles. The PlayPal portable (known elsewhere as Coleco) contains 20 built-in Sega titles, can hook up to a television and doesn't drain batteries like the Game Gear does. Although the choice of games could be better (*The Ninja, Aztec Adventure,* anyone?), there's plenty in here for retro fans, such as *Alex Kidd In Miracle World* (and *Hi-Tech World*), *Super Columns, Ecco: The Tides Of Time* and *Fantasy Zone*. The inclusion of rarer titles like *Sonic Triple Trouble, Sonic Drift 2* and *Snail Maze* (a game preloaded on early Master System consoles only) makes it a viable purchase for those who don't own the original. Sold at the cheap price of £12 ($24 at time of writing) at PlayAsia (**www.play-asia.com**) it's something of a bargain.

GAME GEAR

» One of the many limited-edition models that hit Japan with a bundled game.

» A unique protection accessory, making the Game Gear even bigger.

Early launch titles included *Columns*, *Super Monaco GP*, *G-Loc* and *Castle Of Illusion* (a direct port of the Master System title). *Wonder Boy*, *Woody Pop* and *Sonic The Hedgehog* followed shortly afterwards. The initial Game Gear launch at £99.99 was for the machine only, with later bundles including *Columns* or *Super Monaco GP* for the same price. *Columns*, a game created by Jay Geertsen for DOS and ported to the Atari ST before he sold the rights to Sega, focused on matching three jewels according to colour to make them disappear. Principally aimed at competing with *Tetris*, *Columns* never really had a chance of winning people away from Nintendo's flagship title, but it was popular enough to keep Sega's hopes alive. Sega's popular *Sonic The Hedgehog* mascot also boosted sales due to his 'cool' image. The bundled package of *Sonic* with the machine and a power adaptor (previously bought separately) at £129.99 proved hard for gamers to resist.

After the initial excitement and success at launch, faults with the Game Gear soon became apparent. While it had a sleek, sophisticated appearance, it was a monster in size compared to the Game Boy, which wasn't that small itself. In Japan, the Game Gear had numerous quality issues, with early models breaking easily, doing little to endear it to an increasingly apathetic public, although such problems did seem to be less of an issue elsewhere. The biggest drawback, and the main factor that ultimately resulted in Nintendo winning the handheld war, was the lack of substantial battery life. The Game Boy may have had a monochrome screen, but this enabled it to have around 20-30 hours battery life in comparison to the Game Gear's rather feeble six hours. While Sega released rechargeable battery packs, cutting the cost down for consumers, it only extended power to 8-10 hours and their bulkiness added to the cumbersome weight of the Game Gear.

"LACK OF BATTERY LIFE ULTIMATELY LED TO NINTENDO WINNING THE HANDHELD WAR. THE GAME BOY HAD 20-30 HOURS COMPARED TO THE GAME GEAR'S FEEBLE SIX"

However, the Game Gear also had a lot in its favour compared with the Game Boy. It's coloured, backlit display was impressive for the time (despite blurring issues), meaning it was easy to play in poor lighting conditions, and its stereo sound was an improvement on Nintendo's offering. The D-pad was bigger and more responsive, and the lengthways structure meant it was more ergonomically designed for hours of play rather than the Game Boy, which was prone to cause cramp after extended periods of time.

In order to draw in more customers, different coloured Game Gear models were released, most notably in Japan. America received a blue sports edition in 1993 bundled with *World Series Baseball*, and another supplied with *The Lion King*. This would be the only colour model besides the standard black one that Americans would receive. A Coca-Cola limited edition machine packaged with the game *Coca-Cola Kid* appeared in Japan in 1994, which was a red/orange hue and had the Coca-Cola logo imprinted on the front. Later models included a *Magic Knight Rayearth* bundle (red with the game's logo visible on the handheld); a limited-edition white Game Gear that could be bought in a case with a matching TV tuner; a light blue Game Gear, which also reached Canada and Australia; a smoke edition not too dissimilar to the standard black; and the yellow Game Gear, which was the last to be released in 1996. Despite the variety of different packages in Japan, the gaming public remained indifferent to the machine, with only 1.78 million sales from the country out of the total global figure of 8.65 million by 2004. None of the coloured machines ever reached Europe.

One of the other problems with the Game Gear was a lack of software. Nintendo had 90 per cent control over the market that ensured only a few third-party companies could create games for the Game Gear, leaving the rest down to Sega. As a result, many

» Exclusively released in Japan only, *Gunstar Heroes* now goes for a pretty penny.

» One of the UK's adverts focused on the games, rather than attacking the Game Boy.

» Wise words here, from *Shining Force Gaiden*.

games were essentially ports of pre-existing Master System titles, something that didn't go unnoticed among the hardcore fraternity. It wasn't all bad though, as the Game Gear would host some excellent Sega games that couldn't be played elsewhere. *GG Shinobi* was an excellent addition to the popular franchise, which went on to receive a superb sequel (*Shinobi 2*), while Sonic was milked for all it was worth, including releases of *Sonic Blast*, *Sonic Triple Trouble*, *Sonic Labyrinth*, *Tails' Adventure*, *Tails' Sky Patrol* and *Sonic Drift 1* and *2* (known as *Sonic Drift Racing* in Europe). All of which could only be played on a Game Gear, until Tec Toy bought the licence to port some of the games to the Master System several years later.

Classic RPG series such as *Phantasy Star* and *Shining Force* got the handheld treatment, although only the third game, *Shining Force: Sword Of Hajya,* ever enjoyed an English translation. *Mega Man*, *Gunstar Heroes*, *Panzer Dragoon Mini* and *GG Aleste* were Japanese only exclusives that, to this day, fetch high sums of money due to their rarity. The diversity of the catalogue, despite its Master System roots, was enough to muscle in on the Lynx's territory, managing to gain sales away from Atari's handheld, but failing to make a dent in Nintendo's dominance.

While the Game Gear received the usual accessories you would come to expect, such as, a link-up cable, carrying cases, car lighter adaptors and rechargeable battery packs, it also had some unique accessories that made it stand out from the Game Boy and gave it some added popularity. A TV tuner that slotted into the back of the cartridge slot was released, turning it into an all-round entertainment unit. At the time, a TV tuner on a handheld console was an innovation completely ahead of its time. Although, priced at £74.99, it was expensive considering that portable televisions didn't cost a lot more. However, the device appealed to collectors and gave the Game Gear a unique status on the market. A dispute with the manufacturer ensured that the TV tuner didn't receive prolonged support however, as later models proved incompatible with the gadget, even with Sega's own production line. Despite being a novelty, the TV tuner is highly sought after and even today you should expect to pay £40-£50 for one in good condition. A Master System convertor was also released, allowing gamers to play Master System titles on the move, which instantly expanded the back catalogue of available software. All games worked with the convertor, but as everything had to be shrunk down to the smaller screen, it meant that any titles with lots of text such as RPGs were barely readable and any games that were primarily sprite based, such as *Space Harrier*, were incredibly difficult to see. While Sega was working on a device that allowed Game Gear titles to be played on the Master System, it never materialised due to the problems of the Game Gear's larger colour palette.

Eventually, in 1997, support for the handheld dwindled despite lasting admirably for six years against tough opposition. Sega, for most of the machine's lifespan, was far more focused on the big consoles such as the 32X, Mega CD and the Saturn to really give the Game Gear the proper marketing support it needed and finally withdrew the product. The machine resurfaced briefly in 2000 when Majesco bought the rights for the Genesis and Game Gear from Sega. Majesco's model differs slightly from the original: although it features the same Sega board, some of the accessories including the TV tuner don't work, while certain Master System convertors are incompatible or fail to run some of the games properly. In many ways the handheld is better than Sega's model as it's a bit lighter and has a nicer screen, but the build of the machine feels cheaper than its predecessor.

The demise of the Game Gear was a sad occasion for its devoted following, even though it went largely unnoticed by the rest of the gaming world. Yet for all the handhelds that have gone up against the might of Nintendo and ultimately lost out, Sega's Game Gear managed to last the longest, only outdone in sales by Sony's PSP. For its fans, however, it remains a piece of classic gaming hardware whose legacy lives on.

Hacking The Gear

In an issue of *EGM* magazine, Sega was shown hooking the Game Gear machine up to a television, enabling games to be played on the big screen. Such a method was never made commercial, but various modders in the scene have managed to hack into the machine in order to do this. The modification works by soldering specific circuit boards through the back of the battery compartment. Until recently, such a modification resulted in all games playing in black-and-white, but in 2004, Xavier and Sankichi managed to find ways of soldering the machine so that the games will display in colour. Other gamers have also found ways of getting Game Gear games to work on the Master System, requiring the use of a Master System flash cart, Game Gear ROMs and some Z-80 programming knowledge. Visit **www.disgruntleddesigner.com/chrisc/segahacking** for more details.

Thanks to **www.segaxtreme.net** for certain photographs and Damien McFerran for providing several magazine scans

PERFECT TEN GAMES

GUNSTAR HEROES

GUNSTAR HEROES

» **RELEASED:** 1995
» **DEVELOPED BY:** TREASURE
» **BY THE SAME DEVELOPER:** IKARUGA

Now, this is very impressive. It's obviously cut down when compared to the Mega Drive original, but this adaptation of Treasure's superb run-and-gunner is still utterly brilliant and is a must own for anyone with a love of Sega's bulky handheld. Incredibly fast paced and with some gob-smackingly good visuals, *Gunstar Heroes* shrinks down admirably well to the Game Gear's tiny screen and offers an amazing amount of pyrotechnical wizardry. Gameplay is as intricate and as varied as ever, and it's further proof that Treasure is one of the most talented developers around. *Gunstar* is extremely hard to get hold of now, so expect to pay a pretty penny for it.

WONDER BOY: THE DRAGON'S TRAP

WONDER BOY: THE DRAGON'S TRAP

» **RELEASED:** 1992
» **DEVELOPED BY:** WESTONE
» **BY THE SAME DEVELOPER:** WONDER BOY

***Wonder Boy*, like many other Game Gear titles, is basically a port of the Master System original. This should not put you off, however, as *The Dragon's Trap* was one of the best games to appear on the 8-bit machine.** *The Dragon's Trap* is a huge, sprawling adventure that sees the poor lad having to change into a variety of different animals after being cursed by the game's imposing dragons. It's going to cost you a fortune in batteries, but if you're looking for a solid arcade adventure, you really won't find anything finer. Quite simply one of the Game Gear's finest moments. Even if it is just a port.

BUBBLE BOBBLE

BUBBLE BOBBLE

» **RELEASED:** 1994
» **DEVELOPED BY:** TAITO
» **BY THE SAME DEVELOPER:** RAINBOW ISLANDS

Taito's *Bubble Bobble* must be one of the most ported games in history, but when you consider how good it is, it's not surprising that so many platforms have featured a version of it. Based on the Master System port, which itself was a rather brilliant conversion, this Game Gear effort perfectly captures the charm of the arcade original and is another essential release for Sega's portable console. There's a cracking two-player mode, although you'll need the required link-up cable and a second copy of the game. The graphics are as cute as previous versions, and the timeless gameplay is as strong as ever. One of the best platformers ever made.

BAKU BAKU ANIMAL

» **RELEASED:** 1996
» **DEVELOPED BY:** MINATO GIKEN
» **BY THE SAME DEVELOPER:** OUT RUN

While *Columns* is the Game Gear puzzler that most gamers have probably heard of, it's the excellent *Baku Baku Animal* that deserves the recognition. Originally released in 1995, *Baku Baku Animal* plays like a cross between *Tetris* and *Puyo Puyo* and sees you stacking up a variety of different food stuffs until the required animal comes along and clears the lot, thus setting up potential chain reactions and the possibility of huge scores. Instantly accessible and yet impossible to put down, *Baku Baku Animal* is one of the best puzzlers around and is perfectly suited to the Game Gear's on-the-go nature.

SONIC THE HEDGEHOG 2

» **RELEASED:** 1992
» **DEVELOPED BY:** ASPECT
» **BY THE SAME DEVELOPER:** SONIC THE HEDGEHOG

While some gamers were less than happy with *Sonic 2*'s lack of difficulty there can be no denying that it's a highly polished title that deserves its place in the Game Gear top ten. Featuring bold, bright visuals, a great sensation of speed and some faithfully reproduced tunes, *Sonic 2* is a wonderful adaptation of the original Master System and Mega Drive titles that plays to the strengths of its host machine and ends up working exceptionally well on the Game Gear's miniature screen. There's a fair amount of blurring that will no doubt spoil the experience for some, but old technology can't disguise the sheer amount of shine that lies beneath.

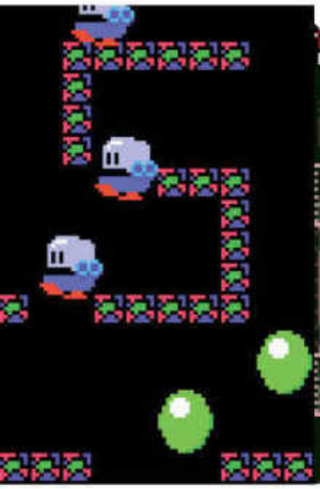
BAKU BAKU ANIMAL

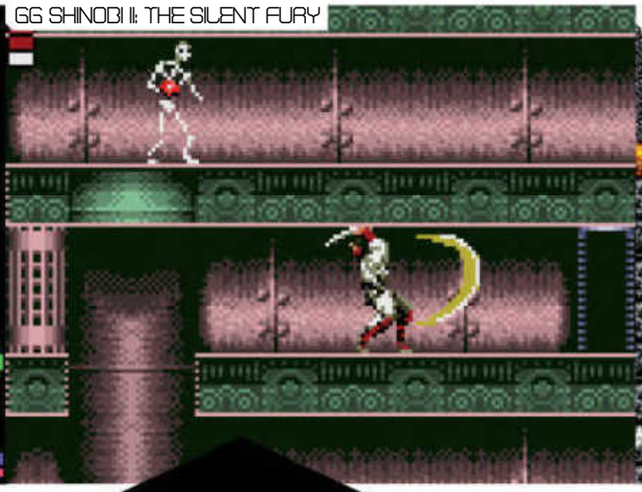
SONIC THE HEDGEHOG 2

STREETS OF RAGE 2

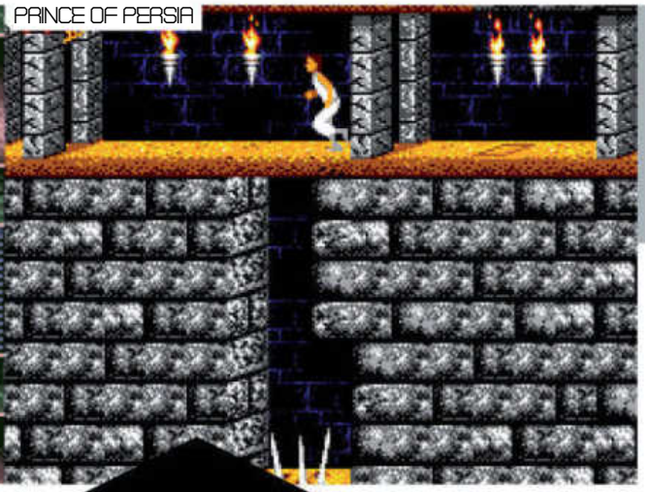
GAME GEAR

It put up a brave fight for six years, but even Sega and Sonic couldn't stop the success of Nintendo's monochrome Game Boy. Console yourself with ten of the machine's best games





GG SHINOBI II: THE SILENT FURY



PRINCE OF PERSIA

STREETS OF RAGE 2

» **RELEASED:** 1993
» **DEVELOPED BY:** SEGA
» **BY THE SAME DEVELOPER:** GG SHINOBI

There are very few beat-'em-ups available on the Game Gear, but even if there were 100 to choose from, it's doubtful that any would match the quality of Sega's *Streets Of Rage*.

From its meticulously created sprites, to the exhilarating combat, *Streets Of Rage 2* is a fantastic re-creation of the Mega Drive original and proves that the Game Gear is more than capable of hosting a strong fighter. The music sadly lacks the polish of the original Mega Drive hit, but when you consider the technical limitations of the machine, this is hardly surprising. Just console yourself with a great fighter that plays as good as it looks.

GG SHINOBI II: THE SILENT FURY

» **RELEASED:** 1992
» **DEVELOPED BY:** SEGA
» **BY THE SAME DEVELOPER:** SHINOBI III: RETURN OF THE NINJA MASTER

While the original is unquestionably a classic slice of ninja heaven, the superior sequel improves on it in every possible way. You're still controlling a different selection of ninjas – after you've rescued them of course – but now the far tighter level design, faster flowing action and greatly improved gameplay mechanics make this Game Gear exclusive title even more desirable. It's also far more balanced than its predecessor, which was notoriously difficult in places, meaning it's the perfect place to start if you're looking for a solid action title or are brand new to the series – where have you been for the past 20 years?

POWER STRIKE 2

» **RELEASED:** 1993
» **DEVELOPED BY:** COMPILE
» **BY THE SAME DEVELOPER:** SUPER ALESTE

While the original *Power Strike* (or *GG Aleste* as it's known in Japan) was never released in the UK, the far superior sequel did make it here and, as was typical of developer Compile, it was another excellent shooter.

While it features similar gameplay to the Master System outing, visually it's been massively enhanced and boasts some great looking sprites and awesome bosses that are as ugly as they are tough. With its mech theme, over-the-top explosions and hectic gameplay, *Power Strike 2* remains one of the best blasters on Sega's machine and instantly makes us forget about the gaming atrocities that were *G: LOC* and *Halley Wars*.

PRINCE OF PERSIA

» **RELEASED:** 1992
» **DEVELOPED BY:** BRODERBUND
» **BY THE SAME DEVELOPER:** MYST

Like Taito's *Bubble Bobble*, *Prince Of Persia* seems to be another title that's been ported to practically every console and computer known to man.

Based on the Master System outing, this is nevertheless a stunning conversion that features amazingly convincing animation, slightly more responsive controls, and some simple yet very effective visuals. Experts will obviously be expected to whizz through the game in under an hour, but *POP* has been put together with so much care and attention that you'll be more than happy to just languidly stroll around and drink in the superb level design while admiring the Prince's natty choice of clothing.

SHINING FORCE II: THE SWORD OF HAJYA

» **RELEASED:** 1994
» **DEVELOPED BY:** CAMELOT SOFTWARE PLANNING
» **BY THE SAME DEVELOPER:** SHINING FORCE: FINAL CONFLICT

On the one hand you could feel rather cheated by *Sword Of Hajya*. Mainly because it's virtually the same as the second story that appeared on the Mega CD's *Shining Force* CD.

On the other hand it's the best RPG on the system to have received a Western translation, so if you're a fan of the genre this is an essential game. It may look simple, and the bland backdrops and generic-looking characters are certainly nothing to write home about, but with *Shining Force II* it's all about the story and the turn-based combat, both of which remain as good as on any other *Shining Force* adventure.

POWER STRIKE 2

SHINING FORCE II

25 YEARS

AS NINTENDO'S LEGENDARY CONSOLE HITS 25, DAMIEN MCFERRAN SPEAKS TO DEVELOPERS AND FANS TO FIND OUT WHAT MADE IT SO SPECIAL

PLAYING WITH POWER

THE SUPER NINTENDO 25 YEARS ON

PLAYING WITH POWER

Many gaming systems have been branded iconic over the years, but that term seems almost inadequate to describe the Super Nintendo, a console which is perhaps the finest ever produced by industry veteran Nintendo. The Kyoto-based company's sophomore home system had the hardest of acts to follow; the NES – or Famicom as it was known in its native Japan – was a commercial success in North America and Japan, essentially granting its maker a monopoly on home console-based interactive entertainment. Post-NES, Nintendo's job was made harder by the fact that rival firms had upped their game and entered the market with powerful challengers, such as the NEC PC Engine and Sega Mega Drive, which launched in 1987 and 1988 respectively. By the time Nintendo was ready to officially announce its 16-bit console, the aging NES was losing audience share to these spritely new systems, and something drastic was required to put Nintendo back on top. Looking back now a quarter of a century later, it's impossible to deny that the SNES did just that, and much more besides. By the time Nintendo moved onto the N64, its 16-bit system was home not only to some of the finest games of the generation, but of all time – and they've endured in the years that have elapsed since then.

DIFFERENT VERSIONS

The SNES had a number of forms...

SUPER FAMICOM

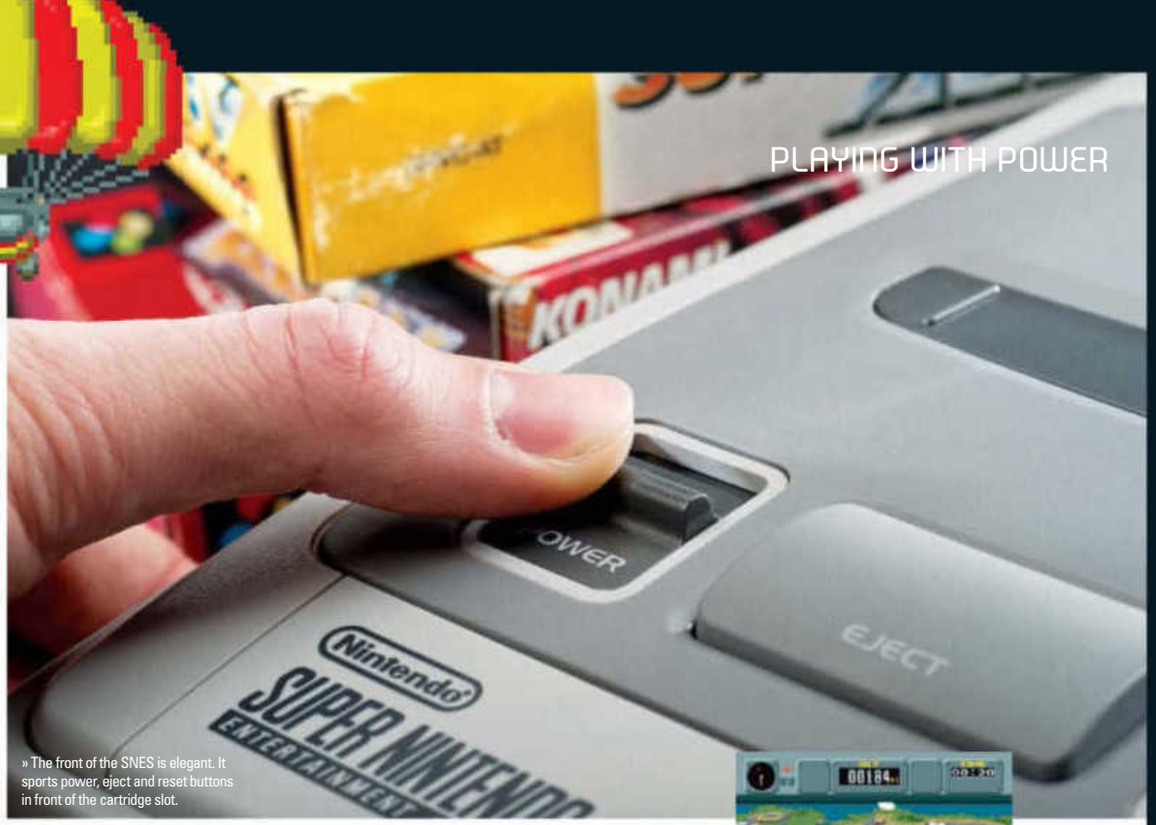
■ Sleek, playful and undeniably classy, the Super Famicom boasted a design which was far removed from the plain and boxy Famicom. The controllers were revolutionary and the four-colour logo has become a cult icon – Nintendo even resurrected the colours for its recent New Nintendo 3DS handheld. On the base of the console an expansion port exists which allows it to connect to the Japan-only Satellaview add-on. The PAL version (shown here) looks identical, but sports SNES branding.

SNES JR/ SNES MINI

■ Launched in 1997 – a time when most players had moved onto more powerful hardware – the SNES Jr was marketed as a cheap, entry-level proposition for younger players. Smaller in size and cheaper to produce, this revised system lacks RGB output as standard but can be modified to obtain it. The power LED and eject button – both hallmarks of the original design – are also absent, as is the expansion port on the bottom.

SNES (NORTH AMERICA)

■ For some unfathomable reason, Nintendo used a totally different case design for the SNES in North America. Designed by Nintendo Of America's Lance Barr, the boxy and unattractive system dropped the four-colour buttons in favour of a purple and pink pallette. The cartridges were also changed, with the US versions adopting the same squared-off design to match the console itself. Thankfully, the European model reverted to the Japanese design, but many misguided American fans swear their version looks best.



» The front of the SNES is elegant. It sports power, eject and reset buttons in front of the cartridge slot.

Back in the early-Nineties when the news came that a successor to the all-conquering NES was in the works, it wasn't just gamers the world over who were rubbing their hands with glee – developers who had made a living on Nintendo's 8-bit system were also keen to see if it could live up to the hype. "It was exciting to see the specs," recalls Chris Sutherland, a former Rare developer who is now working on *Yooka-Laylee* at Playtonic Games. "Previously I'd developed on Game Boy and many others at Rare had worked on NES, so this was a chance to develop games that had far fewer technical limitations." Fellow Rare alumni Brendan Gunn agrees. "It felt like a natural progression from the NES that I was already very familiar with. This made it very easy to get up to speed. The hardware features were far more advanced, but in ways that seemed like a very natural progression." Other developers simply couldn't believe what Nintendo was telling them. "I was given a preliminary outline of what the machine could do," remembers Nick Jones, the former Shiny Entertainment staffer responsible for the SNES versions of *Earthworm Jim* and *Alien 3*. "It seemed impossibly optimistic and with no hardware or full manual, it was hard to really make out what the machine could do. It was like somebody took every programming restriction I'd ever had and just moved the limits an order of magnitude ahead."

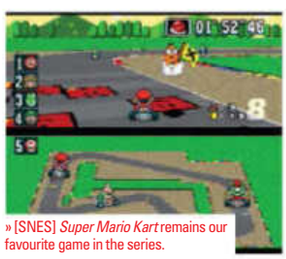
For Brendan and Chris, the SNES represented the next step in the evolution of the games console. "The level of restrictions on the NES and Game Boy had been raised, which is why SNES games tended to have larger characters," says Chris. "Back then, characters were typically built from a number of 8x8 sprites, and if you had more than a certain number of sprites in a row, you'd see parts of your sprite disappear." Compared to rival hardware of the time the SNES' gaming-focused internals allowed for some amazing experiences. "The SNES felt much easier to work with, but that may be because it was so much like an enhanced NES," says Brendan. "It helped that the hardware was designed very specifically with things like scrolling and parallaxing in mind, where the Amiga hardware was designed to be a more general purpose computer." Mike Dailly – who was employed at DMA Design when the SNES launched and worked on *Unirally* – feels that the system was head and shoulders above its competition. "It was better than the Amiga and PC by miles, and the hardware was better than the Mega Drive," he says. "There were just so many toys to play with. I preferred the SNES over everything else. I thought it was an amazingly cool machine."

> **"IT FELT LIKE A NATURAL PROGRESSION FROM THE NES THAT I WAS ALREADY VERY FAMILIAR WITH. THIS MADE IT VERY EASY TO GET UP TO SPEED"**
> Brendan Gunn

While Rare's staff was arguably in a privileged position, having gained valuable experience of Nintendo hardware via its wide selection of games on the NES and Game Boy, other developers had to muck in and learn the hard way. "I went from the C64 which had a 6502 processor straight to the SNES which had a 65816 processor," explains Nick. "They are almost identical except that the 65816 is 16-bit and the 6502 is 8-bit, so you'd think the transition would have been easy, but it wasn't. I was stuck in this mindset that I needed to optimise every byte. The hardware was a lot more

» [SNES] *Pilotwings* highlights what the SNES could achieve using Mode 7.

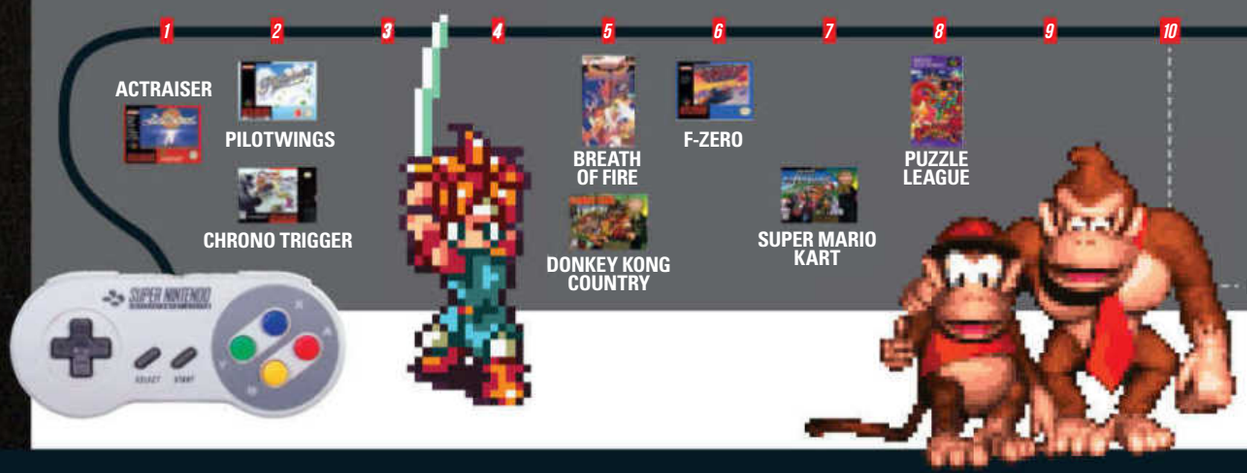
» [SNES] Many thought *Donkey Kong Country* was a next-gen game.



» [SNES] *Super Mario Kart* remains our favourite game in the series.

FRANCHISE STARTERS

Just some of the brilliant franchises that began on SNES



25 YEARS

STAR POWER

Ten legendary developers that made the SNES sing

Nintendo

■ Unsurprisingly, Nintendo itself was the company which did the most to define the SNES, releasing some of the console's best games.

CAPCOM

■ The arcade conversion of *Street Fighter II* remains one of the most important SNES releases, and gave Nintendo a massive advantage over rival Sega.

SQUARESOFT

■ The undisputed master of the RPG, Square produced some of its finest work on the SNES, but sadly many of its titles remained exclusive to Japan.

KONAMI

■ Responsible for some amazing arcade and action games for the SNES, including *Super Castlevania IV*, *Axelay*, *Parodius* and *Turtles In Time*.

Acclaim

■ Titles like *NBA Jam* and the *Mortal Kombat* series made Acclaim a household name in the Nineties, and it scored many commercial hits on the SNES.

> "MODE 7 MADE THE HEADLINES, BUT WAS OF LIMITED USE FOR THE KIND OF GAMES WE WANTED TO MAKE. THE OTHER FEATURES WERE FAR MORE EXCITING TO ME"
>
> Brendan Gunn

» The SNES pad was surprisingly comfortable and a big improvement over the NES pad.

The SNES heralded a new era of trickery thanks to the inclusion of Mode 7, a graphical mode which allowed it to smoothly scale and rotate a single background layer. It was put to good use in titles like *F-Zero*, *Pilotwings*, *Super Mario Kart*, *Super Castlevania IV* and *ActRaiser*. While it was an impressive visual trick, its effectiveness was restricted outside of certain genres. "Mode 7 made all the headlines, but was of limited use for the kind of games we wanted to make," explains Brendan. "The other features were far more exciting to me. Multi-layered parallaxing and colour blending made for much richer backdrops, while bigger sprites gave us far greater capabilities for big, colourful characters," Chris agrees. "We actually stayed clear of Mode 7 for the most part because the ability to scale and rotate was so new and shiny, it felt like it was obligatory for games to use this mode. It also had limitations in its use that made us veer towards using the other modes with some tricks to appear to add more 'layers' of movement than the hardware supported."

The SNES was cutting-edge, but the market into which it was thrust was very different to the one the NES had dominated so effortlessly. Sega was no longer content with second place and thanks to savvy marketing and an earlier release it managed to secure a chunk of the North American and European markets with its Mega Drive system. What occurred next has become the stuff of legend, forever ingrained in the consciousness of the gamers who lived through it: the industry's first *real* console war. "It was interesting because this was a time when there was a difference between each platform," says Jonathan Town, a former Nintendo community manager and retro-gaming aficionado. "These days it doesn't matter too much whether you have a PC, PS4 or Xbox One as the majority of titles are the same and the differences are negligible. The SNES and Mega Drive had a charm to them and even the same game would be different depending on which console you had. Instead of arguments over frame-rates we had *Sonic* vs *Mario*, *Final Fight* vs *Streets Of Rage*, *Star Fox* vs *Silpheed*; each console had a clear personality."

Naturally, Nintendo's console was compared directly to Sega's hardware, and the respective strengths and weaknesses of the pair were highlighted in the magazines of the period. "They were both very comparable machines," says Nick Jones. "The Mega Drive had a faster processor, slightly bigger screen resolution and a synth chip for audio. The SNES had complex graphics modes, a higher range of colours, the video signal was a lot cleaner and it played audio samples for sound – which was a disadvantage and an advantage at the same time." While the SNES boasted superior capabilities, much was made of the console's slower CPU – a trade-off Nintendo made to ensure it cost less to manufacture. The weaker chip is often blamed for the lack of fast-paced shooters on the platform, but Chris Sutherland insists that it was rarely an issue from his perspective. "The speed issue wasn't something that we encountered too much with the *Donkey*

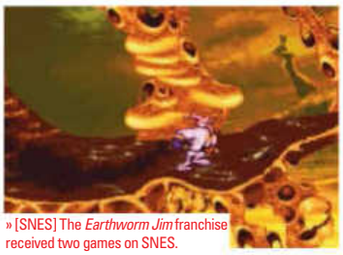
■ Virgin was a prolific publisher on both the Mega Drive and SNES, releasing titles like *Earthworm Jim*, *The Lion King* and *RoboCop Versus The Terminator*.

■ Before merging with Squaresoft, Enix was its rival and made the popular *Dragon Quest* franchise.

■ Once the home of programming Pickford siblings, this studio produced *Plok*, *Equinox*, *Ken Griffey Jr. Baseball* and more for the SNES.

■ Sunsoft's prolific work during the 16-bit era may not have yielded many solid gold classics but the company certainly pumped out quite a few SNES releases.

■ The creator of one of the SNES' most important titles – *Donkey Kong Country* – UK-based Rare mastered the hardware in a way few others could manage.



» [SNES] The *Earthworm Jim* franchise received two games on SNES.

» [SNES] One of the most enjoyable scrolling fighters you can play on SNES.

Kong Country series – perhaps because we were brought up on resource-starved consoles such as NES and Game Boy so we were always trying to be keep things optimised as we developed. Back then systems like that with specialised sprite video hardware that targeted video games could often outshine what was done on a standard PC."

Nick feels that the sluggish CPU was definitely a shortcoming, but like Chris, he was able to overcome this with some clever programming. "It was a little bit of a handicap for sure," he says. "The processor wasn't as powerful and it didn't have as many registers either. One advantage I had was that I came from a C64 background. The processor on that chip was even more restrictive and all games on that machine had to run at 50MHz so I learnt a lot of tricks to achieve that magical frame-rate. Even when I went to Shiny and we worked on *Earthworm Jim*, I didn't tell the Mega Drive programmers my 65816 tricks for over a year so that it evened the playing field. One of the other restrictions was the way that sprites were drawn onto the screen. The SNES was much more limited so you had to draw a lot more sprites to get the same graphic on a screen, which meant more processing power just to set the graphics up. I was able to disguise most of the difference in processor speed. If you play *Earthworm Jim* on the SNES and Mega Drive, the most obvious way to spot the speed difference is when starting a level. Because that was when the game was decompressing the level and graphics – a task limited by processing power. The levels would take about three times longer to decompress on the SNES." Nintendo augmented the power of the console with additional chips which were packed into the cartridges, the most famous of which is the Super FX chip, used in *Star Fox*.

These days, it's often the case that developers require time to fully harness the power of a console, and as a result, the software you see at launch is but a taster of what's to come – by the end of a console's

» Handily, the AV lead for the SNES's output can also be used on a GameCube if you own one.

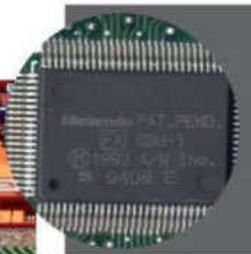
CONSOLE WARS

Scraps that defined an era

MARIO VS SONIC

■ While the *Sonic* games arguably lacked the deep playability of *Super Mario*, the blue hedgehog was marketed perfectly and stole a lot of the Italian plumber's thunder in the early-Nineties. The simultaneous worldwide launch of *Sonic 2* was an event which eclipsed even Nintendo's amazing efforts.

SUPER FX VS SVP



■ As the SNES and Mega Drive grew older and the industry's focus on 3D gaming became ever more apparent, Nintendo decided to enlist the help of UK developer Argonaut to create a chip to bolster the console's polygon-pushing prowess. Sega countered with the Sega Virtua Processor (SVP for short).

SVP Image © Socram8888

FINAL FIGHT VS STREETS OF RAGE

■ When Nintendo secured the port of *Final Fight* it was a massive blow to Mega Drive owners. In typical Sega fashion, the company simply created its own clone: *Streets Of Rage*. The title scored a victory over it SNES counterpart by offering a two-player mode.

STREET FIGHTER II

■ When Nintendo managed to get the first home conversion of the legendary brawler it turned Nintendo's console into the must-have system of the era. A Mega Drive release would follow in due course, but the damage was done – the SNES had scored a massive victory over its rival.

SNES VS PLAYSTATION

■ The recently-unearthed prototype has resurrected interest in this system, which would have been a SNES and Sony CD-ROM drive combined. Nintendo ditched Sony the day after the console was announced. Sony wore revenge and the SNES-less PlayStation launched in 1994, conquering the industry.

MORTAL KOMBAT

■ Family-friendly Nintendo was always going to have an issue with Midway's gore-filled fighter. Ironically, the SNES got the best port in technical terms but at Nintendo's behest the gore was expunged. While the Mega Drive version also suffered censorship, a code could unlock the gore – making it the version everyone wanted.

PERIPHERALS

The SNES had some cool add-ons...

SUPER GAME BOY

■ This nifty device not only allowed you to play Game Boy games on your TV, but expanded a fair few games in interesting ways, too. The most obvious was that you could add borders to games you played or change the traditional four shades of green to different colours. Some titles featured enhanced sound, while certain games let you use a second SNES controller to play two-player games.

SUPER EVERDRIVE

■ If you're a fan of homebrew or backing up your own games then the Super EverDrive is an essential piece of kit. It plugs into your SNES and allows you to add ROMs to it via a SD card. There are various versions available and they included Game Genie cheat codes, with optional USB ports being available for homebrew devs. It's certainly not cheap, but it's very good at what it does.

SUPER SCOPE

■ The Zapper was popular on the NES, so Nintendo tried to replicate its success with the Super Scope. While it has some decent games in the form of *Operation Thunderbolt*, *Tin Star*, *Yoshi's Safari* and *T2: The Arcade Game*, it's not as essential as the Zapper. Its biggest problem was the peripheral's rather unweildly size; while it set the Super Scope apart, it ensured it wasn't as practical to use.

SUPER NES MOUSE

■ Originally packaged with *Mario Paint*, the SNES Mouse proved to be quite a well-supported peripheral. Although a large number of games were only released in Japan, over 30 titles were released in the West, including *Cannon Fodder*, *Eye Of The Beholder*, *Pieces* and *Powermonger*. The only thing that really lets it down is the relatively short lead that connects it to your SNES.

lifespan, the games are leagues ahead of earlier releases. However, the SNES is unique in that the game it launched with is still considered by many to be its finest single piece of software. All of the developers we interviewed list *Super Mario World* as one of their favourite SNES games, with Mike Dailly even rating it as his favourite game of all time. This platformer is legendary even by today's standards, and is merely the cherry on the top of a library which surely ranks as one of the best the industry has ever seen. "I definitely have to choose *Super Mario World* as my go-to game," says Jonathan Town. "However aside from that obvious choice, I really love *Axelay*. It's a lovely-looking shoot-'em-up with a gorgeous soundtrack and balanced difficulty. What really makes it for me though is *Axelay* was a console exclusive, made especially to play to the strengths of the SNES, from the incredible effect on the vertical stages to subtle use of sprite scaling on the boss battles." Some of the console's best games are, refreshingly, a little off the beaten track, such as Human's *The Firemen*. "It's a story-led action game that sort of reminds me of the movie, *Die Hard*," explains collector Stuart Brett, who is planning to publish a book about Super Famicom art soon. "A fire breaks

out at a Christmas party in a corporate skyscraper and we play as Pete Grey and Daniel McClean as they tackle the fire, floor-by-floor, rescuing employees and taking out security robots along the way. It has some great dialogue and character design. It's a lot of fun."

What makes the SNES so remarkable is that it was strong in so many genres, and literally had something to offer for gamers of all tastes. However, one genre in which it excelled was the RPG. "It was the undisputed king of RPGs," continues Stuart. "From the *Earthbound*, *Secret Of Mana* and *Chrono Trigger*, to the *Final Fantasy* series, *Illusion of Gaia* and *Tales of Phantasia* – they were just incredible games that you could sink hours into. However, that's just the tip of the iceberg. The Japanese market had hundreds more, some of which have been translated and patched by fans. I'm still discovering new RPGs for the

THE COLLECTOR

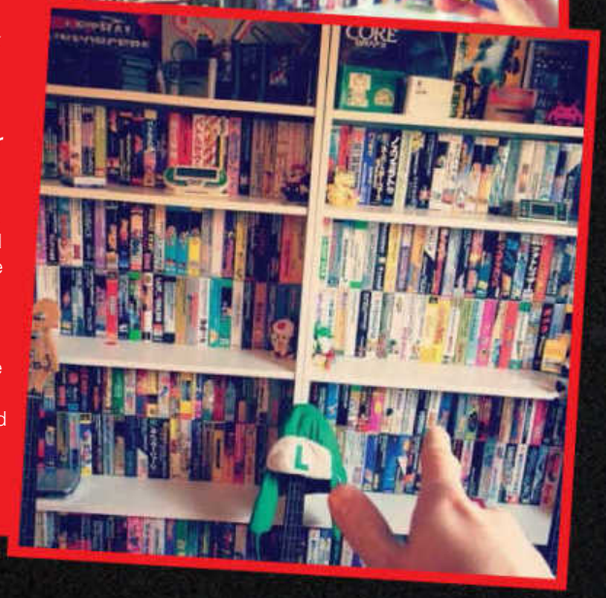
Stuart Brett on collecting Super Famicom games

Roughly how many SNES and Super Famicom games do you have in your collection?
I have just under 400 now. Around a quarter of my games are stored away. I sold off quite a few games last year, mostly games I never play. They were taking over my games room and filling my wardrobe and I was running out space to store my clothes so I sold some off!

What single item has cost you the most?
Spider-Man: Lethal Foes. It was around £280. That was a recent purchase. All the other games I have which are worth thousands (according to ebay sellers) were never that price when I bought them. I have always tried to not overspend and I enjoy hunting down a bargain.

What item do you treasure most from this collection?
I enjoy playing my Super Famicom Box. It's a special version of the console that Nintendo developed for use in Japanese hotels. They contain some unique versions of some classic games, including *Star Fox* and *Mario Kart*.

Can you tell us a little about your book, *Super Famicom: The Box Art Collection*?
I wanted to design a book that celebrates the art and effort that went into game design in the Nineties. There will be over 250 games inside and editing the book with me is Steve Jarratt, ex-editor of *Edge*. The book will be published by Bitmap books and pre-ordering will be announced later this year.



SEQUEL THIS

Ten SNES exclusives that deserved sequels

AXELAY 1992

■ Konami's superlative shooter was not only the perfect advertisement for the console's amazing graphical capabilities, it also played like a dream – no small feat when you consider how unsuited the SNES was to this kind of game. Amazing music, gripping gameplay and timelessly attractive visuals make for a true classic – a sequel was hinted in the end credits, but never came.

ARCANA 1992

■ Unkind observers might brand this little more than a shameless clone of Sega's *Shining In The Darkness*, but it's actually a much better game that doesn't get near enough credit. Turn-based battles and dungeon-crawling make for a stern challenge, while the gorgeous visuals and a painfully beautiful soundtrack ensure it looks and sounds as good as it plays.

SOUL BLAZER 1992

■ While many fans lump this RPG in with fellow Quintet titles *Illusion Of Gaia* and *Terranigma* as a trilogy, the titles are actually self-contained offerings. Out of the three, this is perhaps the most underrated and most deserving of a sequel. It mixes exploration with real-time action, and the notion of rebuilding a world through your actions lends the game additional appeal.

PLOK 1993

■ The work of Ste and John Pickford, *Plok* is a typically zany platforming epic which apparently gained the appreciation of Shigeru Miyamoto himself. Colourful, action-packed and delightfully playable, *Plok* has since been resurrected by the Pickford brothers in a webcomic, and the 16-bit original remains one of the most unique platformers of the period.

E.V.O.: SEARCH FOR EDEN 1993

■ Arguably one of the most original games on the console, *E.V.O.* is a superb mixture of action and role-playing, with the player assuming control of various beasts from Earth's past. Success in combat allows you to level-up and evolve your creature which means they can better deal with environmental changes. It's bonkers, but compelling all the same.

UNIRALLY 1994

■ Known as *Uniracers* in North America, this fast-paced racing title focused on stuntwork and earned critical praise at the time of release. However, due to the similarity between the main character and the unicycle in Pixar's animated short *Red's Dream*, Nintendo was forced to bow to legal pressure and not manufacture any more copies once the initial 300,000 run had sold out.

» We greatly prefer the artwork found on Japanese games. The boxes feel a little sturdier too.

> **"THE SNES' WEAKNESS WAS LACK OF ARCADE CONVERSIONS OF ANY WORTH, WHILE THE MEGA DRIVE WAS DROWNING IN THEM"**
>
> Jonathan Town

console. The latest being *Verne World*, which is set in a futuristic theme park." While there were notable shooters – like the aforementioned *Axelay* – this is practically the only genre that Nintendo's console struggled with, thanks to the slow CPU. "The SNES' weakness was lack of arcade conversions of any worth, while the Mega Drive was drowning in them," admits Jonathan. "Shooters in particular – there are a few great ones, but only a handful."

Like the Mega Drive, the SNES was supposed to get a hardware expansion which leveraged the incredible capacity of CD-ROM discs, and while Nintendo partnered with electronics giant Sony to work on the unit, it ever made it to market. The recent discovery of a SNES PlayStation prototype has put this ill-fated venture back in the headlines and jogged the memories of developers who were shown the tech at the time. "During the winter 1992 CES show, I was lucky enough to attend a private demonstration of a CD-based Sony prototype," says Brendan. "The demonstration took place in fancy hotel room well away from the show, and it was to a small group of Nintendo representatives along with a small contingent of top Rare people – and me! The demo consisted of a video streaming from the CD. I liked the concept technically, but we were not impressed with the video quality." Mike Dailly recalls that DMA was actually commissioned to produce software for the device similar to that which Brendan describes. "DMA was originally approached by Nintendo because we had a video playback engine for it. We demoed a clip of *Star Wars* playing from a 4MB cart, and they were very interested in the tech for the CD-ROM system. But it all went quiet and we started doing *Unirally* instead."

The popularity of the SNES has ensured that it is in high demand with collectors even today. Starting your own collection isn't expensive, and recent developments have lowered the barrier to entry on the more common releases. "A lot of the games have dropped in price fairly dramatically due to availability on emulators or via the Virtual Console on Wii and Wii U," says Jonathan. "US and UK RPGs still command ridiculous prices, but there are plenty of great games to be had for less than £20. The real problem is finding them in good condition – the cardboard packaging sadly doesn't fare very well if not looked after." While finding some common games at a decent price isn't going to be hard in today's market – providing you're happy with just a cartridge – the

SKYBLAZER 1994

■ A rare case of Sony Imagesoft making a decent game, *Skyblazer* is an attractive action platformer which made good use of the console's Mode 7 capabilities. Coming towards the end of the console's lifespan *Skyblazer* was perhaps unfairly ignored, and certainly deserved a 3D sequel which would have made better use of the game's flying sections.

SECRET OF EVERMORE 1995

■ Following the success of *Secret Of Mana* Square decided to found a North American studio and produce an RPG aimed squarely at western audiences. While *Secret Of Evermore* wasn't up to the standard of its Japanese siblings, it was unique compared to a JRPG. It's a shame Square didn't produce more titles of this type.

MAJYUUOU: KING OF DEMONS 1995

■ Konami's shooter was not only the perfect advertisement for the console's graphical capabilities, it also played like a dream – no small feat when you consider how unsuited the SNES was to this kind of game. Amazing music, gripping gameplay and attractive visuals make for a true classic – a sequel was hinted in the end credits, but never came.

BAHAMUT LAGOON 1996

■ One of the last great RPGs of the SNES era, this Japan-only release was tipped for a western localisation but it never happened. It has been fan-translated in recent years and is well worth seeking out, if you're happy to dabble with a spot of emulation. *Bahamut Lagoon* sold almost half a million copies in Japan but no sequel was forthcoming.

more desirable titles are rising in value. "Videogame culture is embedded in the mainstream," says Stuart. "It's lucrative now. I think the Internet has made the retro gamer's world smaller. The chances of finding a genuine bargain online are growing smaller. I can remember paying £60 for *Majyuuou: King of Demons* back in 2007 for my Super Famicom. I thought that was expensive. I've seen copies on eBay now for over £1,300."

The SNES is one of those machines that simply grows in stature as the years roll by, and there's a good chance that people will still be talking about it in respectful tones in another quarter of a century. But why did Nintendo's console make such a massive and long-lasting impact on gamers? Why is it so fondly remembered when the hardware which followed ushered in the era of revolutionary 3D realism? "It was the final hurrah of the classic era of 2D gaming," replies Brendan. "It was a high point before the shift into the modern era of 3D polygons. As exciting as the N64 and its contemporaries were at the time, those games look dated. SNES games by comparison look gloriously retro. Also, the move to 3D created a huge increase in the complexity of games and their controllers which only enhances the charm of the 16 bit era." Chris Sutherland also feels it was the system's mastery of 2D which makes the SNES so beloved. "I think it was the last home console that used custom hardware devoted to 2D sprite games," he explains. "After that there was a transition to more general purpose CPU/GPU architectures. I think that's one of the reasons it stands out – it was almost the de facto machine for creating 2D games. Later consoles could still do that, but people started to veer towards 3D as it was the new thing."

» You can use this device to connect to the Satellaview. It reminds us of the old pictures of the CD-ROM add-on.

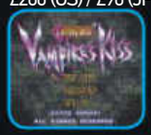
For hardcore fans like Stuart, it's all about the software. "It introduced so many franchises for Nintendo," he concludes. "To have new games like *Mario Kart*, *F-Zero*, *Starfox*, and *Pilotwings* released within the space of a few years was exciting. There was a drive behind Nintendo in those days to try new ideas, particularly in Japan and that enthusiasm was instilled across third-party developers. Most games were coded by teams, so creativity and lack of interference was in full flow. Enix, Square, Konami, Capcom and countless others developed some truly stunning titles for the console. Recent fan translations have also breathed a new lease of life back into the console, with lots of Japanese-exclusives now being available to Westerners for the first time." So here's to another 25 years of Nintendos legendary console.

POUND SAVERS

Excellent Virtual Console options for those that can't collect the real deal

CASTLEVANIA: VAMPIRE'S KISS / DRACULA X

£200 (US) / £90 (JPN) / £225 (PAL) / (VC) £5.49



■ While it's not a patch on the PC Engine CD title from which it is derived, *Vampire's Kiss* is insanely collectable in its physical form, and demands a steep price for the most committed *Castlevania* fan. As such, this download is a much better choice for anyone interested in playing it.

FINAL FIGHT 3 £130 (US) £120 (PAL) / (VC) £5.49

■ The third *Final Fight* outing on the SNES may not be as refined as *Streets Of Rage 2*, but it's the finest example of the genre on Nintendo's console. Haggar returns with new allies and *Street Fighter*-style moves. Its pricey second-hand but this digital release is infinitely better value.

DEMON'S CREST £170 (US) / £125 (JPN) / £260 (PAL) / (VC) £5.49

■ A commercial disaster upon its release in North America, this spin-off from the *Ghosts 'N Goblins* series focused on Firebrand, an enemy in the original games who was elevated to hero in *Gargoyle's Quest*. A mixture of platforming and RPG, this is a true hidden gem.

MEGA MAN X2 £160 (US) / £25 (JPN) £240 (PAL) / (VC) £5.49

■ The second *Mega Man X* game is notable on the SNES as it's the only home version of the game (a cut-down mobile game also exists). It builds upon the groundwork of *Mega Man X*, being far more action-packed than the earlier NES games and quite a bit easier too.

WILD GUNS £350 (US) / £160 (JPN) / £250 (PAL) / (VC) £5.49

■ A steampunk Wild West shooter with an excellent co-op mode and some brilliant, screen-filling boss battles, *Wild Guns* is yet another in-demand SNES release which requires deep pockets to own. Thank goodness, then, for this Virtual Console release.

EARTHBOUND £500 (US) / £20 (JPN) / £N/A (PAL) / (VC) £6.99

■ Recently available on the Wii U Virtual Console, *Earthbound* is a quirky and endearing RPG which, instead of featuring the usual fantasy setting, boasts a modern world invaded by aliens. The game never got a European release, and the American version is incredibly expensive.


POWER
READY
3DO
L
R
Panasonic
■
X
►/II
P
3DO
PHONES
VOL
A
B

Panasonic 3DO

For many the 3DO remains something of a joke, an overpriced oddity masterminded by Trip Hawkins, the founder of Electronic Arts. Over 20 years after the console's release, Will Matthews argues that it's time for a serious rethink

Trip Talks

Trip's early thoughts for 3DO start to take shape

"The thought process for me started in the late Eighties, and I continued to talk to companies to try and understand what their plans were. I was also at that time talking to the companies that controlled operating systems and platforms like Microsoft. Microsoft, for example, had a major initiative that they schemed up with IBM, which they were trying to get developed and marketed and promote a more consumer-orientated, more multimedia-orientated version of the PC, but it never got off the ground. Even though Microsoft had a lot of OEM relationships with different PC manufacturers they couldn't convince anybody to bring that sort of product idea to market. That kind of product idea became very common within five or ten years. Obviously at that time it was an idea ahead of its time."

IF 3DO WAS A PROPHET, IT WOULD BE ZARATHUSTRA. A PHYSICIST, IT WOULD BE TESLA. A WYSIWYG OS, IT WOULD BE WHAT BILL GATES AND STEVE JOBS SAW DOWN AT XEROX PARC. OR, TO PUT IT ANOTHER WAY, 3DO IS AN UNDERAPPRECIATED CONSOLE THAT NEEDS TO BE RECONSIDERED.

For many, 3DO represented a watershed moment for gaming. For British gamers in the early Nineties, the Amiga and the Atari ST remained popular, but were showing their age technologically. What about the SNES and the Mega Drive? In some circles (not all, mind) they were unquestionably seen as toys, host to endless cute platformers and arcadey shoot-'em-ups. They were by the companies that crushed smaller developers with prohibitively expensive cartridges. And worse still, they often censored naked women, zombies, blood and violence – the staples of most male gamers. What about the PC? That ran Lotus123 right? It also cost the earth.

Meanwhile, technologies like Surround Sound and CD-ROM were rapidly taking off. *Jurassic Park* fever was big news at the cinema, while everyone was getting excited by the power of CGI, which has been increasing in popularity since appearing in films like *The Abyss*. The arcades were also exciting with achingly beautiful games from Namco and Sega like *Virtua Fighter*, *Ridge Racer*, and *Daytona*.

The home gaming response for many was disappointing to say the least. You had Philips's CD-i, Amiga's AGA chipset and add-ons and cartridge expansions for the aging SNES and Mega Drive. There was nothing to really believe in or to get excited about. The gaming world needed something and it needed something special.

The Amiga loyal, disenchanted with Commodore, wondered where the core developers of Amiga Technology were working. As it turned out, they were actually hard at work on exciting new technology. In a posting on comp.sys.amiga.advocacy in 1992 it was revealed that Dave Needle and RJ Mical were working at NTG, The New Technology Group. They were working on new hardware that would eventually become the 3DO.

Designed on a restaurant napkin in 1989, the 3DO hardware was targeted to be more powerful than a PC, cheaper than a PC, feature backwards compatibility and have a fairer licensing model for developers. A 3D

Trip's trip through gaming

Your guide to the industry exploits of Trip Hawkins

1978 Joins Apple Computer Inc

1982 Director of Strategy and Marketing at Apple Computer Inc

1982 Founds Electronic Arts

1991 Forms The 3DO Company

1993 Releases 3DO console

1995 Announces 3DO successor, M2

1996 The 3DO Company begins making games for other consoles, including former rival, PlayStation

2003 The 3DO Company announces bankruptcy

2003 Founds mobile company Digital Chocolate

2005 Hawkins gets inducted into the Academy Of Interactive Arts And Sciences' Hall Of Fame. He is eighth person to do so

2012 Trip Hawkins steps down as the CEO of Digital Chocolate

2012 Co-founds and becomes CEO of If You Can Company

Trip Talks

Trip on how Sony was nearly involved with 3DO

"None of these hardware companies had any vision about how to move the industry forward and how to advance the platform features to make it possible to make better games and help the games industry really flourish. They were all kind of waiting for somebody to shake things up and somebody to be a catalyst. That made it very clear that 3DO could define the technology that would be the catalyst, but then we needed to have manufacturing partners. We talked to everybody about it and the two biggest targets in the very beginning were Sony and Matsushita. They're the two largest consumer electronic companies in the world, then and now. They had been rivals in media like VCRs and Camcorders and music CD players and in many cases they battled over standards. There was a lot of interest with Sony, but when we started talking to Sony – even though at that point we were nearly 18 months ahead of them in terms of product development – they had already started their R&D on the PlayStation. As a result, for Sony it came down to a question of whether or not they would join forces with us and come to market sooner and be part of a broader licensing platform or whether they should just bring their own product to market. They decided of course to bring their own product to market. So that was a loss. That was a disappointment, and at the time it turned out to be fatal because Sony became the big success and Sony's performance is what killed off the 3DO."

texture-mapping engine would make games real, while collaborative play was central to the design. The whole package would be topped off by a double speed CD-ROM drive, while AT&T was to provide a modem for voice and gaming. In short there was simply going to be nothing like 3DO on the market.

Under the hood the 3DO used an ARM60 RISC Processor and had two powerful custom graphics chips and an animation processor. It also sported 3Mb RAM and a multitasking OS. Uniquely for a console, developers wrote games for the OS and not the hardware, ensuring backwards compatibility.

At the 1992 CES in Las Vegas, 3DO was revealed. It received coverage in the *Wall Street Journal*, the business sections of the *New York Times*, *Los Angeles Times*, *San Francisco Chronicle*, *Chicago Tribune* and *San Jose Mercury News* plus a profile in *Time* and another *Business Week* piece. More than 30 financial analysts from all the big investment banking firms came by the booth to request briefings. NBC's *Today* show featured 3DO as one of the hot products at the show. CNN and CNBC aired segments. *USA Today*, *Newsweek*, *US News* and *AP* did features. Cover stories in the top enthusiast publication in each important consumer category: *Multimedia World*, *VG & CE*, *New Media*. The *New York Times'* computer columnist did a follow-up piece. It was big news. Such big news in fact that Trip Hawkins, the mastermind behind 3DO who had left Electronic Arts to found The 3DO Company, was offered the keynote speech at CES in June 1993, upstaging Bill Gates, who had asked for the same slot.

In the words of Trip Hawkins: "3DO dominated". There really was no competition.

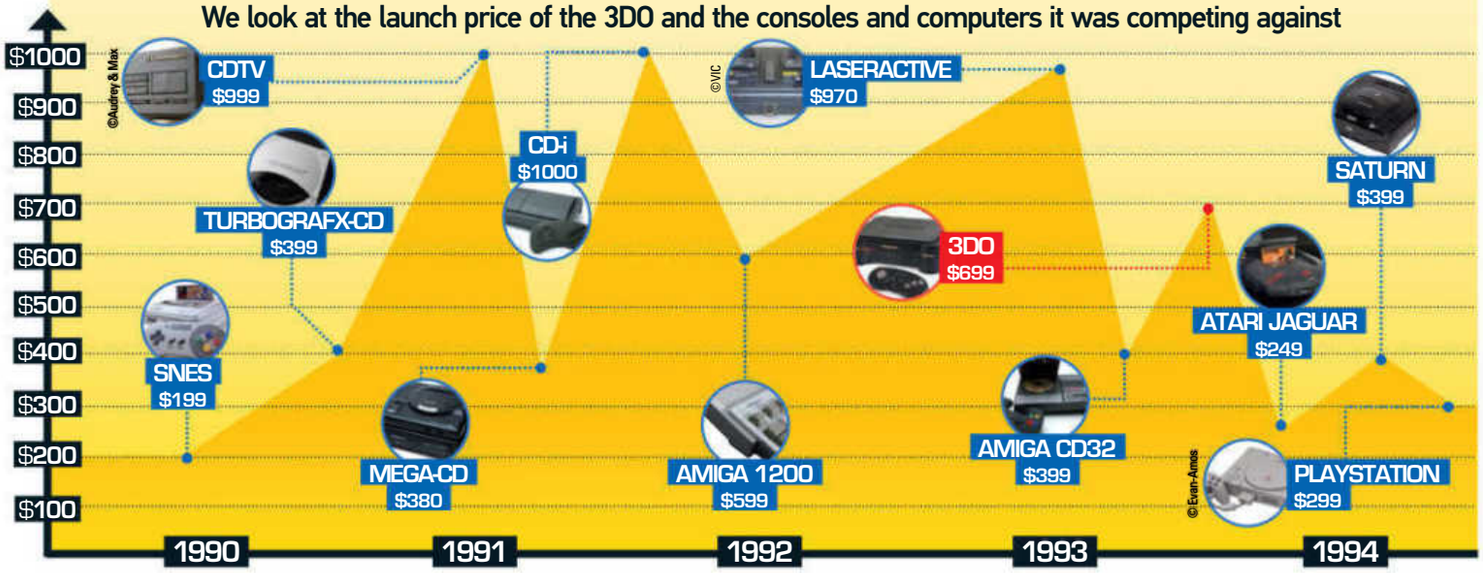
"…Aah, but…" says the internet today, "what about Sony?"

Interestingly, it could have all been very different, as Trip explains to us. "Even Sony looked long and hard at licensing the 3DO hardware in the same way Sanyo, Goldstar and Panasonic had, and they, Sony, were close to signing an agreement. It sounds incredible today but 3DO was bleeding edge and exciting technology."

» Several manufacturers released versions of the 3DO, including Panasonic, Goldstar and Sanyo.

How the 3DO stacked up

We look at the launch price of the 3DO and the consoles and computers it was competing against



YEAR RELEASED

Trip Talks

Trip on not making 3DO internally

"It was intended from the beginning to be a licensing model and a technology company more like Dolby Labs. It was understood that there were plenty of great manufacturers in the world who were looking for great things to manufacture and that we should partner with those companies."

Why Trip teamed up with designers Dave Needle and RJ Mical

"I'd actually known those guys for a while and we are kindred spirits (always caring about many of the same things) and it turned out that they had already started working on designing a next generation system and they had made some very important decisions that were the same decisions that I would have made (architecture and approach). Rather than me start a brand new team and starting from scratch it just made a lot of sense to me to try and join forces with them and shape what they were doing into what I wanted it to be."

And so, before its launch, a huge anticipation formed around both 3DO and Trip Hawkins. Evidence of this can be seen in the fact that in mid-March 1993, 3DO entered into the stock market with an initial public offering that valued the company at around $300 million. At that point nothing had shipped. In 1993 the 3DO idea had reached insane proportions: Hollywood, telecoms, media, the public and 300 developers all knew 3DO was the future.

In October 1993 3DO was launched in the United States. Six months later it launched in Japan and six months after that it hit Europe. *Jurassic Park Interactive* was to be the launch title in the US, but thankfully, some might say, it slipped. Crystal Dynamics' *Crash 'N Burn* was bundled with the console instead. Played today, *Crash 'N Burn* is clearly the missing link between 16-bit and 32-bit platforms, something that is admittedly true of a lot of early 3DO games. Game mechanics, sound and the overall presentation gave it the feel of an Atari ST game on steroids, yet the graphics were pure next generation; astonishing draw distance, textures, full-motion video and the much vaunted polygons people had clamoured for. While it was no killer application, it was by no means a bad game. Jaws predictably dropped and reviews for the game were very enthusiastic.

» The AV-Expansion was used for various things, including the MPEG-1 FMV Cartridge.

Importantly too for 3DO, its detractors had been silenced. The Panasonic FZ-1 had not only launched on time and on budget, but it delivered on all of its performance promises.

Let's talk about price for a minute: the topic itself is a meme. If YouTube, magazines and the web are to be believed, price was the only reason 3DO failed and didn't go on to become a resounding success. The American price was initially high. Most retailers were selling the console at $599 (interestingly, its official list pricepoint was $699, but Trip explains that very few retailers actually sold it at that higher price). In six months it was down to $500, about £300. The high price theory only holds water if, and only if, you used a SNES and Mega Drive as a benchmark and ignore the subsequent competitive price drops. Which of course some people did. Against the PC or a high-end consumer CD Player, a fairer comparison for the console perhaps, 3DO was an absolute bargain.

From a British perspective, in 1994 an Intel 486 DX2 66 PC was around £900, and you could add a CD-ROM which was at least another £200. A Mega Drive plus its CD-ROM add-on in comparison was £370. A Phillips CD-i was £399 and so on. The 3DO launched in the UK at £399. After that, the price of the 3DO dropped rapidly and matched the price of PlayStation and Saturn turn for turn. Price was certainly a factor, but not the significant one that the internet would now have you believe.

Luckily for us Brits, the 1994 UK launch of 3DO had 34 titles available. Standout titles were games like *Total Eclipse*, *The Horde*, *Madden Football* and *FIFA International Soccer*. To this day *Shockwave* is enjoyable, and *Road Rash* is superlative. 3DO had some healthy conversions from other platforms too – noticeably, *Alone In The Dark* and truly stunning adaptations of *Samurai Shodown* and *Super Street Fighter II Turbo*.

Trip Talks

Trip on not region locking 3DO

"I think it had moderate importance. There's obviously a difference between PAL, SECAM and NTSC televisions and these are products that are all going to play back through the television. Even if the hardware is compatible across regions you're going to still have some issue with how software is going to present and display. So the regional issues were kind of legitimate in terms of how they might affect the product experience, but in my opinion Nintendo were always too hardcore about it. They just really wanted to prevent hardware and software from moving across territorial boundaries and in my opinion that was way too controlling and kind of typical of how Nintendo wanted to manage their empire. I believe that how 3DO did it was much more liberal and generally I think in many respects humanity wins anytime that there's more freedom, so that's why I'm not surprised that's how the industry has evolved since then."

RF OUT

When the 3DO was first released not all TVs supported RCA jacks, so this was used for older televisions. It needs to be tuned in and the picture is far from stellar, but at least you can play on the actual console.

COMPOSITE RCA

If you wanted to get a better image out of your 3DO and had the TV to support it then this was a big improvement over the fuzzy RF Output.

EXPANSION PORT

This port could be used by the FZ-EM256, a 256k Expandable Memory Unit. It was released in 1994 and only available in Japan.

CH SELECT

This was a rather useful little switch for alternating between the 3DO and the TV to ensure that they weren't tuned into the same frequency.

S-VIDEO OUT

Looking for the best possible picture? Then this was your best choice and it gives strong results. It's worth noting that S-Video doesn't appear on the Goldstar GDO-101M model.

Trip Talks

Trip on why 3DO's medium was always CD-based

"If you think about it, at that time your manufacturing cost for one megabyte of memory on a cartridge was more than $10, so you're literally paying more than $10 per megabyte. A CD-ROM at that time held 500 megabytes and cost about $1. It's just such a ridiculous difference, and honestly you were very limited in what kind of software product you could make that would actually fit on a cartridge, and then on top of that you had other constraints like the inability to save anything because the memory is permanent – there's no storage. Of course you could say you had a similar issue with CD-ROM because both CD-ROM and Cartridge ROM are Read Only Memory, but if you're going to use a CD-ROM you need to have a lot of RAM and you're going to be transferring things from the disk into working memory and then you can have a certain amount of your working memory easily powered by a battery that allows you to save things. So CD-ROM was just far more powerful and far more efficient."

3DO Vs PlayStation

Despite an early headstart, 3DO ultimately lost out to the power of PlayStation. Here's how the two consoles stacked up

M32-Bit 12.5 MHz RISC CPU (ARM60)	CPU	MIPS R3000A-compatible 32-Bit RISC chip 33.8668 MHz
2MB Main RAM	RAM	2MB Main RAM
1MB	VRAM	1MB
Dolby Surround Sound	SOUND	ACPCM up to 24 channels
44.1kHz	SAMPLING RATE	Up To 44.1 kHz
320 x 240 to 640 x 480	RESOLUTION	256 x 224 to 640 x 480
No	REGION LOCKED?	Yes
2x (based on manufacturer). Maximum data throughput 300 Kb/s	MEDIA	2x CD-ROM Drive. Maximum data throughput 300 Kb/s

Trip Talks

Why Trip wanted a different licensing model for developers

"It just seemed like it ought to be possible... If you're looking at a Nintendo system the hardware price is lower because Nintendo understands it's a razor and razorblades business model and they need to build the hardware install base. They would basically make it a loss leader and bring it to market for $199 and that's how you successfully launch and build up consumer markets. Then Nintendo of course would shift the cost burden to the software. I thought: 'Why can't a platform like this be more like a television? Where the public pays $500 on a television, knowing they're going to get a wide variety of programming and they spend more on the hardware and less on the software and there's more flexibility for pricing on the software. I believed that a multimedia machine that had a CD-ROM drive in it that could do music, video, games and education could support a higher pricepoint. That aspect of 3DO and even that aspect of any other early multimedia machine, including the PlayStation, never really got established with the public and never had the benefit of the doubt for its versatility, so all of these early machines ended up getting judged by the media, and judged by the public, purely as games machines. And again, the games machine business model was give the hardware away and sell these expensive razorblades. My goal was to shift a little bit of the cost of the hardware, get much better hardware and then get CD-ROM media that would be cheap and have lower licence fees and then have a wider variety of software, more like the variety of music for music CDs."

Unfortunately, for many it just wasn't enough. This was certainly the opinion of the usergroups of the time, 'more games' they cried. The problem was that 3DO was a new, more powerful unknown platform. Development time was longer and far more expensive and as a result there was a lot to learn on all sides.

3DO's immediate competition fared a great deal worse. The Amiga CD32 had no genuinely visually or technologically arresting games. The Atari Jaguar, while considerably cheaper – and argued by many to be more powerful – had issues; relying on cartridges, naked polygons and heavily rushed games, Atari's finances were also in question. Sega, meanwhile, fumbled about with expansion units and Nintendo danced to its own tune as usual. In truth, from 1993 to 1994 3DO continued to dominate the 32-bit wars, especially from a hardware perspective.

However, Sony's whisper campaign was gathering pace, and many gamers and developers began to hold out. Magazines became filled with questions about *Ridge Racer*, and asking things like would Namco do a 3DO port?

At that time, CD-ROM created new concepts for developers to experiment with: pre-rendered FMV, streamed from CD, and with that the Interactive Movie, a term that soon became synonymous with 3DO. Certainly, the 3DO played host to its fair share of what might be termed 'abuses' of CD technology in the form of Interactive Movies, but it didn't have disproportionately any more than any other CD platform of the time. Today, for anyone willing to mine their way through the 3DO catalogue for such titles, they may be delighted to discover that games like *Corpse Killer*, *Snow Job*, *Daedalus Encounter* and *Novastorm* are actually at the very least charming reminders of the groundswell behind the technology, and at their very best, very playable.

Many games were FMV heavy, with so-called Photo Realistic Graphics: *Mega Race*, *Microcosm* and *Rise Of The Robots* were poster children of this and adorned many magazine covers of the time. 3DO's tech showed them off best and was placed shoulder-to-shoulder with these games as they built hype; then, sadly, as they bombed out they took a bit of 3DO

» The 3DO's controller was quite cool, featuring a daisy-chain system and the ability to use headphones.

Console Failures

Other high profile consoles that ultimately failed to make the grade

AMSTRAD GX4000

RELEASED: 1990

■ The GX4000 lasted only around a year. Despite being a relatively powerful 8-bit machine, it simply couldn't compete with the SNES and Mega Drive. With neither the games, the stamina or money to do so and plagued by a myriad problems, it failed, selling only 15,000 units. While some of its games showed off the console's capabilities, many were simple CPC ports with better loading and little else.

PHILIPS CD-i

RELEASED: 1991

■ 'Poorly executed plan' sums up the CD-i. Vision-wise it shared 3DO's hopes of being a global platform, but never achieved it. Failing to capture the public's imagination, and with a small collection of lacklustre games, CD-i eventually bowed out. In the machine's defence it's worth noting that it wasn't marketed first and foremost as a games machine, opting instead to be a multimedia jack-of-all-trades.

NOKIA N-GAGE

RELEASED: 2003

■ Nokia had the right vision, because in 2002 mobile phone gaming was a fad. The N-Gage had some great games including a beautiful conversion of *Tomb Raider*, plus support from Sega with the likes of *Sonic* and *Sega Rally*. Sadly for Nokia, it had a mobile phone maker's mentality and lost to Nintendo. It didn't help that phone buttons are ill-suited for playing complicated console games.

sheen with them. While 3DO is often remembered for the cliches of Interactive Movies, it's often forgotten that it played host to games that progressed the theory: *Wing Commander III*, EA's $6 million epic, the immersive *Immercenary* and WARP's two hours of time-limited *D* and the star-studded *Hell: A Cyberpunk Thriller* all exhibit part of the DNA seen today in games like *The Last Of Us* and *Uncharted*. Basically, movies and stories you interact with.

Through the first half of its life, 3DO played host to more quality titles than it is credited for. It has some excellent 2D fighting games, most notably what was arguably the best version of *Street Fighter II Turbo*, *Samurai Shodown* and *Pretty Soldier Sailor Moon*. 3DO also enjoyed the best conversions of games like *Another World* and *Star Fighter*. Equally, as the *Doom* phenomenon exploded at around that time, while *Doom* wasn't available on 3DO initially, many FPSs tried to fill that gap: *Slayer*, *Death Keep*, *Iron Angel Of The Apocalypse*, *DefCon 5* – all interesting titles that did new things with the *Doom* formula.

3DO also had a rich alternative library: party games, collaborative games, puzzle games, edutainment, reference works – all were a part of Trip Hawkins' vision for the console. 14 years later, Nintendo would reclaim its dominance with such titles. "They took the concept of these games as far they could," Trip tells us about these early games. Sadly, the world just wasn't ready for casual gaming.

December 1994 and PlayStation finally launched – 3DO's real apocalypse all wrapped up in an impressive ten-year plan. Sony launched the PlayStation for $399 – Mr Hawkins was in the audience at the announcement. It was an incredible price. "It was achieved because built into this launch price was the assumption that the cost of CD-ROMs, components, RAM and manufacturing, over the ten years, would come down, subsidising the initial launch price," explains Trip. Dependent on no one, with a $2 billion budget, an inscrutable Japanese plan and a phenomenal vanguard in marketing, PlayStation effectively stole 3DO's thunder from right under its nose.

By 1995 it was 3DO's last stand. Sony and Sega were the darlings of the console world by then and it showed. EA's *The Need For Speed* went up against *Ridge Racer* and *Daytona*, and came away with an ill-deserved bloody nose, despite the fact it was a great racer. Sega and Sony seized the headlines, and perhaps

Trip Talks

Trip on the lack of a second joystick port

"Well we absolutely planned for it to work through the daisy-chain and the daisy-chain was a really elegant solution that allowed up to 16 joysticks to be connected, so clearly there was no problem having two joysticks connected to the machine because there were in fact two ports on the hardware to plug two joysticks in. You could also daisy-chain them for a more cooperative game. It's really up to the hardware manufacturer. A manufacturer could have offered it with two joystick ports."

Trip Talks

Even in early 1994 Trip knew 3DO was in trouble

"We came out of that first holiday season knowing that we hadn't met all our objectives. So in early 1994 we were kind of scrambling to try and improve things and that's when we negotiated with Matsushita – we made an agreement with them that gave them incentives to bring the price down to $499. We were then really hustling to try and figure out how to get better games to market, but a lot of that was outside our control. That was the point when 3DO decided that it should expand its commitment to making titles for 3DO. That, for example, resulted in the early work on the development of brands that became very successful brands for 3DO, but were not necessarily successful on the 3DO platform – brands like *High Heat Baseball* and *Army Men*. Those brands were conceived to be killer apps for the 3DO hardware, and then of course by 1995 it became clear that we weren't going to make it in the hardware business, but those would be good brands to make for other people's hardware."

» There's something rather sexy about the 3DO's design.

more importantly, review space and shelf space. 3DO tried to outflank them. Some of the best titles for the platform came during this period – *Killing Time*, *Gex*, *Return Fire*, *Shockwave 2*, *Lucienne's Quest*, *Blade Force* – but they were losing ground.

Equally damaging to 3DO were the many games ported to the PlayStation, and not just through loss of exclusives. What's interesting is that if you compare them today, none seem to have benefited from the PlayStation's power. In many cases – such as *The Need For Speed*, *Space Hulk*, *Novastorm*, *Starblade*, *Total Eclipse*, *Shockwave* – games were dumbed down and tweaked, draw-distances ruined and palettes butchered. *Novastorm* for example is an unrecognisable mess. It's not a great game, but the hard sci-fi look and feel is gone – it was struck dumb for PlayStation. *Need For Speed* had a *Ridge Racer* serum injected into it, making it almost unplayable, the simple elegance of *Total Eclipse*'s graphics tarnished. PlayStation was powerful, but many artists hated it because the memory management was so inflexible. At the time members of rec.games.video.3do gnashed their teeth and put ash on their heads, but it was all for naught.

By the end of 1995 Sony's PlayStation was the new sexy. *WipEout* was sexy. *Ridge Racer* was sexy. *Tekken* was sexy. Saturn stumbled with lacklustre conversions and the 3DO, Jaguar and CD32 were all aging fast. 3DO had lots of good games, but good isn't sexy, and sexy sells.

At the beginning of 1996, two 3DO games broke fans' hearts: *Doom* and *Mortal Kombat 3*. *MK3* was shown working, featured on magazine covers and by all accounts was ready for release, but it never materialised. *Doom* was another story. Randy Scott of Art Data Interactive promised for two years a game that "[had] simply no comparison between the PC and 3DO versions…" he was right, just not in a good way. ADI had wrestled to put *Doom* onto the 3DO. Plagued with staff problems and over-ambitious ideas, 'Burger' Bill Heineman was eventually contracted in to do a basic port of the PC version in just ten weeks to meet a

Trip Talks

Trip wasn't happy about EA jumping to Team Sony

"If you're a developer and you know that Electronic Arts was really the place that 3DO got conceived and birthed, and that even Electronic Arts is moving to PlayStation, then that's what you're going to do. Frankly that was very sad and discouraging for me because I was no longer running Electronic Arts and I didn't really agree with that decision. It just really felt like 3DO got prematurely stabbed in the back. I understood the fear and the risk management and I also knew that Sony was courting EA and bending over backwards to offer EA a really favourable deal and there's no way EA would have gotten that deal had EA not have been involved in 3DO. So, frankly, 3DO made a huge contribution to the success of EA on PlayStation by helping them have the leverage to get a better deal, but 3DO's ox got gored in that process."

Defining Games

Ignore the detractors, as the 3DO had some cracking releases. Here are some of the most notable

DOCTOR HAUZER ■ 1994 ■ RIVER HILL SOFTWARE

A 3DO exclusive and import-only title that can be picked up relatively cheaply and easily. It's often derided as merely an *Alone In The Dark* clone, but it's much more than just that. For 3DO fans it demonstrates, probably better than any other game, the 3D power of 3DO. The Doctor Hauzer world is fully texture-mapped and can be played entirely from a first-person perspective. It lacks some of the subtle genius of *Resident Evil* in its puzzles, but there are walkthroughs out there to help you through.

NOVASTORM ■ 1994 ■ PSYGNOSIS

Novastorm is Psygnosis's sequel to the disappointing *Microcosm*, and known as *Scavenger 4* on other platforms. It's an essential because it is very much a product of its generation – sprites overlayed on beautiful pre-rendered backdrops, an edgy dystopian atmosphere and a hypnotic techno soundtrack. The mechanics of the game are somewhat questionable, but as with so many Psygnosis games it's style over content. *Novastorm* may not be a fantastic game, but it's a mesmerising journey.

POWERS KINGDOM ■ 1993 ■ MICRO CABIN

Easier and cheaper to get hold of than it's sister game, *Lucienne's Quest*. *Powers Kingdom* is a Japanese tactical RPG before next generation RPGs became cool with the advent of *Final Fantasy VII*. The character names are obscure, the plot is contrived and the manual is all but an unreadable translation disaster. Yet, it has depth. Missions are repetitive, but the characters' skills develop nicely, and the battles get increasingly epic. Be warned, *Powers Kingdom*/*Guardian War* is region protected on 3DO.

ESCAPE FROM MONSTER MANOR ■ 1993 ■ THE 3DO COMPANY

This was created to demonstrate 3DO's power under the watchful eye of Trip Hawkins and RJ Mical. Leo Schwab, the main developer, set out to create something to show 3DO's graphical superiority. Lacking the complexity of *Doom* or *Wolfenstein*'s weapon choices, multi-level design and textures, *Monster Manor* has a higher resolution and features ever so slightly creepy transparent ghouls and monsters, that are brilliant.

THE NEED FOR SPEED ■ 1994 ■ ELECTRONIC ARTS

No 3DO article should be without a mention of the game honoured as the best on the platform: *The Need For Speed*. Real cars, real tracks, real physics, real crashes, real cops, real replays and a really impressive draw distance. The 3DO version is the definitive version of a fantastic racer. Nothing competes with the feeling of being in the wrong gear, on a hill, after a spinout with cops wailing behind you. An epic racing game, with a splash of edutainment. Pure 3DO.

THE HORDE ■ 1994 ■ TOYS FOR BOB

Made by Toys For Bob and published by Crystal Dynamics, *The Horde* is simply delicious. It's a blend of strategy and arcade – breed cattle, set traps, fight the horde and earn money. The isometric animations for the demonic horde are inspiring and beautifully realised, as are the sound effects. Nothing quite beats the satisfaction of slicing open a belching Hordling while they sit digesting your village's occupants. The FMV is entertaining, and recognise Kronus Maelor? Yes, he was in the movie *RoboCop*.

FIFA INTERNATIONAL SOCCER ■ 1994 ■ ELECTRONIC ARTS

The 3DO version of *FIFA International Soccer* was a revelation upon release, boasting stunning 3D, slick animation and beginnings of the ridiculously high production values that the series would become famous for. While all of EA's sports games on 3DO left no doubt that the next gen was well and truly here, it was *FIFA* that set the benchmark for everything else to follow. Best of all it still plays a mean game of football and caters for up to six players. Just don't mention the poorly-implemented offside rule…

Trip Talks

Why 3DO lost so many developers to PlayStation

"One of the things that was difficult was that we were trying to get the hardware to market for the holiday season in 1993, but in fairness game developers were dealing with many new things and issues on this type of hardware. It was not the kind of development they were accustomed to, so it turned out that even though many of the game developers were sure and confident and promising that they going to make that 1993 holiday season, a lot of the best products like *FIFA* and *Road Rash* and my personal favourite Return Fire – all these games that turned out to be everybody's favourites didn't really get to market until the summer of 1994, so that was around nine months after the hardware had launched. That disconnect... You could make the argument that that was the fatal blow. If those games had come out at launch, if the hardware had been a little bit cheaper, then it probably would have taken off and it probably would have been a big success and developers would have stuck with it and it would have become a much more challenging competitor for Sony to come in and compete with. And Sony would have probably ended up sharing the market instead of taking over the market. When you have that much of a timing gap, not enough hardware got sold in that first nine month period, it just made it that much more tempting for a lot of the developers to just move on and embrace the Sony PlayStation and kind of give up on 3DO and port their 3DO work to the PlayStation. Even Electronic Arts did that."

Trip Talks

Peter Molyneux was part of Trip's 3DO plans

"I remember having one conversation with him at a developer's conference that was probably in 1992 where he said: 'Hey Trip, I got these 3 ideas, which one do you like better?' and they were all pretty interesting. I'm pretty sure that he eventually developed different products and brands from those ideas, but I'm sure they had their biggest impact on the PC and on the PlayStation because 3DO lost momentum in 1994, because we couldn't sell enough hardware fast enough. We didn't have the low price point, we didn't have the killer app games. As we were losing momentum in 1994 a lot of the good developers [like Peter] began focusing on the PlayStation."

Industry In-roads

Some of the cool things that 3DO helped establish before everyone else

DAISY-CHAINED CONTROLLERS

■ The 3DO featured the ability to link several controllers together, allowing for competitive play. Interestingly, it's a trait that no other consoles appear to have used.

MULTITASKING OPERATING SYSTEM

■ Nowadays, many modern consoles have high-end operating systems that can do multiple things, but it was an innovation on systems like the 3DO.

INTEGRATED LIGHTSHOW

■ Play a music CD in your 3DO and you'd be treated to an integrated lightshow. It's a cool system that was used in both the PS3 and Xbox 360 and we wouldn't be surprised to see it in the next run of consoles from Sony and Microsoft as well.

LACK OF COPY PROTECTION

■ Unusually for the time there was absolutely no copy protection built into 3DO. It's a rare anomaly as current console manufacturers fiercely protect their systems.

DEVELOPER BENEFITS

■ Trip and his team worked closely with developers to not only give good licensing deals, but also attract developers to the console. Sony is taking a similar stance with PS4, realising that happy developers means more potential exclusives.

JOYSTICK HEADPHONE SOCKET

■ In addition to being able to link to other controllers, the 3DO also had a headphone socket and volume control built into it. It's a feature that has been used in consoles like Xbox 360.

3D GRAPHICS

■ One of the biggest bonuses that the 3DO had at the time was its cutting edge technology that greatly outshined the average PC of the time. This is something that's becoming rarer and rarer in today's technology-fuelled market.

THE HOLLYWOOD CONNECTION

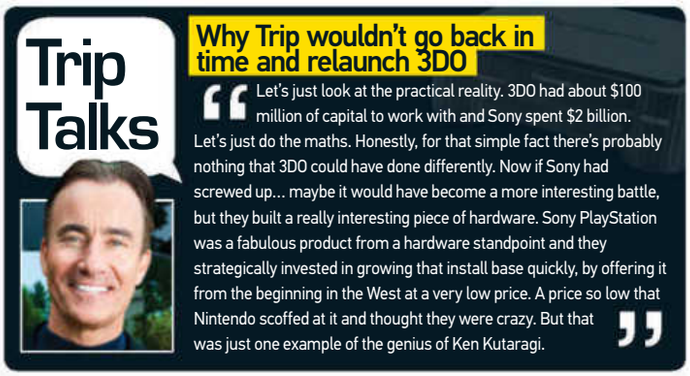
■ While software companies had dallied with film licences before, 3DO was the first home console to actively pursue Hollywood. It's now commonplace in the industry, with actors and composers often getting involved with new games.

TRUE MULTIMEDIA

■ 3DO was one of the first consoles to offer true multimedia capabilities. This has now become the norm rather than the exception, although many would argue that Microsoft took the concept too far with the announcement of its Xbox One.

REGION FREE

■ 3DO was one of the first disk-based consoles to be region free, extremely handy today for those that are collecting on the machine and want the best possible games. It's a stance more and more companies are now taking on their home systems.



Christmas deadline. Through no fault of 3DO, or Burger Bill's, it was widely considered the worst conversion of the game.

As the early-Nineties changed to the mid-Nineties, one by one challengers and stalwarts alike succumbed to the PlayStation's dominance, and in December 1996 the 3DO console was no more. The 3DO Company was to focus on software. In truth, the 3DO Console ended its days having achieved its ambitious design goals but failed to compete with Sony's gargantuan budget and momentum. Post-1996, all was not entirely lost, even though the 3DO Company was diversifying.

Fans of the console clung to the idea of the 64-bit 3DO M2, the designs for which had been sold to Matsushita for $100 million back in 1995. The omens for the M2 3DO Console were, however, bad. At E3 in 1996, Trip Hawkins had posed proudly next to three prototypes for the M2 and had demonstrated *IMSA Racing*. So, when the 3DO M2 failed to emerge at the 1997 E3 Show, supported by rumours that 3DO stalwart WARP had canned the sequel to the cult classic *D*, most people predicted the inevitable.

In a statement mid-1997, Matsushita's then-president, Yoichi Morishita, claimed the technology wasn't making much headway in developing a 64-bit device capable of competing in the already crowded market. He claimed: "There is a slim possibility that [64-bit technology] would be specialised in home video machines," and added: "It is a difficult situation." The 3DO M2 never fully materialised.

Matsushita's reasoning was obvious. We forget during that year between the E3s of 1996 and 1997 that the world had been given *Final Fantasy VII*, *Tekken 3*, *Resident Evil*, *Quake*, *Tomb Raider* and *Super Mario 64*. It just didn't make any business sense for Matsushita to go up against Sega, Sony and Nintendo at that time.

Other deals were around though. In a deal in 1996, 3DO had teamed up with Cirrus Logic to develop video graphic controllers, using M2 Technology and the 3D API bundled with Windows 95: DirectX. While beta versions of these graphics cards do exist, they were never formally released. Rumours also circulated regarding talks between M2 and Sega but they fell through, so it's claimed, because Sega wanted exclusive rights to the M2 technology.

So, after all the hype, the bold claims, the dashed hopes, the curious Dodo magazine adverts – much to the horror of asthma sufferers – that featured real feathers, a solid glimpse of the future and more than just a little full-motion video, the 3DO console dream was at last over.

Today, some 20 years later, 3DO still retains a hardcore group of fans. Interestingly, in regions where the 3DO Multiplayer was never released, such as Russia and South America, the console is considered exotic and even essential.

A variety of software tools have also been developed, predominately again in Russia, that allow 3DO fans to examine the contents of 3DO game discs. Rarities such as images referencing *Metal Gear Solid*, originally planned for the 3DO, on the *Policenauts* 3DO Pilot Disc, and cheats never before published for games like *Novastorm* have also emerged in recent times.

In 2007 four new games, previously unavailable and only in beta, were released: *PowerSlide*, *Decathlon*, *Onside Soccer* and *Ice Breaker 2*. In 2010, for those lucky enough to own a 3DO M2 console, *IMSA Racing*, the 1996 E3 showcase title – then known as *M2 Racing* – was made available too.

In the past year alone three entirely new games for the 3DO have also emerged: *Unlucky Pony*, *Where's Derpy?* and *Vigoroth The Delivery Man*. Hardware modifications have also started to surface. An RGB mod, available on a popular auction site, is easily available for those with a steady soldering hand. Additionally, a hard-disk mod and boot disc allow owners to load 3DO games.

Hopefully, way into the future, even when the last CD lens is dead, 3DO games will continue on.

Today, 3DO is equated unfairly to failure. Compared to the CD32, Mega-CD, CD-i, FM Towns Marty and the Apple Pippin, 3DO not only had vision but successfully executed that vision. Many of its peers had neither. 3DO lives on in spirit today in the PS4 and Xbox One, the next generation of collaborative, online, multimedia consoles. Trip's vision was eventually realised by others.

Trip Talks image is a press shot from his time at Digital Chocolate, creator of popular mobile games

PERFECT TEN GAMES

LUCIENNE'S QUEST

ROAD RASH

SNOW JOB

LUCIENNE'S QUEST

» **RELEASED:** 1995
» **DEVELOPED BY:** MICRO CABIN
» **BY THE SAME DEVELOPER:** THE DEEP BLUE FLEET

When a system is starved of a genre, it becomes easy to lavish praise on unworthy titles. Despite being one of few JRPGs released, *Lucienne's Quest* deserves its praise. By no means an epic quest (needing under 20 hours), it was packed with light-hearted charm and clever ideas. Rather than playing a hormonally enraged teenager with spiky hair like other jRPGs, you control a wizard's female apprentice who decides to help a warrior cure his lycanthropy, only to be joined by equally colourful characters. You also begin with teleportation magic, which eliminates all backtracking! The battle system meanwhile is fun and unique, allowing real-time damage to the surroundings. Blithe, but enjoyable.

STAR CONTROL 2

» **RELEASED:** 1994
» **DEVELOPED BY:** PAUL REICHE III & FRED FORD
» **BY THE SAME DEVELOPER:** STAR CONTROL

Explore outer space while communicating with strange alien races, having hellishly intense dogfights, and unravelling a millennia old mystery – all in order to free Earth from the "slave shield" problem it's gotten into. Although a PC port, the 3DO iteration of this epic space opera was vastly superior thanks to all written dialogue being replaced with some excellent voice acting. Paul Reiche III and Fred Ford spent the final six months developing the game without pay, and the last two averaging 18 hours a day, seven days a week – this dedication and effort is clear to see on screen. Worth owning a 3DO for, despite The Ur-Quan Masters port being free.

ROAD RASH

» **RELEASED:** 1995
» **DEVELOPED BY:** ELECTRONIC ARTS
» **BY THE SAME DEVELOPER:** M.U.L.E.

It was late arriving on the 3DO, but *Road Rash* reinvigorated the bikes-and-violence formula like never before. Gone were the cartoony sprites of the MD games, instead replaced with gritty digitised characters – every eruption of violence with a chain or club felt wonderfully savage and guttural. Environments were also truly 3D, with an exhilarating sense of speed. But the biggest improvement was atmosphere: heavy rock bands like Soundgarden allowed their music to be used, which, when combined with the between-races bar-room surreal-pastiche of talkative yet scummy bikers, genuinely made you feel like a member of this carburettor underclass: a social miscreant with a penchant for bikes, booze, heavy rock, and violence.

POLICENAUTS

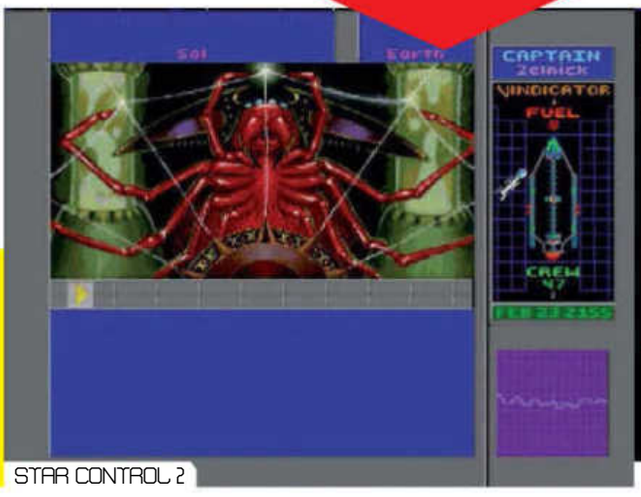
» **RELEASED:** 1995
» **DEVELOPED BY:** KONAMI
» **BY THE SAME DEVELOPER:** METAL GEAR SOLID

There are many Japan-exclusives worth mentioning – *Policenauts* was also released on the Saturn and PSone – but more should know about Hideo Kojima's "forgotten" game. Created between *Snatcher* and *Metal Gear Solid* (both released in the West), it reportedly took six years to finish. Basically another point-and-click adventure (with added lightgun action scenes), what makes it so special is the atmospheric story line. You're a 'Police Astronaut' for an orbital space station, who ends up frozen in deep space for a number of years after a freak accident. Later witnessing your estranged wife's murder, you must return to the station and solve a terrifying conspiracy. Lucky for us, a group of fans have made an English translation patch, available at **www.policenauts.net**.

SNOW JOB

» **RELEASED:** 1995
» **DEVELOPED BY:** STUDIO 3DO
» **BY THE SAME DEVELOPER:** BLADE FORCE

"An FMV game?!" we hear you collectively cry. Yes, but one that's very good. It's actually regarded as one of the all time best in the genre – trust us on this. Instead of having an embarrassing and nonsensical plot (like most FMV games), *Snow Job* takes place on the gritty streets of present-day New York; you're an ex-cop trying to bust a drugs ring while preventing the murder of your DA girlfriend. Unlike traditional FMV games, which involve pushing one or two buttons, this plays like a detailed point-and-click adventure – using digitised 360-degree environments and FMV for dialogue sequences. Passable acting and it's quite complicated; adventure fans should love it.



STAR CONTROL 2

POLICENAUTS

IMMERCENARY

3DO

Seen by many as folly, Trip Hawkins' 3DO nevertheless featured some stunning games that deserves to be experienced by the more open gamer and we've selected the cream of the crop for you to cast your eyes over

RETURN FIRE

THE NEED FOR SPEED

IMMERCENARY

» **RELEASED:** 1994
» **DEVELOPED BY:** 5 MILES OUT
» **BY THE SAME DEVELOPER:** N/A

Best described as an action adventure, *Immercenary* secretes the player in the Garden: a virtual world populated with virtual-reality imaginings of 20th Century pop art. The player travels from a lab chair in a cyberpunk 2004 to the Garden, taking on the cyber appearance of Raven; her growth cycle absorbs and fascinates in equal measure – the more you destroy the stronger Raven becomes. However the inhabitants of this world don't grow with her. Free-roaming exploration of the world consumes the player's morality. To see more you must destroy the Garden where violence only happens if you instigate it. RPG overtones imbue with a mesmerising soundtrack and some incredible visual fusions to create one of the rarest experiences in games.

RETURN FIRE

» **RELEASED:** 1995
» **DEVELOPED BY:** SILENT SOFTWARE
» **BY THE SAME DEVELOPER:** RETURN FIRE: MAPS OF DEATH

Designed by Baron RK Von Wolfshield. *Return Fire* was future real on its release in 1995 combining instant hit gameplay mechanics from the previous generation with a visual and aural candour that could only be realised with the advent of the CD drive. With 100 levels, nine terrains and only ever one adversary, the game was a monumental challenge. The aim was simple: capture the enemy flag and return it to your base. At your disposal an army equipped with helicopters, jeeps, tanks and armoured support vehicles – steeped in classical music each vehicle had its own signature tune. Unrivalled as a multiplayer game at the time, *Returns Fire* is significant when you consider that most FPSs today contain 'capture the flag'.

WAY OF THE WARRIOR

» **RELEASED:** 1994
» **DEVELOPED BY:** NAUGHTY DOG
» **BY THE SAME DEVELOPER:** RINGS OF POWER

Jason Rubin launched a 3DO exclusive in '94. It borrowed from the big hitters of the time, most notably *Street Fighter II*, *Mortal Kombat 2*, *Samurai Shodown*, and *Fatal Fury*. The characters were played by actors and the digitisation process worked well and rendered a character-set unequalled since. With names like Major Gaines and Shaky Jake the characters were parodies of type, with indigenous quips like Shaky Jake's Australian "Now that's a knife" still raising a smile today. Fatalities dominated the game with each character having their own and every arena having a few. White Zombie chugged away in the background adding depth to the gore that was so over the top at times it was funny. A class act in all departments *WOTW*'s Achille's heel was its exclusive nature.

THE NEED FOR SPEED

» **RELEASED:** 1994
» **DEVELOPED BY:** EA CANADA
» **BY THE SAME DEVELOPER:** NEED FOR SPEED: UNDERGROUND

From the team behind *Test Drive*, *The Need For Speed* fell to EA through acquisition. It aspired to create a driving game to equal *Ridge Racer* and *Daytona*'s arcade incarnations on a console, at a time when *Jaguar XJ220* was deemed the ultimate console racer. Adorned with three tracks, background details gave weight to impressive goraud shading. A slim roster of super cars, deftly underscored with detail, from the FMV intro for each car to a presenter shooting a volley of statistics at you, three camera angles were available and engine sounds were recorded for the first time. Racing against the chosen car's factory spec sheet added to the perception of detail. To play *NFS* today is like playing every driving game of the last ten years. It's no wonder then that its popularity still thrives.

WING COMMANDER 3 HEART OF THE TIGER

» **RELEASED:** 1994
» **DEVELOPED BY:** ORIGIN SYSTEMS
» **BY THE SAME DEVELOPER:** STRIKE COMMANDER

***Wing Commander 3* provides synapses of all that Trip Hawkins thought 3DO would bring to gaming, and was the kind of game the 3DO was designed for.** A space saga, the game came laden with FMV and starred such acting luminaries as John Rhys Davies and Mark Hamill.Rendered in hi-res the game sets the player aboard the TCS Victory; character interaction shows discord in the ranks and leaves the player feeling isolated. The missions turn into fraught space battles. Polished cut-scenes tell an epic tale, and the later stages become very emotive as you understand the player's role. Challenging racism, war and loneliness, *Wing Commander 3* showed us exactly what 3DO was designed to be.

WAY OF THE WARRIOR

WING COMMANDER 3 HEART OF THE TIGER

ATARI JAG

"It was the first time I had encountered parallel processing, which took some getting used to" WAYNE SMITHSON

JAGUAR

Atari's last games console remains one of the biggest missed opportunities in the history of our industry. Kieren Hawken went out on the prowl to find out why this much-maligned console is still purring after all these years

The Jaguar story begins back in 1989, around the same time Atari was releasing its Lynx handheld. Richard Miller – a former member of a team of ex-Sinclair engineers Flare Technology, who had previously developed the Konix Multi-System – was now a director over at Atari in Sunnyvale where it was working on a new 16/32-bit hybrid console then known as 'Blossom'.

At this point it was just a video chip and Atari required assistance in completing the project, so Richard called up his old friend from Flare, Martin Brennan, and talked him into helping. Martin renamed the project 'Panther', because his wife had recently purchased a Panther Kallista sports car, but soon realised that this project was not the way to go. While Atari had been working on the Panther, Flare had been working on a project of its own – the Flare II (the Konix was the Flare I) – which Martin believed was far superior to what Atari had. He was convinced that 3D graphics were the way to go and that the Panther, which was a basically a monster sprite engine, would soon become old hat. To Atari's credit, it listened and, in 1991, the Panther was dropped – just as it was close to completion – and the Jaguar came alive. It was Jack Tramiel himself, the legendary chairman of Atari, who chose the name based upon the same rationale as the Panther naming. With Flare being a British company, it made perfect sense to name the new console after his favourite British car company, Jaguar. Jack even wrote a letter to the iconic auto manufacturer asking if it minded him using the name.

So, the Jaguar was born, and its announcement shocked the industry with the revelation that it would be a 64-bit system with multi-processor architecture. Consumers were still caught up in the excitement of the 16-bit age, so a machine that skipped a whole generation just seemed unfathomable to some. Atari proudly boasted that its machine would be released in 1993, at under $200, and eat the competition alive. However, it was still left unclear just how Atari was going to compete with Sega and Nintendo. Several delays later the Jaguar was finally ready for release in late 1993. The console was to be manufactured by IBM in the USA, with Atari proudly displaying an American flag on the box presumably in the attempt to appeal, on a patriotic level, to the domestic market. The test markets in New York, San Francisco and smaller scale launch in London went extremely well, with the machine selling out very quickly. Manufacturing problems at IBM resulted in Atari struggling to maintain that early momentum and it was forced to cancel

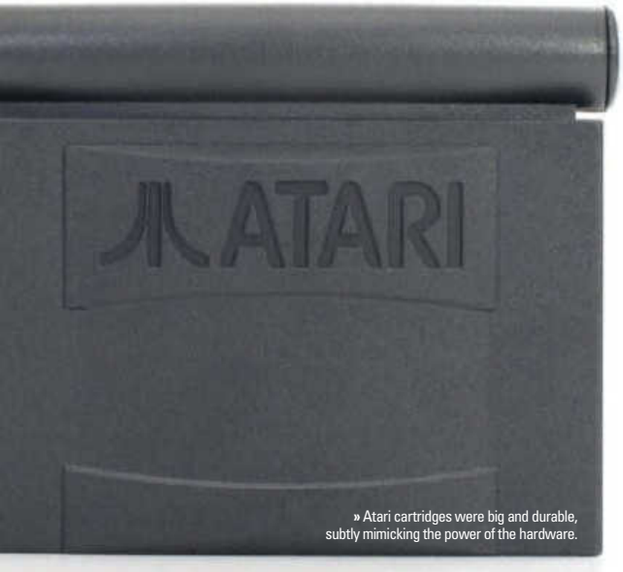
Atari Jaguar CD

■ On 11 September 1995, the long-promised Jaguar CD finally hit the market at a price of $149.99 (£129.99 in the UK). As an add-on for Atari's already struggling 64-bit Jaguar console, Atari hoped it would help turn the tide on the Sega Saturn and Sony PlayStation.

Manufactured by Dutch company Philips, it featured a double speed CD-ROM drive that, by using a unique system, gave game developers a huge 790 Megabytes of storage capacity that exceeded the other CD-ROM systems of the time. While its design helped combat piracy, it also made it more prone to disc reading errors. With mostly standard parts to keep the cost down, the only extra hardware included was a chip called Butch that interfaced it with the main unit and added Cinepak for full motion video playback. It had been rumoured that the unit would feature a new chip to improve the 3D abilities of the Jaguar and also include extra RAM, but the design had already been finalised in the early years of the Jaguar and Atari just didn't want the extra cost.

The initial run of 20,000 units sold out within two weeks and a second batch was then ordered. However, it is unknown if that second batch even went into production or what the size of it was, as Atari went into the reverse merger with JTS only months later, liquidating all Jaguar stock. Many people who worked for the company believe that the original 20,000 units were the only ones ever made, and this would certainly explain why the system is now so rare, regularly fetching high prices on online auction sites.

Only 13 games were officially released for the unit but this has been significantly increased by the output from the homebrew scene, which now makes the Jaguar CD a must have item for any dedicated Jaguar owner.



» Atari cartridges were big and durable, subtly mimicking the power of the hardware.

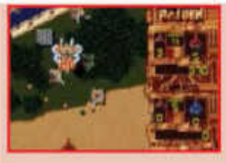
Best Jaguar Ports

STUNNING CONVERSIONS TO SEEK OUT

DOOM

YEAR: 1994

■ The Jaguar version of *Doom* became the one that many later console ports were based upon. John Carmack programmed it himself and described it as his favourite version. This superb port features over 20 levels of bloodthirsty action with full screen visuals, eerie sounds and some great lighting effects. It also makes use of the Jaguar's keypad for weapon selection and came supplied with a handy overlay.



RAIDEN

YEAR: 1993

■ One of the Jaguar's launch titles, this was also one of the few arcade conversions to appear on the machine. Upon its original release in the arcades, *Raiden* was lauded as being one of the best vertical shoot-'em-ups of all time. The overall quality of the Jaguar version far surpassed those found on the 16-bit systems of the time and, thankfully, has none of the sprite flicker or slowdown that's associated with them.

INTERNATIONAL SENSIBLE SOCCER

YEAR: 1995

■ Many people regard *Sensible Soccer* as the best football game of all time. It sold in the millions when it was released for the 16-bit home computers and soon saw its way onto consoles. This version has to rank as the best of the bunch, mostly due to the vastly improved AI that sees defenders closing you down much quicker and goalkeepers pulling off spectacular saves.

WORMS

YEAR: 1996

■ Team 17's *Worms* franchise is one that endures to this day, but many people argue that subsequent games haven't captured the magic of the original. One of the best multiplayer games out there, the Jaguar version is of particular note. It is similar to the PlayStation and Saturn versions but benefits from richer graphics and is missing bugs that plagued those ports, such as the jump bug, and odd graphical glitches.

"The Jaguar had a European soul with a Texan hat" DAVID WIGHTMAN

launches in both Germany and France, with the UK initially receiving a mere 1,000 units. The full worldwide launch of the console was delayed until the summer of 1994. Games were also very slow in coming too, the machine launched with the pack-in game *Cybermorph* plus *Evolution: Dino Dudes* (a conversion of the popular *Humans*), a near arcade perfect conversion of *Raiden* and the visually stunning *Trevor McFur In The Crescent Galaxy*. The press and consumers alike were initially unimpressed with the majority of the Jaguar's launch line-up, as it contained two games already available on the Mega Drive or SNES and a game that looked great but played poorly.

The pack-in game *Cybermorph* did show promise though and received rave reviews. Attention To Detail's Fred Gill was the lead programmer on the game and remembers, "We received 390 points out of 400 in one of the US magazines, with four reviewers each having 100 points, and something like a ten page spread which really blew us away." Homebrew programmer Steve Scavone remembers the launch well from a consumer perspective, "I got one of the test market Jaguars in 1993 and, when I popped in *Cybermorph*, I was blown away that a game console could do so much." Coder of *Baldies*, David Wightman, offers up a really interesting insight into what it was like to work with Atari's console. "The Jaguar had a European soul with a Texan hat. With a few exceptions, one of the reasons Euro teams had a better time developing on the Jag was due to it being a brain in a box. Coming from 8-bit assembly coding, then onto the Amiga/ST where you ignored the OS, then onto the Jaguar where you hit the hardware directly – it was a breeze. It was a just a big fat sprite chip with a pipe to the monitor which, in those days, was developer perfection. American coders by route of the Apple II and PC had learned to go through a bios and an operating system to code, they had a tough time dropping down to binary after the luxury of APIs and libraries which they had become accustomed to. That's a core reason why very few titles came from American corporations before launch, they struggled to find people who understood how to program hardware without a soft pillow to sit on."

Throughout 1994 the software for the Jaguar just trickled in, despite over 100 titles having been announced for the machine. It soon became apparent that developing for the Jaguar was problematic for many developers. The reportedly buggy chipset and a lack of support from Atari, not helped by its precarious financial position at the time, have been cited. Fred Gill reflects, "I think Atari were, unfortunately, already in a downward spiral. They couldn't afford to create and launch a new console and so everything was done on a shoestring

» The Jaglink cable plugged into the DSP expansion port on the back of console allowing you to link up two machines for multiplayer games such as *Doom* and *Aircars*.

budget." Darryl Still, the man behind marketing the Jaguar in Europe remembers: "To be honest, it soon became obvious that the development team in Sunnyvale were struggling with the Jaguar." This is echoed by Wayne Smithson, the man behind *Attack Of The Mutant Penguins*. "It was initially difficult to get anything decent out of it because it had more than one processor," adding "it was the first time I had encountered parallel processing which took some getting used to, interleaving instructions to get the best performance out of the code was an art form in itself." Steve Scavone was also quick to add to this discussion; "Atari was just not ready to release the system, and should have found another way to survive to get the bugs out of the system and get the proper tools in the hands of developers. I think a few more months would have been enough to do it, but everyone claims they did not have the money."

» The Jaguar's design won several awards and, with its sleek lines, you can see why.

» Standard Jaguar cartridges went up to 6 Megabytes but special hardware compression meant that games could actually be up to 12 times bigger than that.

Things did improve, albeit briefly, for the Jaguar with the emergence of several key titles; Jeff Minter's *Tempest 2000*, Rebellion's *Alien Vs Predator* and id Software's port of *Doom* that was programmed by John Carmack himself. All three of these titles arrived in 1994 and were quickly praised by the expectant press. These releases actually had people suddenly wanting a Jaguar, but the continued supply problems meant that Atari just couldn't capitalise on this demand. There were also two more titles announced during 1994 that were set to arrive from teams in France and Germany respectively. Ubisoft started to show off the gorgeous *Rayman*, a title that was originally supposed to be a Jaguar exclusive and started a franchise that still endures to this day. German team Eclipse, who were well known to Amiga and ST owners, announced and promptly released the superb *Iron Soldier*, which featured fully 3D polygon-based worlds to capitalise on a consumer demand for mech games. Stefan Kimmlingen was one of the team members involved in this title and remembers the launch of both games very well, recalling, "Atari invited me to the first press conference in Germany where I won the *Kasumi Ninja* contest against guys from the German gaming press. This was also the first time ever that the *Rayman* franchise and *Iron Soldier* were shown off. I was amazed how the *Rayman* character was animated. And, of course, everybody was freaking out when they saw the explosions in *Iron Soldier*." *Iron Soldier* would go on to be one of the best selling titles for the console and spawned sequels for the Jaguar, PlayStation, VM Labs NUON and PlayStation 2.

It was in 1995 that the death knell began to toll for the Jaguar, the PlayStation and Saturn had both been released and Atari's machine just couldn't keep up. Even the release of the Jaguar CD could not help things, as it came far too late to really make any difference. This year actually saw a decent amount of releases for the machine, but many of them were just ports of existing 16-bit console games like *Pitfall: The Mayan Adventure*, *Flashback*, *Zoop* and the abysmal *Double Dragon V*. Although there were some bright lights like *Missile Command 3D*, *I-War*, *Super Burnout*

Best Jaguar Homebrews

THE HOME PROJECTS YOU REALLY NEED TO PLAY

TUBE: SECOND EDITION

YEAR: 2012

The original version of *Tube* was rightly hailed as one of the first Jaguar homebrews to really make use of the machine. An original game with elements of *WipEout* and *STUN Runner*, it saw you racing down a series of tunnels trying to achieve the best time. What makes this game even better is that it was released for free.

IMPULSE X

YEAR: 2012

The original *Impulse* was a little-known *Arkanoid* clone for the 32-bit Atari Falcon by Duranik, the team behind the recent *Sturmwind* for Sega's Dreamcast. In 2012 the game was converted to the Jaguar CD by MD Games and then made available on cartridge too. The game features 40 levels of block breaking action, along with high score web codes and a level editor.

GORF

YEAR: 2006

This arcade perfect conversion of the classic coin-op had to be withdrawn from sale after an issue over who owned the rights with Bally/Midway. The programmer released the game with the full blessing of the original creator Jamie Fenton. If you own a Jaguar CD then this is one of the best titles out there, just be aware you'll need a huge wallet to own it these days.

FALLEN ANGELS

YEAR: 2013

This game is a tribute to an early title from LucasArts – *Rescue On Fractalus*. *Fallen Angels* on the Jaguar breaks new ground by being the first complete game to be released on the machine that uses a voxel engine. This helps create the fast 3D landscapes that your craft flies over as you try to rescue all the stranded pilots from their stricken vessels.

Darryl Still

FORMER MARKETING MANAGER OF ATARI UK

Can you explain to us your exact involvement with the Jaguar as the Marketing Manager of Atari UK?

I joined Atari as Product Manager for the ST. There was quite a large and thriving marketing department at that time. When the Jaguar came around I was running a very small department with a, frankly, minuscule budget. The majority of the push was PR based, which was very successful in making it the must-have machine for that first Christmas. Unfortunately, most people ended up not being able to get what they must have.

You were quoted in the press as saying that Atari UK could have sold 20 times the initial allocation of machines they were given upon release. Do you feel the Jaguar should have been launched in Europe first where the Atari name was stronger?

Hell yeah, but then I am somewhat biased. There was a longer disconnect between the gamer and the Atari brand stateside than we had in most of Europe. It seemed we were getting shafted badly in favour of the US customer stock-wise. But, it was not too long before it became clear that actually there were shortages all round.

Atari missed out on most of the 16-bit generation, do you think they should have gone ahead with the cancelled Panther first?

I never knew the business reasons behind Panther's cancellation. If all things had been equal – we'd had Panther, decent stock, and a good run-up – then I suspect some things like developer and publisher involvement would have been smoother.

Can you tell us any other interesting stories about your involvement with the machine back then?

The launch in New York was fun. We took Jeff Minter into 'The Slaughtered Lamb' in Washington Square – the pub that was mocked up to mimic the one in *An American Werewolf in London*. Jeff, with his love of sheep, just sat there clutching himself and moaning.

I guess the moment that sticks in my mind most was when he first trialled the 3D surround sound unit in the small AV room and filled the whole area with games. I walked out from that just spellbound by what we could achieve. The other end of the scale was when the parent who we had not been able to supply for their much-loved son's Christmas present emptied the contents of their dustbin in our reception area.

» [Jaguar] The keypad of the Jag's controller is major part of the gameplay experience and selected games came with special overlays to improve it further.

» [Jaguar] Atari invented thed 9-pin D-plug design but finally replaced it on the Jaguar with a 15-pin variation.

Best Jaguar Exclusives

WHO SAYS ATARI'S CONSOLE HAD NO GOOD GAMES?

HOVER STRIKE: UNCONQUERED LANDS

YEAR: 1995

The cartridge version of *Hover Strike* was originally known as *Battlezone 2000*, and the influence is clear to see in this CD version. *Unconquered Lands* features a number of improvements, including a superior framerate, more levels, FMV intros and an external camera view. This is the game that proves that the Jaguar can do texture-mapped polygon graphics when in the right hands.

BATTLEMORPH

YEAR: 1995

As you may have already guessed, *Battlemorph* is the sequel to the first Jaguar game, *Cybermorph*. Released for the Jaguar CD as a launch title, it drastically improves upon the original. The drab, flat polygons of its older sibling are replaced with vibrant texture-mapped examples and the new worlds are far more complex in their nature. Pointless FMV is kept to a minimum and the extra space is utilised for creating vast planets to battle your way across.

MISSILE COMMAND 3D

YEAR: 1995

This game might have been designed with the Jaguar VR Helmet in mind, but it is every bit as good without it. The VR mode steals the show, a full 3D tour-de-force that views the game from a first-person perspective and requires you to switch between your three bases to take out enemy attack ships and huge bosses. It also throws power-ups into the mix, adding another new element to the tried and tested formula of the original arcade game.

ALIEN VS PREDATOR

YEAR: 1994

Often called the Jaguar's 'killer app', *Alien Vs Predator* was the game that put programmers Rebellion on the map. Featuring three game modes where you can play as the Alien, Predator or Colonial Marine it combines elements of survival with those of a traditional FPS to create an engaging and genuinely scary experience. It may have been improved upon by its sequels, but the Jaguar original still holds up very well today.

"It was the last machine where someone like Minter could be let loose" DAVID WIGHTMAN

and *Val D'Isere Skiing And Snowboarding*, they mostly got lost in the mix with the Sony and Sega hype machines in full flow. By now the Jaguar had a, perhaps somewhat unfair, reputation for having bad games. The reality was that it just didn't have enough games and, even more importantly, the games that people wanted to play. Sony was promising 3D texture-mapped worlds, while Sega was offering up conversions of all its hit arcade games.

The final year of the Jaguar's commercial life turned out to be 1996 and the final game released for it by Atari was *Virtua Fighter* clone *Fight For Life* – a game that, while technically impressive, played like a dog. In February of 1996 production of the Jaguar ceased after Atari Corp merged with JT Storage in a reverse take over. This effectively killed off the Jaguar, but we did see one final flurry of games thanks to stalwart third party publishers Telegames. It picked up the rights to a number of finished but unreleased games such as *Iron Soldier 2*, *World Tour Racing*, *Zero 5*, *Towers 2*, *Breakout 2000* and *Worms*. Ironically these actually turned out to be some of the Jaguar best games, the titles it sorely needed back in 1994.

But this is not the end of the Jaguar – not even close! The Jaguar lived on through a hardcore community of fans that didn't just keep interest in the system alive, but who also ensured it had a new life after they – notably aided by *BattleSphere* co-creator Doug Engel – successfully persuaded Hasbro (the then owners of the Atari brand) to release the Jaguar and its encryption keys into the public domain. This essentially allowed Jaguar fans everywhere to start making their own games for the machine, with it inspiring a fledgling homebrew scene that has since flourished with many games having been released on both cartridge and CD. From simple but eminently enjoyable games like *Painter*, *Black Out!* and *Jagmania* to conversions from other systems such as *GORF*, *Impulse X* and *Another World*.

So why should the Jaguar be remembered? "I personally, and fondly, remember the Jaguar as the last machine where programmers were in control of the hardware," offers David Wightman. "It was the last machine where someone like Minter could be let loose to create such mad 'code art' as VLM. The Jaguar never sold in great numbers but I'd like to think of the Jaguar not as a failure, but a bookend to an incredible generation of creativity, where designers, coders and small teams could dream up, program and launch some absolutely wild and wonderful games onto an eager public. What came after the Jaguar was the PlayStation which, for all its greatness, ushered in corporate development and with it the bleached, repetitive, bland titles which we're still playing today."

It's a sentiment Wayne shares, telling us, "It was a bold move at the time from an iconic company who were pushing the boundaries. It could have been great…" If anyone knows why you should consider owning Atari's console it's Shawn Lavery, one of many people still keeping the system alive today. "[It's] the plucky underdog with quirky games that never quite made its potential known," he tells us. Lucky for us then that Shawn and so many other coders are still allowing us to see the Jaguar's potential some 20 years after it was first created.

Special thanks to: Darryl Still, Carl Forhan, Steve Scavone, Fred Gill, Shaun McClure, David Wightman, Wayne Smithson, Stefan Kimmlingen, Shawn Lavery and Jeff Nihlean.

JAGUAR PERFECT TEN GAMES

Atari's Jaguar had so much untapped potential that it pains us to see it so openly scorned by the majority of gamers nowadays. Those in the know however are fully aware of the system's great games and here is a selection for you to go out and play

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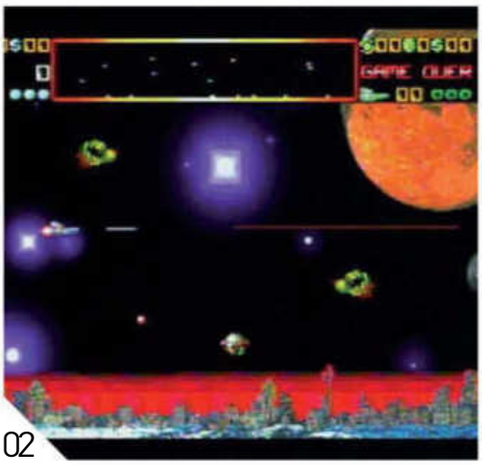

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BATTLESPHERE

- **RELEASED:** 2000
- **PUBLISHED BY:** SCATOLOGIC INC
- **CREATED BY:** 4PLAY
- **BY THE SAME DEVELOPER:** SCATBOX HARDWARE ACCESSORY

01 The epic space opera *BattleSphere* is a triumphant example of what the Jaguar is truly capable of. It's filled with clever references to popular sci-fi creations, and you choose one of seven known intergalactic races (including humans), before being placed in a fully 3D sphere of space and battling it out to become champion. Visually nothing short of stunning, the dynamic AI also impresses, and for a time was unsurpassed. It's also one of the few games that supports up to 32 simultaneous human players over a network (although you're going to have to find a convention in order to experience this. As a kind gesture, all profits from sales of the game were donated to charity. And thanks to the official *Battlesphere* website for providing our images.

PROTECTOR SE

- **RELEASED:** 2002
- **PUBLISHED BY:** SONGBIRD PRODUCTIONS
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** PROTECTOR

02 If you're looking for a superb update of *Defender*, it's this excellent offering from Songbird Productions that you should be searching out and not Jeff Minter's *Defender 2000*. The graphics truly are stunning and feature some of the best 2D visuals we've ever seen on Atari's 64-bit console, hell, any console from that period for that matter. Sound is also excellent, with a great array of sampled voices and some rocking tunes that perfectly capture the frantic on-screen action. Insanely fast, full of excitement and sporting some very nifty power-ups, this is a perfect example of twitch gaming and deserves to be in every Jaguar owner's collection. If you're a fan of Eugene Jarvis's original game or just love a good blaster, pick it up. You're not going to be disappointed.

TEMPEST 2000

- **RELEASED:** 1994
- **PUBLISHED BY:** ATARI
- **CREATED BY:** JEFF MINTER
- **BY THE SAME DEVELOPER:** DEFENDER 2000

03 Jeff Minter's *Tempest 2000* is justification enough for picking up Atari's ill-fated console. Beautiful to look at, incredible to listen to, witnessing *Tempest 2000* in action is the equivalent of having a synapse explode in your brain, such is the impact of Minter's masterpiece. Forget the incredibly poor port of the original arcade game that has been included and just concentrate on spending all your spare time with *Tempest Duel*, a gripping deathmatch for two players; and of course, the stupendously good *Tempest 2000*. With new enemies, the ability to jump, a selection of smart power-ups, scintillating sound and those eye-melting visuals, this is perhaps Minter on his finest form. Luckily this is one of the most common Jaguar games available, so it won't cost you an arm or a leg.

GORF CLASSIC (CD)

- **RELEASED:** 2006
- **PUBLISHED BY:** 3D STOOGES
- **CREATED BY:** JAMIE FENTON
- **BY THE SAME DEVELOPER:** NA

04 The original arcade version of *Gorf* was developed by Jamie Fenton and released in 1981, featuring five progressive and very different levels, as well as several digitised voice samples that heckled the player. The Jaguar CD port by 3D Stooges, which was created after the system's unfortunate demise and rekindled the development community, has the honour of being the only arcade-perfect port to home systems that has all five of the original levels (due to licensing issues, the third *Galaxians* level was normally removed). Unfortunately, due to popularity and a low print run, this is now fairly rare and expensive on eBay, so if you intend to track it down, make sure you're carrying a full wallet. *Gorf Classic* is a fun and frantic shooter that you'll return to again and again.

IRON SOLDIER I/II

- **RELEASED:** 1994-7
- **PUBLISHED BY:** KATARI/TELEGAMES
- **CREATED BY:** ECLIPSE SOFTWARE
- **BY THE SAME DEVELOPER:** NA

05 We're mentioning both *Iron Soldier I* and *II* as they're perfect examples of what the Jaguar and Jaguar CD could do in capable hands. Both titles require you to storm around in a huge mech and lay waste to whatever is foolish (or unfortunate) enough to get in your way, with a wide variety of weapons from rocket launchers to a chainsaw. Each game features expansive environments (although the CD version has greatly improved visuals and a storming soundtrack), a variety of well-structured missions and some of the most amazing explosions in any Jaguar game. Some may baulk at the slow pace of both games, but with so much to learn (*Iron Soldier II* boasts even more controls than the already comprehensive original) you'll be glad you have some time to think.

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ALIEN VS PREDATOR

» **RELEASED:** 1994
» **PUBLISHED BY:** ATARI
» **CREATED BY:** REBELLION
» **BY THE SAME DEVELOPER:** SNIPER ELITE

06 Never mind the fact that *Alien Vs Predator* was released a good 12 months after being a supposed launch title, it was a landmark game for both the Jaguar and first-person shooters in general, thus making it more than worth the wait.

While *AVP* boasted spectacular visuals, which still impress today, it was the sound that truly impressed. With no music, creators Rebellion used a selection of screams, explosions and gunshots to punctuate the silence of each well-constructed stage. It was in the gameplay that *AVP* truly excelled though, and while the floaty controls could be annoying, the different attributes of the three main protagonists – human, alien or predator – and strategic gameplay more than made up for it.

HIGHLANDER (CD)

» **RELEASED:** 1995
» **PUBLISHED BY:** ATARI
» **CREATED BY:** LORE DESIGN LIMITED
» **BY THE SAME DEVELOPER:** NA

07 The Jaguar and CD add-on were starved of traditional adventures and RPGs (the only other notable exception being *Towers II*, though that's a fairly boring dungeon crawler). So adventures like *Highlander*, which was exclusive to the system, are something to get very excited about indeed. Based not on the films franchise – which was killed by three totally unnecessary sequels – but rather the animated TV series, you play Quentin MacLeod on his quest against rogue immortal Kortan. Controls are comparable to *Resident Evil*; you're able to defeat enemies using fists, swords, or a gun while searching for items that allow progress. Highly recommended, the only problem is needing a MemoryTrack peripheral in order to save. A unique and enjoyable title that's well worth tracking down.

RAYMAN

» **RELEASED:** 1995
» **PUBLISHED BY:** UBISOFT
» **CREATED BY:** IN-HOUSE
» **BY THE SAME DEVELOPER:** KING KONG

08 Decent platformers are few and far between on Atari's Jaguar, so when a title with the quality of *Rayman* comes along you can't really afford to miss it. Originally created exclusively for Atari's machine (it was later ported to the PlayStation and other consoles like the Saturn) Michael Ancel's platformer still looks sumptuous and boasts some utterly stunning locations. Filled with layer upon layer of parallax scrolling and beautiful, hand-drawn sprites it's an amazing technical achievement and perfectly shows off previous claims about the Jaguar's 2D power. Despite the game's toughness there's no denying the adorability of *Rayman* and it's little wonder that Michael Ancel's creation is still appearing in games today. Indeed, Ubisoft even released a couple for Nintendo's Wii.

BI/WN (CD)

» **RELEASED:** 2004
» **FREELY RELEASED BY:** BEEJ WEST (DEVELOPER)
» **CREATED BY:** ATARI
» **BY THE SAME DEVELOPER:** DONKEY KONG

09 *Black Ice/White Noise* was not officially released due to being cancelled before completion, but since it was such an ambitious title and because the beta can be freely downloaded online, we thought it must be mentioned. Having read the full and unedited Jagwire interviews with the developers, its history alone warrants several articles. The team had a unique vision, which today is comparable to a cross between *Shadowrun* without magic (or, more accurately, *Neuromancer*) and *GTA III*. Players would have been able to traverse a massive cityscape while completing missions, riding vehicles, shooting police, hacking computer networks, talking with NPCs, and so on. Sadly, among other things, overly high ambitions killed the project.

MISSILE COMMAND 3D

» **RELEASED:** 1995
» **PUBLISHED BY:** ATARI
» **CREATED BY:** VIRTUALITY
» **BY THE SAME DEVELOPER:** N/A

10 Despite the Jaguar's VR Headset never getting released, Atari still saw fit to release *Missile Command 3D*, which featured a VR version of the game few Jaguar owners will have been able to play. Apart from this obvious oversight, the VR version in particular is great fun to play and gives you a clear example of just how immersive the game would have actually been. Starting off in an underwater base, you'll soon progress above ground and into space itself. All the while missiles are furiously raining down on you and despite the first-person viewpoint it perfectly captures the essence of the original game. Speaking of the original, Vituality also included it, but as with the Tempest seen in *Tempest 2000*, it was a far from perfect port.

SEGA SATURN

SEGA'S 32 BIT MACHINE IS WIDELY VIEWED AS SOMETHING OF A DISASTER, BUT WHILE IT MIGHT NOT HAVE SET THE WORLD ALIGHT IN TERMS OF SALES, THE CONSOLE WAS A VERITABLE TREASURE TROVE OF CLASSIC SEGA GAMING GOODNESS THAT, FOR THOSE WHO CHOSE TO EMBRACE IT, WAS A PEERLESS CONSOLE

It's not often that you can say of a console that it mimics – for better or worse – the very attributes its parent company displays, but the Saturn is such a machine. On the one hand, the Saturn very much reflects the corporate ineptitude and lack of unity that blighted Sega at the time (and indeed its relative failure at market was a major contributor in Sega's eventual pull-out from the games market barely more than half a decade after it launched), boasted one of the most complex system architectures around (and whose predominantly 2D orientation was at loggerheads with the three-dimensional shift the industry was undergoing at the time) and an array of games that was out of touch with what mainstream consumers wanted. On the other hand, for those who appreciate Sega's unique style of games along with the efforts of the Saturn's few, staunchly loyal third-party supporters, there will never be another console quite like Sega's 32-bit machine.

TROUBLED BEGINNINGS

In a trend that would set the tone for the console's traumatic life, the Saturn was born into a Sega family beset with problems. Despite the successes of the Mega Drive – predominantly in the West – Sega's management had increasingly fallen out of touch with the demands of both the market and the industry.

The Saturn started out life in the early-Nineties deep within Sega of Japan's Research and Development department. Originally going under the working title GigaDrive, the machine was essentially designed to be a 2D powerhouse of a console with secondary 3D capabilities using CD-ROM technology and would have sat, performance wise, somewhere between Sega's System32 and Model 1 arcade boards. While this might have seemed like a suicidal prospect at the time, Sega's thinking did have a certain degree of logic to it. The first consideration was the cost of the machine. Sega's Model 1 board – which by the end of 1993 was wowing gamers with the likes of Yu Suzuki's *Virtua Racing* and *Virtua Fighter* – was very expensive, as was proving the attempts to shoehorn 3D graphics into console gaming, either in the form of chips-in-carts (such as Sega's SVP chip that was used in the Mega Drive port of *Virtua Racing* or Nintendo's Super FX Chip) or upgrade modules such as the 32X, while not achieving arcade perfection. The second was the concern that the market might not be ready for three dimensions yet, with the rapid failure of the 3DO – the first 'next gen' machine to hit the shelves – appearing to vindicate Sega's management.

With GigaDrive, Sega thought it had found the ideal solution to this: create a machine that could handle Sega's Model 1 games,

Switch Or Chip?

In terms of modding, the Saturn remains one of the most modification friendly machines out there. In principle, there are two main types of mod: the first is the double switch, the second the mod chip. The former sees two switches getting installed on your machine: one allows you to select between PAL, American, Japanese and 'Japanese 2' (allowing you to select English language options in certain games), and the second is a 50/60Hz switch. In the case of mod chips, these will allow you to play pirate games. However, these games will still be region encoded so a Japanese pirate copy won't boot on a chipped PAL Saturn without a region decoding cart or switch.

"IN A TREND THAT WOULD SET THE TONE FOR THE CONSOLE'S TRAUMATIC LIFE, THE SATURN WAS BORN INTO A SEGA FAMILY BESET WITH PROBLEMS"

Year released: 1994

Original price: £399.99 (UK)/$399.99 (US)/¥44,800 (Japan)

Buy it now for: £10-£150 (depending on model)

Associated magazines: *Sega Saturn Magazine, Mean Machines Sega, Edge, Sega Power, Saturn Power*

Why the Saturn was great… Despite the errors that saw Sega build the Saturn as a predominantly 2D machine, for fans of Sega's unique style of game – especially its arcade wares – the Saturn remains the only place to enjoy the works of Sega's internal development teams at a time when they were arguably at their creative peak

» Games like *Virtual On*, with heavy Japanese styling had limited appeal in the West, but it doesn't mean they weren't amazing.

"WITH A PRICE POINT WAY BEYOND MOST GAMERS' MEANS AND LAUNCHING DURING THE GAMES INDUSTRY'S QUIET TIME OF SUMMER, THE MOVE BACKFIRED HORRIBLY"

Lobotomy

While most of the Saturn's best games came from the Land of the Rising Sun, the West wasn't without its star developers. Case in point: Lobotomy. While it was tough leaving *Death Tank* and *Exhumed* off our list of top ten games (see page 210), the impact the developer had on the Saturn shouldn't be underestimated, with its SlaveDriver engine used in *Exhumed* going on to power the Saturn ports of *Quake* and *Duke Nukem 3D*, arguably the best console ports of either game on any of that generation's machines.

» *Virtua Fighter* aside, the Japanese launch line-up was total crap. Take the abysmal *Gale Racer*, for example.

but focus predominantly on 2D games ready for a Japanese launch in late-1994. Unfortunately, Sega's efforts couldn't have been more misplaced. A year before the launch, Sony Computer Entertainment formally announced that it intended to enter the console market with a 3D-capable machine that not only knocked the Saturn into a cocked hat, but also blew the Model 1 board that gamers had been swooning over away. Sega was in major trouble.

The result was a complete redesign of the Saturn. Out went the simplistic single processor that had been intended, and in went two SH-2 RISC processors, along with dual VDPs in a bid to create a machine that was capable of 3D performances somewhere between the Model 1 and the all-new Model 2 board that was being prepared to launch with *Daytona USA*. Suffice to say, it was a tough haul, and this showed when the console launched on 22 November in Japan, with a launch line-up that included such abysmal efforts as *Gale Racer* (known as *Rad Mobile* in the West), it all meant that Sega needed a seriously big game to wow the Japanese punters – and fortunately, it had just that. While Yu Suzuki and his AM2 team had enjoyed fame before with the likes of *OutRun*, AM2 had really shot to fame with the Model 1 arcade board, first with *Virtua Racing*, then *Virtua Fighter*. Using realistic physics to heighten the perception of realism, *Virtua Fighter* in particular had been impressing arcade-goers ever since its 1993 debut. Not surprisingly, Sega ensured that the Saturn port of the game was ready to go when the console launched in November, with the console selling 250,000 consoles in just two days.

While the following months saw the figures tail off, it left Sega free to plan the Western launches, but this presented its own problems. High price points and a general disinterest in next-gen formats had already effectively accounted for the 3DO and Atari Jaguar by 1995 (both were still being supported but the writing was clearly on the wall) in the West, and Sega of America boss Tom Kalinski felt it wasn't the time to launch a new console while 16-bit sales were still strong (a view that would later be confirmed, as 16-bit sales remained strong for well over another year). However, Kalinski's political stock within the company had taken a major knock with the rapid failing of the 32X (something that would also not be helped by the launch of a new, more capable console), and with Sega of Japan keen to beat the PlayStation to market, the Western launches of the Saturn were pushed through as a matter of urgency.

» Team Andromeda's *Panzer Dragoon* franchise wasn't a huge seller on the Saturn, but was still an amazing series.

It was a disaster. The Saturn launched on 27 April 1995 in the US, and then on 8 July in Europe. With a minimal amount of fanfare, games and consoles simply arrived on the shelves and in some countries, neither the specialist press nor the media at large were sent review material; from one day to the next, the Saturn simply arrived.

The games were a mixed bag as well. Whereas Sony had been hyping up *Ridge Racer*, *Toh Shi Den* and other texture-mapped 3D games ahead of the PlayStation's launch, the highlights of the Saturn's launch were the 'raw' polygonal *Virtua Fighter* (bundled with machines) and a port of *Daytona USA* that AM2 had hurriedly ported in under six months. With a price point way beyond most gamers' means (£399 in the UK and $499 in the USA) and launching during the games industry's quiet time of summer, the move backfired horribly.

THE 'BIG THREE'

As Christmas drew closer, things were looking perilous for Sega. The PlayStation launch came and went, and – adding further weight to Kalinski's argument that the West wasn't ready to go next gen – failed to really attract the huge sales Sony had wanted (and spent large amounts of market cash on chasing), Sega needed some big hits, and it looked like it was going to get them.

Thanks to the initial rush to redesign the console, the first generation of games had to be rushed through. However, by September 1995, Sega of Japan's teams had taken a year to perfect their techniques and most importantly, had some great games they could try them out on. During this time, Sega's Model 2 board had become the arcade hardware of choice for the arcade department, and its two top studios, AM2 and AM3, had three games ready for porting. The first to make it was AM2's *Virtua Cop*. The lightgun game had been struggling since its heyday in the Eighties, and AM2 saw the chance to reinvigorate it with *Virtua Cop*, a game that was as much about precision as raw adrenaline. The second AM2 title was *Virtua Fighter 2*. With the success of the *VF1* undeniable, a sequel was inevitable and Suzuki's team managed to deepen the game and increase its fluidity to the point where it seemed further improvements would be impossible. The third game in the queue was AM3's *Sega Rally*. The brainchild of Tetsuya Mizuguchi, the game was about as far removed from *Daytona USA* as you could get, attempting to create a deep rally game that was realistic enough to the point of being convincing, but without making things overly complex. In short, the ports were a complete success. Technically as well as in gameplay terms, there was nothing on any console to touch them at the time, and while *Sega Rally* and *VF2* would miss Christmas in Europe, it didn't stop *Sega Rally* setting a record for the fastest selling CD game in the UK, and global sales for the Saturn finally started to catch up with those of the PlayStation.

THE BEGINNING OF THE END

With the Christmas period a comparative success, Sega was upbeat going into 1996. At E3 that year, Kalinski announced that "Sega games would be the success of 1996", and on paper he should have been right. The Saturn's line-up for the year was strong, including a new *Sonic* game, *NiGHTS*, a new *Panzer Dragoon* title, *Virtua Cop 2*, a reworked *Daytona* and *Fighting Vipers*, but it didn't end there. Sega also took the wraps off its new analogue controller (due to be bundled with Yuji Naka's *NiGHTS*) and Sega also used E3 to unveil its NetLink modem and internet service, which was expected to debut in the States that autumn for $199 and, by offering an affordable internet access machine, helped Sega sell the 1.5 million consoles it was aiming for in 1996, as would aggressive price cuts on the hardware. And with much hype surrounding the Model 3 board, Kalinski also used E3 as a platform to announce Yu Suzuki's third game.

Sadly, things didn't go according to plan. Consumer interest was changing. While arcade ports had been fine before then, gamers were expecting more – and the PlayStation was delivering that in spades. No better is this demonstrated than with *Formula One*. Both Sony and Sega had acquired licences for the 1995 season, but whereas Sega squandered its licence on a rather tame arcade-style racer called *F1 Challenge* (or *Live Information* as it's known in Japan) that only featured a handful of playable cars and tracks (of which only three were real), Sony entrusted Psygnosis with its licence, who in turn enlisted the help of Bizarre Creations to create an in-depth *Formula One* sim that attempted to re-create the whole season. While Sega's game launched first, it barely managed to register on the sales charts, whereas *Formula One* became Europe's bestselling game of the year 1996 and finished second in the global sales charts to another legendary PlayStation title, *Final Fantasy VII*.

» While best known for its racers, AM3's *Last Bronx* was an interesting alternative to AM2's beat-'em-ups.

» *Saturn Bomberman* featured ten-player support, although you needed a really big screen to enjoy it properly.

ST-V Titan

One aspect of the Saturn that's frequently overlooked is the ST-V Titan arcade board. Essentially a Saturn with a bit more RAM, the ST-V failed to be as successful as its successor, the NAOMI, but did have an impact nevertheless. Sega itself used it for *Dynamite Deka* (aka *Die Hard Arcade*, AM1), along with *Decathlete* (*Athlete Kings*, AM3) and *Winter Heat* (AM3), while smaller arcade companies such as Treasure (*Radiant Silvergun*) and Raizing (*Soukyugurentai*) were also able to use the board as well. The fact the board was based on the console allowed for much easier console ports.

» Even though the machine is widely regarded as a 2D powerhouse, the Saturn was capable of great 3D graphics.

» Compared with the game that immediately preceded it, *Virtua Fighter 2* was a technological miracle and played fantastically.

» In subsequent years, SNK jumped on board the Saturn bandwagon with its 1MB RAM cart, which allowed for *Metal Slug* to be ported.

"WHEN SONIC X-TREME WAS ANNOUNCED AND DEMOED AT E3 1996, SUCH WAS THE BACKLASH THAT SEGA ULTIMATELY QUIETLY DROPPED THE GAME"

It wasn't only here that Sega squandered chances. *Tomb Raider* had been knocking around on release schedules as far back as the 32X, and given Core's strong relationship with Sega, it came as scant surprise that Lara Croft first debuted on the Saturn. Not only did Sega squander a chance to make a fuss about this (a mistake Sony did not make), the fact the subsequent PlayStation version looked better added fuel to the argument that the PlayStation was the better machine. This was also true of the ports of Psygnosis's two big PlayStation launch games, *WipEout* and *Destruction Derby*. When it was announced that both games would receive Saturn conversions along with some of Psygnosis's other PlayStation titles, it seemed like Sega had pulled off an elaborate coup, but ultimately the delays and subsequent poorer port qualities meant neither game aided the Saturn's cause.

However, it wasn't just Sony to blame in this. Sega's reliance on arcade ports at a time when the first dedicated console games were coming through did nothing to endear the console to gamers, especially when its next big round of conversions – *Fighting Vipers*, *Virtua Cop 2* and *Daytona USA CCE* – were arguably weaker games than the 'Big Three' that had preceded them 12 months earlier.

To compound this, Sega's own console-specific stuff failed to register with the punters. While both exquisite titles that still hold up well today, both *NiGHTS* and *Panzer Dragoon Zwei* failed to sell the console. And what of *Sonic*? When *Sonic X-treme* was announced and demoed at E3 1996, such was the backlash that Sega ultimately quietly dropped the game and started work on a high-resolution port of Mega Drive game, *Sonic 3D Blast*.

1997 – THE END IS NIGH

Having been pushing Sony hard 12 months earlier, as 1996 rolled into 1997, it became clear that Sega had virtually conceded the market to Sony, with Nintendo second in line to scoop up whatever remained.

With Sega's proposed merger with Bandai rapidly collapsing and the company busy with the Dreamcast – the hardware was already being demonstrated behind closed doors at E3 – 1997 took on the form of one final hurrah for the Saturn. Typically, this took the form of more arcade ports – *Manx TT, Last Bronx*, *Marvel Super Heroes* and an assortment of ST-V ports being the most high profile – but would also see some interesting new additions. The biggest factor was *Sonic*'s long-overdue arrival on the console. The first game, *Sonic 3D Blast,* was a glorified hi-res port of the Mega Drive game, whose main highlight was, bizarrely enough, the CD soundtrack crafted by Sega of Europe's in-house musician Richard Jacques, but this was just the start. During the summer, Sega launched, *Sonic Jam*, a retro pack with the four Mega Drive games and a 3D 'Sonic World' where Sonic could run around and perform various tasks as a conceptual demonstrator for what would later become *Sonic Adventure* on the Dreamcast. This was followed by *Sonic R*, which was developed by Traveller's Tales who had done *Sonic 3D Blast*, and was a platform-based racing game that while perhaps not the greatest game ever, was a wonderful technological showcase for what could be done on the Saturn.

» Later titles like *Soukyugurentai* from small developers like Raizing helped keep Saturn fans stocked with good videogames to play.

With the much talked-about *VF3* port (with or without upgrade cart) seemingly dead in the water, AM2 signed off from the Saturn in style with *Fighters MegaMix*. Based on the *Fighting Vipers 2* engine and gameplay mechanics, the game merged *VF2* and *Fighting Vipers* characters (along with assorted other AM2 characters) in a colossal fighting game that came very close to eclipsing *VF2*.

Likewise Lobotomy, who had pulled off the very impressive *Exhumed* the year before, was entrusted to port over PC hits *Duke Nukem 3D* and *Quake*, a task it proved more than capable of.

By the end of 1997, however, it became clear that Sega was done with the Saturn, with *Burning Rangers*, *Panzer Dragoon Saga* and *Shining Force III* the last games of note to be published by the company in 1998. However, this wasn't the end of things for the Saturn – at least in Japan. The machine's 2D power was more than capable of handling Neo Geo and CPS2 ports – especially when used in conjunction with RAM carts – allowing Capcom and SNK to port their more elaborate 2D games with a great degree of accuracy, while Tecmo was able to use the knowledge gathered by Sega to port across Model 2 game *Dead Or Alive*. The availability of ST-V boards also meant that smaller companies like Treasure and Raizing could continue to find a home for their games in the console market. Sadly, very few of the games released during 1998 made it out in Europe or the States, forcing many dedicated fans to turn to importing to get their gaming fix.

» While the *Dead Or Alive* games are a household name now, Tecmo's beat-'em-up started out its console life on the Saturn.

» Sonic Team's *NiGHTS* is for many people the best game ever made – and with Sega's analogue pad, it's not difficult to see why.

THE HARDCORE CLASSIC

The opening page of the February 1997 issue of *Sega Saturn Magazine* states that "Owning a Saturn is making a statement," and from a gamer's point of view, this is almost certainly true. There's no denying the ineptitude of Sega's management during this time; in virtually every conceivable way, the machine was at loggerheads with what the market wanted (and for the most part received, courtesy of the PlayStation), and arguably, the precarious financial position the Saturn left the company in, along with the damage done to its reputation, put its successor, the Dreamcast, on the back foot before it had even launched.

But equally, there's no denying the excellence of the console's games. With the arcade heritage of both Sega and its key third parties, such as Capcom, SNK, Treasure, Raizing Tecmo and co – arguably at a time when they were all at their creative peak – it

» The best of Capcom's two-dimensional wares were vastly superior on the Saturn compared to their PlayStation namesakes.

comes as little surprise that the machine's best software tended to find its origins in the arcades. While it should be pointed out that very few of the games themselves are exclusive to the Saturn in the traditional sense – even Sega converted its big Saturn ports to the PC using its ill-fated Sega PC label – such is the gulf in quality between the Saturn and other home versions that for most arcade gamers, there was only ever one machine worth bothering with. Even more so considering that certain ports were arguably better games than their arcade parents.

That's not to say there wasn't a great array of console-specific titles. The offerings of Sonic Team and Team Andromeda spring instantly to mind, with *NiGHTS, Burning Rangers* and the *Panzer Dragoon* trilogy all demanding of a place in any self-respecting Saturn collection, along with the excellent *Shining* games (Team Sonic), *Guardian Heroes* and *Silhouette Mirage* (Treasure), along with many others.

Even today, despite the widespread availability of sequels and re-releases on other formats, the Sega Saturn is still a worthwhile investment for those who appreciate the unique gameplay styles of the companies that supported it. In terms of dedication to delivering the most faithful experiences possible, especially arcade ports, the machine is still arguably peerless to this day, a state of affairs reflected in the cult status it deserves.

As such, the market for the console remains buoyant to this day, nearly a decade on. While the abundance of unwanted PAL machines and games can make the machine an attractive prospect, be warned: those wishing to get the best out of the Saturn must be prepared to invest handsomely. While several fancy limited-edition machines were released in Japan, our recommendation would be to pick up a 'double switched' PAL machine, coming with region selection and 50/60Hz selection switches to enable you to play imported titles and poorly optimised PAL titles in all their full-screen, full-speed glory. Such a machine won't cost much – indeed, it's possible to perform the modifications yourself using one of the many online tutorials, – but some of the rarer and more desirable games can fetch top prices these days, so be prepared to spend. Certain titles can now fetch upwards of £150.

However, if the particular type of game offered by the Saturn is your cup of tea, then it's ultimately worth it. While it would be foolish to pretend that the Saturn was anything other than a failure in the business sense, there'll probably never be a machine quite like it.

» *Virtua Fighter* helped to fuel Saturn sales in Japan at launch, but was the only launch game worth writing home about.

NetLink Me Up

One of the least successful upgrades for the Saturn was its NetLink modem. Comprising of a 28.8KB/s modem and browser software, the service allowed for internet browsing and online gaming, although in the event, it never took off. A few games, such as online-enabled versions of *Sega Rally, Virtual On* and a few others, appeared but the service never caught on and by the end of 1997, most developers had abandoned it in the US and Japan.Although that was one step further than it got in Europe. Sensing it would probably never catch on, Sega of Europe never released the modem or the software here.

GO EAST, YOUNG MAN

While the Saturn had a tough time in the West, it received plenty of support in Japan. Here are three of our favourite titles that never made it to Western shores

Title: Princess Crown
Developed by: Atlus
Everyone knows the Saturn was capable of incredible sprite-based visuals, and *Princess Crown* is one of the best titles to highlight this fact. With multiple, enormous, fluidly animated characters moving and fighting each other all over the screen, it's enough to melt the eyeballs. Gameplay was equally excellent, with plenty of variety. Playing one of several characters' quests, you roamed a fantasy realm fighting dragons, goblins, and other mythical creatures, using a unique *Street Fighter*-style combat system. You could also cook food to make healing items. Awesome.

Title: Dracula X: Nocturne In The Moonlight
Developer: Konami
Thanks to flagging sales in the West, Konami's *Nocturne In The Moonlight* never appeared outside Japan. Essentially a beefed-up edition of *Symphony Of The Night* albeit with rougher visuals, slowdown, and lengthy loading times, *Nocturne* allows you to start play as one of three different characters – including Saturn exclusive Maria. It also has plenty of new weapons and even two new locations, The Cursed Prison and Underground Garden, to discover. Worth playing through even if you have already played the superior PlayStation version.

Title: Psychic Killer Taroumaru
Developer: Time Warner Interactive
It may indeed reach extortionate prices on eBay, but this superb effort from Time Warner Interactive easily justifies its £200+ asking price, if only so you can constantly gaze at its remarkable aesthetics. Filled with the sort of graphical trickery that wouldn't look out of place in one of Treasure's games, *Psychic Killer* is a stunning example of what capable designers could achieve with the Saturn's hardware. The game's not bad either, playing like a cross between early *Shinobi* games and *Alisa Dragoon*.

SEGA SATURN

PERFECT TEN GAMES

Forget the fact that it was an alleged nightmare to program and that it came a poor second to Sony's all-conquering PlayStation, there is still much to discover on Sega's (unfairly) maligned console. Featuring both jaw-dropping 3D titles and an eclectic range of 2D games, Sega's Saturn quite frankly has something for everyone

01

NiGHTS INTO DREAMS

- **RELEASED:** 1996
- **PUBLISHED BY:** SEGA
- **CREATED BY:** SONIC TEAM
- **BY THE SAME DEVELOPER:** BURNING RANGERS

01 It's difficult choosing just one of Sonic Team's Saturn titles, and we debated endlessly over this or *Burning Rangers*, but as *NiGHTS* is so unlike anything else and came out first, it had to go in. The gameplay basically involves flying around a pseudo-3D world, passing through rings to open the level exit. The atmosphere is surreal, but to reach that euphoric state you need to master the art of infinite looping: passing through rings quick enough to maintain the timer and effectively loop the level several times while generating insane scores. It doesn't click for everyone, but if your mind is expanded enough it's magical. Also, don't forget *Christmas NiGHTS*.

SATURN BOMBERMAN

- **RELEASED:** 1997
- **PUBLISHED BY:** SEGA
- **CREATED BY:** HUDSON
- **BY THE SAME DEVELOPER:** ADVENTURE ISLAND

02 *Bomberman* is one of the greatest series ever created, and *Saturn Bomberman* is the pinnacle of the series. Every single post-Saturn iteration of the franchise generates the question: is it as good as *Saturn Bomberman*? None are. The main reason is that it's the only version supporting ten simultaneous players on a single screen, which is pure nirvana. Another is that while most *Bomberman* games are fairly boring in single-player, the Saturn's solo mode is equally as good as the multiplayer. Beautiful anime cut-scenes, ingenious level design, interesting enemies and power-ups. Whether alone or in a group, *Saturn Bomberman* is awesome.

02

GUARDIAN HEROES

- **RELEASED:** 1996
- **PUBLISHED BY:** SEGA
- **CREATED BY:** TREASURE
- **BY THE SAME DEVELOPER:** GUNSTAR HEROS

03 No other system at the time could do 2D like the Saturn, and the game exemplifying this was *Guardian Heroes*. Unlike *Final Fight*, which had a variable plane of movement, *Heroes* only had three planes where movement was restricted to left and right, with players needing to alternate between them. It ensured the fighting engine was precise, well defined, and unlike anything else. Treasure also blessed it with a fantastic anime intro, and dozens of frames of super-liquid-smooth animation. Then there was the ability to collect extra characters to fight as, and even control a powerful undead warrior. Pure genius.

SHINING FORCE III

- **RELEASED:** 1997
- **PUBLISHED BY:** SEGA
- **CREATED BY:** CAMELOT
- **BY THE SAME DEVELOPER:** MARIO TENNIS

04 The *Shining* series has always been a favourite among Sega stalwarts and, after the Saturn's first-person-perspective *Shining The Holy Ark*, fans rejoiced that the series would return to its strategy RPG roots for the first time in 3D. The basic mechanics weren't a drastic departure from past instalments, but there were several additions, such as the friendship system. Unfortunately, for all its excellence, it is also a source of annoyance for the Saturn community. Only the first of the proposed three-disc set was translated into English, with the second two only in Japanese.

PANZER DRAGOON II: ZWEI

- **RELEASED:** 1996
- **PUBLISHED BY:** SEGA
- **CREATED BY:** TEAM ANDROMEDA
- **BY THE SAME DEVELOPER:** PANZER DRAGOON SAGA

05 We've already covered *Saga* under Why You Must Play, but *Zwei* is such a different experience, it's worth including another *Panzer* game. It's an on-rails shooter, which blends an unusual story line and ethereal atmosphere with some intense action. Unlike contemporaries such as *Star Fox*, *Zwei* allowed the camera to be panned all around the dragon mount, and therefore fire at enemies coming from all directions. It also improved on the first by providing a devastating berserker attack. *Zwei* is remembered best for its wild set pieces and epic bosses.

03

04


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SEGA RALLY CHAMPIONSHIP

- **RELEASED:** 1995 (UK 1996)
- **PUBLISHED BY:** SEGA
- **CREATED BY:** AM3/CS TEAM
- **BY THE SAME DEVELOPER:** MANX TT SUPERBIKE

06 *Sega Rally* might have only had three cars and four circuits, but thanks to its endless time-attack options we're still struggling to put it down. The key to *Sega Rally*'s brilliance lies in its circuit design and handling. Singularly excellent, the two complemented each other and offered a game that was convincing to play, but thanks to a variety of different lines that could be taken through most corners and the precision needed to balance the cars on the edge, knowing that there was another tenth lurking in a given sector would keep you coming back for more.

VIRTUA FIGHTER 2

- **RELEASED:** 1995 (UK 1996)
- **PUBLISHED BY:** SEGA
- **CREATED BY:** AM2
- **BY THE SAME DEVELOPER:** DAYTONA USA

07 While the Saturn didn't lack decent 3D fighters, none of them could hold a candle to *VF2*. While it wasn't the most accessible game to grace the console (arguably its only weakness), *VF2*'s perfectly weighted controls, fluid animation and sheer depth really set the game aside, and the stunning high-resolution 60fps visuals only helped sweeten the deal. While the AI was competent enough, *VF2* was always best enjoyed with a friend of roughly comparable quality, where learning a character and devising tactics accordingly in order to beat them became the order of the day – and it still plays like a dream now.

VIRTUA COP

- **RELEASED:** 1995
- **PUBLISHED BY:** SEGA
- **CREATED BY:** AM2
- **BY THE SAME DEVELOPER:** OUTRUN, SPACE HARRIER

08 Prior to *Virtua Cop*, the lightgun game had been stuck in the doldrums. However, Yu Suzuki's AM2 team saw the chance to revive it in 1994, and thus *Virtua Cop* was born. The port is about as faithful as you could hope, with all of the enemy attack patterns and locations re-created. While the game might seem sedate now – especially compared to the various instalments of *Time Crisis* or *House Of The Dead* – the score-attack-based gameplay that rewarded justice shots (shooting an enemy's hand, rather than killing him), the depth this allowed for was stunning, and it's still worth playing to this day.

09

RADIANT SILVERGUN

- **RELEASED:** 1998
- **PUBLISHED BY:** ESP
- **CREATED BY:** TREASURE
- **BY THE SAME DEVELOPER:** SILHOUETTE MIRAGE

09 There's a host of outstanding shoot-'em-ups on the Saturn, and while it's somewhat predictable that we've plumped for Treasure's opus, it so deserves to be here. Ported from the Arcade S-TV board, *Radiant Silvergun* is quite simple the pinnacle of Saturn shmups and is one of the most exhilarating shooters we've ever played. Beautiful in design, with an ingenious weapon system – you instantly start with a fully powered-up ship and must use the weapons to the best of your ability – *Radiant Silvergun* is a near-flawless experience that shouldn't be missed under any circumstances. Yes it's essentially nothing more than a souped-up boss rush. But, man, what a rush.

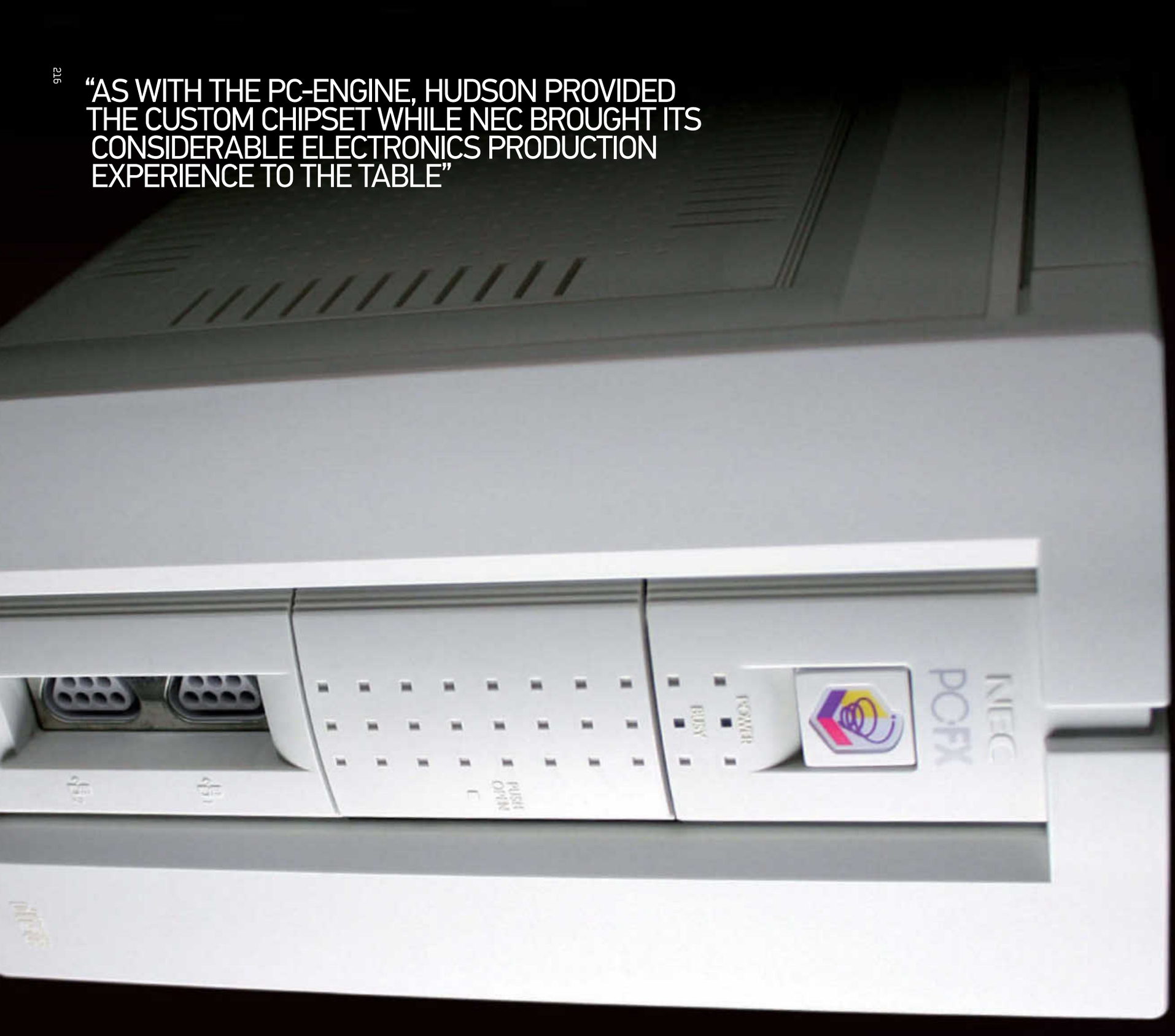
STREET FIGHTER ZERO 3

- **RELEASED:** 1995
- **PUBLISHED BY:** CAPCOM
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** STRIDER

10 Capcom was one of the Saturn's staunchest supporters and as a result there are a host of great beat-'em-ups available on the machine. While the likes of *X-Men Vs Street Fighter*, *Street Fighter Alpha 2* and *Marvel Vs Street Fighter* are all worthy of a mention, it's the Japanese-only *Street Fighter Zero 3* that's made our coveted Perfect Ten – mainly because until very recently it was the finest conversion of the game to ever appear on a home machine. That wasn't all, though, as Capcom included all the arcade's extra gameplay modes and a console-exclusive World Tour to ensure that arcade veterans had plenty to sink their teeth into.

10

"AS WITH THE PC-ENGINE, HUDSON PROVIDED THE CUSTOM CHIPSET WHILE NEC BROUGHT ITS CONSIDERABLE ELECTRONICS PRODUCTION EXPERIENCE TO THE TABLE"



PC-FX

AS THE 16-BIT GENERATION DREW TO A SLOW AND AGONISING CLOSE, THE INDUSTRY WITNESSED A CHAOTIC STAMPEDE OF SHINY NEW CONSOLES, SOME OF WHICH WERE MARKEDLY MORE SUCCESSFUL THAN OTHERS. DAMIEN MCFERRAN TAKES A LOOK AT ONE OF THE MORE HIGH-PROFILE BLUNDERS OF THE ERA

ACCESSORISE Three peripherals no PC-FX owner should be without

PC-FX Pad (FX-PAD)
A lovely six-button pad that is almost identical to the controller that came with the PC-Engine Duo RX. This is very comfortable and ranks as one of the finest pads of its generation. A shame hardly anyone got to experience it.

PC-FX Mouse (FX-MOU)
Compatible with only a handful of games, the FX-MOU still made many PC-FX gaming sessions more palatable. As was standard at the time, it only had two buttons, but that was plenty for the few games that supported it.

Memory Card (FX-BMP)
The PC-FX had 32K of internal RAM for save games, which filled up quickly. Therefore, this memory card was an essential purchase for serious gamers, especially those who favoured the large number of RPGs on the system.

Year released: 1994

Original price: ¥50,000/approx £240

Buy it now for: £50-£100

Why the PC-FX was great… It may have lacked 3D power and was plagued with questionable anime software, but the PC-FX is still a firm favourite with serious retro collectors. FMV gaming may have been forgotten these days but NEC and Hudson's machine was the undisputed master of the medium, even managing to make the genre playable and entertaining. The limited library (coupled with the relatively unknown nature of the platform) makes this the ideal choice for budding retro connoisseurs with deep pockets who wish to dip their toes into the Japanese end of the market

Complacency can be deadly. You only have to look at the changeover between the 16-bit and 32-/64-bit generations for confirmation of this fact. Amazingly, during this period of transition all of the established hardware manufacturers were caught with their trousers down while new boy Sony waded in and effortlessly mopped up their precious market share. Poor old Sega stumbled badly, first with the ill-advised 32X and then with the Saturn, and while Nintendo's fall from grace was slightly less pronounced few would have the confidence to declare that the N64 lived up to the lofty expectations established by the tremendous success of its predecessor, the SNES.

However, by far the most humiliating collapse was that of NEC and its cohort Hudson Soft. These two companies had previously worked together on the legendary 8-bit PC-Engine, which in Japan had managed to beat Sega's Mega Drive into third place and even went as far as to challenge Nintendo's previously unassailable dominance. Unfortunately, like their fellow rivals they drastically underestimated the challenge posed by creating a successor to such outrageously popular hardware.

But let's not get ahead of ourselves here; there's a history lesson to brush up on first. As previously mentioned, NEC and Hudson's partnership had proved to be a particularly profitable one and it was almost a given that the dynamic duo would collaborate on new projects together again. Work on what would become known as 'Tetsujin' (Iron Man in Japanese) commenced almost as soon as the Nineties had begun, with an official announcement coming as early as 1992. As had been the case with the PC-Engine, Hudson provided the custom chipset (which included five separate co-processors) while NEC would bring its considerable electronics production experience to the table.

Tetsujin boasted fearsome specifications for the time. Not only was it to be CD-ROM based, it also contained a RISC processor clocked at 25MHz and was supported by 2MB of RAM to facilitate speedy CD access. The system also featured highly advanced 2D capabilities as well as support for full-screen 24-bit video playback. A prototype was demonstrated to selected parties in the same year, with three games being displayed. Two of these were merely tech demos but the third got delegates really hot under the collar; it was an updated version of Hudson's classic *Star Soldier*, which ran in what appeared to be full 3D. In reality it was actually displaying 3D objects over a pre-rendered background (the same technique employed by GameArts' *Silpheed* on the Mega CD and Namco's *Starblade* in the arcades), but it was more than enough to impress the assembled throng and with a successful demonstration of their new hardware out of the way NEC and Hudson feverishly worked on getting the new machine ready for release.

INSTANT EXPERT

The PC-FX uses 32K of internal RAM for save games. Many games feature unique warning messages alerting the player when this memory is full.
Hi-Ten Bomberman, a ten-player version of Hudson's famous title, was rumoured to be in development for the system but was cancelled. Many believe this formed the basis for the Saturn's sublime *Bomberman*.
In keeping with NEC's vision of technological convergence, a modem was mooted for the PC-FX but never saw the light of day.
Although the PC-FX joypad was aesthetically the same as the one bundled with the PC-Engine Duo RX, the auto-fire switches became 'mode' switches, which enabled players to change the mapping of the pad's buttons instantly.
Hudson and NEC's software publishing policy favoured a heavy bias towards anime-style games and 'digital comics', both popular in Japan at the time.
Only 62 games were officially released for the PC-FX during its three-and-a-half-year life span.
Early releases came in attractive plastic boxes, not totally dissimilar to the ones used for the Neo-Geo AES, but as time went on NEC reverted to cheaper (and a lot less attractive) standard CD jewel cases.
The three expansion ports of the PC-FX were apparently included because NEC and Hudson were keen to avoid the endless and confusing string of upgrades that had so befuddled prospective PC-Engine owners.
The PC-FX's 'FX-BMP' memory card is powered by two AAA batteries.
The three expansion slots on the PC-FX each had a special purpose. The front slot housed the FX-BMP memory card, the one at the rear was for the SCSI cable and the remaining bay was for the proposed 3D card.

AARON NANTO INTERVIEW

PC-Engine FX (**http://pcenginefx.com/PC-FX**) is without question the internet's leading resource on all things PC-FX, showcasing a fine selection of images, reviews, videos and other related media. We spoke to webmaster Aaron Nanto, who is the proud owner of a complete PC-FX collection, about NEC's 32-bit console.

What do you find so appealing about the PC-FX?
The PC-FX is unlike any other console for two reasons: the games and the design of the system. The PC-FX is the only console that utilised motion JPEG technology for its primary purpose to give you real-time control of full-motion video. This allowed for fighting games like *Battle Heat*, where you controlled your character via FMV sequences that reacted instantly to your button presses. Other consoles back in the day had FMV games, but nothing as fast or high quality as what the PC-FX could do. The other unique feature of the PC-FX is the design of the console – the PC-FX is the only game console to be designed like a mini-tower computer with three expansion ports.

Why do you think the PC-FX failed to sell in Japan?
The reason the PC-FX didn't sell that well in Japan was due to the games and the fact that it didn't support backwards compatibility with the PC-Engine. NEC took a radically different approach to what types of games were released for the PC-FX and this was undoubtedly a major factor in the failure of the console. Gone were the arcade conversions, shooters and platform games from the PC-Engine. NEC instead gave gamers original IPs, FMV versions of old classics and anime games.

Do you think the hardware was exploited to its fullest potential during the PC-FX's short life span?
The PC-FX hardware was definitely not exploited to its fullest potential before support was pulled for the console. For the majority of the games, we saw 2D sprites and FMV, but the PC-FX had the potential to display 3D graphics to a certain extent and we saw just a hint of that in the game *Zenki*.

Can you tell us a bit about the expandability aspect of the machine? Is it true that a 3D card was proposed that would allow it to compete with consoles like the Saturn and PlayStation?
The PC-FX had a huge amount of expansion options that were not exploited during the short life of the console. Unfortunately, we will never know what NEC might have done to expand the console – a 3D card could have been a possibility, as with memory expansion or even adding a modem. However, the only item that utilised the expansion ports was the FX-BMP, which provided more save-game memory.

How easy is it to collect for the machine today?
Due to the limited market of the unit (Japan only) and low number of games produced, people who want to start collecting the PC-FX will have a very hard time acquiring many of the games – the prices can be quite steep. The console and accessories are fairly easy to find on the used market but the games will take a much longer time to collect. Personally, it took about five years to collect every PC-FX game for my own collection, and this was many years ago – it is much harder now.

How much does a PC-FX unit sell for these days?
The PC-FX console itself you can find on eBay for about $100 (£50), but most times it will have to be shipped from Japan and that can be another $40+ (£20+) just for shipping.

Given the Japanese nature of the machine's videogames, how easy is it for English-speaking gamers to get to grips with the PC-FX and its software?
There is only a small selection of games that non-Japanese players can enjoy, which means that if you can't understand Japanese, this console might not be for you considering the cost involved in acquiring the games.

Initially the two companies were confident of launching Tetsujin in 1992, but lack of finished software forced a rethink and spring 1993 became the target date. When this was also missed, rumours began to circulate that NEC and Hudson were reluctant to usurp the PC-Engine while it was still pulling in good business (in Japan, at least). As the months passed Tetsujin became less and less cutting-edge and it seems that during this time little development was undertaken to ensure the new hardware retained parity with newer machines like the 3DO and Atari Jaguar; NEC and Hudson seemed content to rest on their collective laurels, at least while their current hardware was still viable.

Then, in early-1994, it was confirmed that the Tetsujin project had been formally cancelled. Sources insisted that development had been abandoned due to NEC and Hudson seeing the proposed specs for Sega and Sony's 32-bit challengers, both of which outshone Tetsujin and also promised considerable 3D capability. In light of such competition the partners were forced to scurry back to the drawing board. Sadly, it was far too late to come up with an entirely new design and therefore much of the architecture that was present in the (by now) hopelessly underpowered Tetsujin was utilised in the new machine. Although Hudson's five-piece custom graphics chipset was streamlined to just a single co-processor, Tetsujin's reliance on streamed footage rather than real-time rendering was retained. The working title for this new platform was 'FX', which soon became PC-FX – the 'PC' presumably being added to capitalise on the prominence the PC-Engine brand was enjoying in Japan at the time. Despite this name checking, it was confirmed early on that this new device would not be backward compatible with existing PC-Engine CD-ROM software.

The PC-FX console finally made its worldwide debut at the 1994 Tokyo Toy Show where it fought with the Saturn, PlayStation, Neo-Geo CD and

» Launch title *Team Innocent* used pre-rendered backgrounds in a similar fashion to Capcom's *Resident Evil*.

» Running on the Tetsujin hardware, this update of Hudson's popular *Star Soldier* franchise used pre-rendered backgrounds and 3D ships.

A STRANGE BREW

Although the PC-FX was severely lacking 3D muscle, NEC did release one piece of hardware that granted a glimpse of what might have been. The PC-FXGA (the GA stood for 'Game Accelerator') was a card that could be installed on a PC (or on a PC-98, which was NEC's own personal computer standard in Japan) and used to develop 3D homebrew titles. Some intriguing demos were also bundled with the card and while they're hardly breathtaking by the standards of the era, it at least gives a hint of the kind of 3D power that the system could have enjoyed. Sadly, because NEC's proposed 3D expansion card for the home console never materialised, anything produced using the PC-FXGA was unplayable on the standard PC-FX. Still, this is a pretty unique piece of kit and is fairly desirable in the eyes of serious collectors.

Bandai Playdia for the attention of the masses. The unconventional casing design immediately caused tongues to waggle, with many commentators unfavourably comparing it to the rather unflattering PC towers that were available at the time. Nevertheless, attendees at the show were left open-mouthed by *FX Fighter*, a title shrewdly positioned to steal the thunder of Sega's *Virtua Fighter* arcade conversion, which also happened to be on display. Hudson's game looked nothing short of stunning, boasting highly detailed combatants constructed of smoothly shaded polygons. It certainly put Sega's boxy effort to shame, but there was a significant catch: the PC-FX was in fact spooling pre-rendered footage directly from the CD and not actually generating these images in real-time. It wasn't immediately apparent at the time but the system lacked dedicated 3D hardware and this effectively meant that it couldn't hope to compete with the Saturn and PlayStation in this regard. In their defence, neither NEC nor Hudson ever insisted that the footage was real-time rendering; it was rather the assumption of those that viewed the demonstration that perpetuated this viewpoint. Nevertheless, magazines picked up on the impressive footage and this contributed to the expectation surrounding the launch of the console.

> "IT WAS HARD TO IGNORE THAT THE SATURN AND PLAYSTATION OFFERED CUTTING-EDGE 3D VISUALS FOR THE SAME PRICE"

However, when the PC-FX eventually hit Japanese store shelves in December 1994 the mystique surrounding its 3D muscle swiftly evaporated. *FX Fighter* was nowhere to be seen, although leading launch title *Battle Heat* proved to be a very similar proposition. It was essentially a *Dragon's Lair*-style anime fighting game where animated sequences were spooled off the disc in time with the player's button commands. To be fair, it was (and still is) an awesomely impressive trick; there is no delay between the player's input and on-screen action and the quality of the FMV is tremendous. This is thanks to the fact that NEC and Hudson had decided to shun traditional MPEG video playback (which resulted in low quality compressed footage with lots of pixelation and a generally low frame rate) in favour of the much more memory-intensive JPEG system, which essentially displayed a different high-quality still image for each frame of animation, and all at a silky-smooth rate of 30 frames per second. Because it was built on the foundations of Project Tetsujin, the console was therefore constructed from the outset to make use of this unique method. Tetsuya Iguchi, a member of NEC's Electronic Products planning department, proudly stated that the PC-FX was a 'Direct Memory Access' machine. Instead of pushing data from the CD through the CPU bus, the PC-FX channelled the information directly to the video-out port via a sequencer, rendering chip and video encoding processor. This process allowed the machine to produce blisteringly fast video footage, and it should come as no surprise to learn that the console eventually became a hotbed of anime-style games.

However, for all this FMV-related trickery, it was hard to ignore that the Saturn and PlayStation were bringing cutting-edge 3D visuals to homes for the

EVERYTHING PUT TOGETHER FALLS APART

Compared with rival machines, the PC-FX is a pretty hefty beast, but you may wonder just how much of the space inside that bulky casing is taken up by actual hardware. One PC-FX owner also found himself pondering this troublesome question and so he disassembled his beloved console, piece by piece. Amazingly, he discovered that the PC-FX is mostly full of air, with the actual circuit board and electronics taking up only a tiny percentage of the internal real estate. Naturally, much of this space would have been swallowed up by the proposed upgrades, which would have occupied the areas within the expansion slots. For those of you with strong stomachs, the grisly results of this machine dissection can be seen here: **http://nfggames.com/forum2/index.php?topic=1305**. Whatever you do, don't try this at home, kids.

» You're going to have to spend some serious cash for a complete PC-FX collection.

» In its later years, the PC-FX was host to a flood of saucy 'hentai' titles. Oo-er.

same retail price, making the PC-FX look massively underpowered as a result. But it wasn't just technical issues that PC-FX owners had to deal with; software support was equally disappointing. The much-hyped *FX Fighter* was quietly cancelled and in a move that with the benefit of hindsight appears particularly foolhardy, Hudson established publishing guidelines that stipulated that famous titles such as *Bomberman* and *Adventure Island* would not be developed for the system. Perhaps the company was attempting to prove that the PC-FX was too advanced to host these seemingly simplistic games; whatever the reason for this puzzling stance, it meant that the console was fighting without the aid of Hudson's most potent weaponry – its best-selling franchises.

However, even in the darkness a few faint glimmers of light could be seen. Games such as *Chip Chan Kick!*, *Der Langrisser FX* and *Kishin Doji Zenki: Vajura Fight* managed to ignite the interest of gamers the world over, with *Zenki*'s exhilarating mixture of gorgeous 2D visuals and addictive gameplay almost providing enough justification for numerous enthusiasts to purchase a PC-FX purely to play it. Many of the anime FMV games were actually remarkably entertaining and very nearly succeeded in making what was previously a laughable genre appear almost worthwhile. For all its faults, NEC's machine was certainly adept at creating attractive 2D videogames and could handle FMV with remarkable proficiency, but sadly NEC and Hudson had simply backed the wrong horse – 3D was the next big thing, as the runaway success of the PlayStation would attest.

Like so many other machines of the era, the PC-FX was billed as a 'multimedia' device as well as a gaming platform. The PC tower casing – so

» How could you not want to play a game where a big-eyed girl gets tied up?

» Unfortunately, many PC-FX games require a good knowledge of Japanese to play.

at odds with conventional console design, which favoured machines that spread themselves horizontally rather than vertically – may not have been to everybody's tastes, but it arguably gave the PC-FX a mature, almost professional look. The ability to receive (but not send) faxes was an innovative attempt to introduce the kind of online connectivity we now take for granted with machines like the Xbox 360 and PlayStation 3; indeed, prior to the console's release Tetsuya Iguchi spoke of forging a link between different electronic products, such personal computers and telecommunications systems. The machine featured ports for future expandability and although the only peripheral to make use of this was the FX-BMP game save memory module, there were rumours that a fully fledged 3D graphics card was in the works that would have allowed the PC-FX to compete toe-to-toe with Sony and Sega's machines. Music CD and Photo CD playback was also supported and in a rather novel move the console could be connected to a PC-98 personal computer via a special SCSI adapter and function as a CD-ROM drive.

However, as innovative as these features may have been, they counted for little in the face of more technically potent rivals. Bolstered by impressive capability and sterling support from publishers, the PlayStation quickly ran away with the majority of the market leaving the competition in its wake. The PC-FX hardly figured in the scheme of things; sales were pitiful, with less than 100,000 units sold after a year – compare this to the performance of the PlayStation, which had shifted over 1 million units in Japan by this stage. Amazingly, these figures might not have come as much of a surprise to NEC as it would appear the company's aspirations were low from the beginning, with Iguchi being quoted as saying he expected the PC-FX to sell "around 50,000" units in 1994 and another 50,000 in the following year.

As things became increasingly fraught, NEC opened the floodgates on what many would consider to be the console's lasting legacy – dubious 'hentai' dating simulations featuring wide-eyed schoolgirls in provocative poses. But even before this occurred, the acutely Japanese nature of the software had effectively spelt an end to what little chance there had been of a Western release. It could be argued that after the dismal performance of the TurboGrafx-16 (the American version of the PC-Engine), NEC wasn't going to make the same mistake twice, but had the PC-FX been a success in its homeland, the probability of it reaching Western shores would have been much greater.

Nevertheless, the PC-FX did manage to carve out a niche for itself in Japan and hung onto a tiny market share for over three years. The final release (called *First Kiss Story* – you guessed it, a dating simulator) limped onto Japanese shelves in April 1998. Rumours circulated that other games (including a highly anticipated update of Hudson's classic *Far East Of Eden* series) were awaiting development "dependent on market performance", but this was effectively the end of the road for the PC-FX – a console that was outdated from the moment it went on sale. It was a bitterly disappointing outcome and a far cry from the triumphant legacy left by the PC-Engine; it also spelt the end of NEC and Hudson's previously fruitful relationship.

(Many thanks to Aaron Nanto for providing exclusive hardware and software photography.)

Year released: Japan: 23 June 1996, US: 29 September 1996, UK: 1 March 1997

Original price: ¥24,900 (Japan)/$199.99 (USA)/£249.99 (UK)

Buy it now for: £10-£15

Associated magazines: *N64, Nintendo Official Magazine, Total*

Why the N64 was great… It's all about the controller and the software, courtesy of the intangible genius of Nintendo's internal development teams and the hard work of the third parties that stayed the course, especially Rare who, quite frankly, will never be the same again. The ironic part is that while Nintendo's fortunes have improved since, many of the games lauded at the time have not been bettered and probably never will be. That in itself will be the legacy left by Nintendo's last cartridge-based home console

NINTENDO 64

WITH THE SUCCESS OF THE NES AND SNES UNDER ITS BELT, NINTENDO APPEARED UNSTOPPABLE. THAT WAS ALL ABOUT TO CHANGE. MAT ALLEN LOOKS AT HOW THE N64 CONSOLE IS A PERFECT EXAMPLE OF HOW IT CAN ALL GO WRONG DUE TO COMPETITION FROM A CORPORATE BEHEMOTH AND BAD EXECUTIVE DECISIONS FROM WITHIN

'Wrong' is an entirely subjective and opinionated summary of the situation. It is hard to deny that there were a number of factors that ended in Nintendo being dethroned by Sony by the time the N64 was phased out. The innocent victim in all this was the console itself; it was a great machine with some unbelievable games, but it was hamstrung by certain corporate decisions and never fulfilled its potential. It was not the flop many others label it as.

Project Reality was first hinted at as far back as 1993, the name coined from Nintendo's new relationship with Silicon Graphics and its workstations being used to great effect in films such as *Jurassic Park* and *Terminator 2*. The following year saw the arcade machines *Killer Instinct* and *Cruis'n USA* released that were touted as using the same technology that would soon be available in your own home. In hindsight, the arcade machines were vastly overpowered by comparison, but no one was to know that and anticipation surrounding Nintendo's next console grew.

It wasn't until November 1995 that the new console, dubbed the Ultra 64, was finally unveiled at the annual Shoshinkai exhibition to great expectation. Only two of the 11 games shown were playable; one was *Kirby Bowl*, which would disappear into development hell shortly afterwards. The other was *Super Mario 64*. The playable demos available were all that was needed to convince the attendees that Nintendo still had the magic.

Part of that was due to the design of the controller. Nintendo is known for producing ergonomic devices that are focused on getting the best out of its own games, and for the N64 this was no different. Designed by Genyo Takeda, the controller had three prongs, offering three different holding positions and hence the possibility of varying control schemes all wrapped up in one unit. Sitting on the middle prong was an analogue stick, a device unfamiliar to many people at the time. This design choice was about to change the way videogames were made forever.

The controller was better than that of the competition, but it took time to learn how to use it. The same could be said for the console itself. When announced, terms such as 'Z-buffering', 'tri-linear mip-mapping' and 'Gouraud shading' both wowed and confused the

New… Or Old?

Many groundbreaking features of the N64 touted by Nintendo were not as new as first thought. The N64 itself was labelled the first 64-bit console, though technically the Atari Jaguar had beaten it to it with its object processor. And neither was it the first console with four controller ports as the Bally Astrocade and Atari 5200 had this feature in the pre-crash era. And that analogue stick sitting prominently in the middle of the controller? Many people believe Sega had pre-empted Nintendo's decision with its release of *NiGHTS* (bundled with such a controller), but the game was released in Japan two weeks after the N64 launched. Nonetheless, both the Atari 5200 and Vectrex had an analogue stick as standard. What can be said for sure, though, is that the inclusion of this feature has influenced the design of all future controllers since.

"THE PLAYABLE DEMOS AVAILABLE WERE ALL THAT WAS NEEDED TO CONVINCE THE ATTENDEES THAT NINTENDO STILL HAD THE MAGIC"

64 Didn't Deliver

The 64DD unit, or Dynamic Drive, was Nintendo's attempt at a proprietary media format that could rival the capacity and flexibility of the CD used by Sony's PlayStation. First previewed in 1995 before the N64 had even launched, it was delayed beyond recognition and when it finally did arrive in 1999, had lost all the momentum and impetus that it promised. Not only were games being designed to run from the unit directly, but also many companies were planning upgrade disks that could be accessed by the cartridge version to add new features, missions and content to the main game. With the delays, all bar one of these was cancelled. The one survivor, the *F-Zero X* Expansion Kit, happened to be almost worth buying the unit for regardless. During its one-year lifespan only nine pieces of software were released for the unit, and in conclusion can be considered the only Nintendo hardware failure alongside the Virtual Boy.

public in equal numbers, and many magazines sought to explain these words to their readers. While these features and more were to prove the power of the N64 was greater than that of the PlayStation, they also provided one or two serious end-user flaws.

The largest complaint levelled against the N64 is how quite often, the graphics appear as if someone has smeared Vaseline across the screen. This blurry appraisal was in contrast to the often jagged and pixelated look on the PlayStation; the N64's mip-map and anti-aliasing techniques helped smooth out textures when they moved closer or further from view, but the restrictions on storage with cartridges and a very low texture cache meant these textures were often blurry as a result. Nintendo itself often chose to use the Gouraud shading to compensate for the lack of texture definition.

"AT THAT POINT, SUPER MARIO 64 HAD BEEN SOLD WITH ALMOST EVERY CONSOLE"

Clever tricks to get around some of the limitations, together with rewriting parts of the graphics processor microcode meant that the true power of the N64 could shine through. Developers such as Factor 5 and Rare were especially adept at getting the most from the machine. In conclusion, like most other consoles, those developers willing to put the effort into learning got the most from it, as witnessed in the end result of the games they released.

As early as 1994, Nintendo had started to assemble a group of programming teams that would be responsible for producing some of the early N64 games, that would inevitably give them a head start in getting the best from it. Aside from Williams and Rare who produced the previously mentioned coin-ops, others courted included simulation specialists Paradigm, Acclaim, Sierra, LucasArts, and Electronic Arts. Notice anything about the companies listed? None of them were Japanese. A costly oversight at the time? Maybe so, looking back. Perhaps Nintendo believed Japanese companies would automatically come on board. The reality was to prove a lot different. Either way, even with the head start it took longer than expected for any of the third parties to fully push the machine. Even Nintendo itself wasn't immune to running late. The N64 had originally been scheduled for a 1995 release, and when a definite date of 21 April 1996 was finally decided upon, it shifted two more months due to the realisation that certain titles, such as *Mario Kart 64*, were not going to make the first wave of releases, and Miyamoto wanting more time to fine tune *Super Mario 64*.

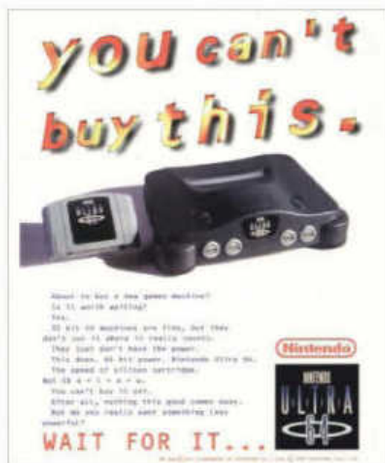
April 1996 incidentally had been the planned launch date in the UK. This slipped back to March 1997 as the US release was planned and orchestrated. The PlayStation was already out and Nintendo UK ran a series of adverts telling people to wait for the arrival of the N64. At the time it was still called the Ultra 64, the "Ultra" part apparently dropped in due course due to the name being owned by Konami.

When the console did launch in Japan, the PlayStation had already been on sale there for 18 months. The launch games were similar to that of its predecessor, the Super Famicom, in that it involved a *Mario* title and a *Pilotwings* game. The other title available that day was a version of *Shogi*, a game very much Japan-centric in nature.

And that was it. Until the release date of the console in the US was approaching, there was no other software released in Japan, which was somewhat worrying from a promotions and publicity point of view. *Super Mario 64* may have been an epic, brilliant, groundbreaking title, but if people wanted something else to try on their new system, they were a little stuck, to the say the least. Not that Nintendo had much to worry about the success of the console at that point; *Super Mario 64* had been sold with almost every console, and by the end of the N64's lifespan, had shifted more than ten million copies, making it the most successful N64 game ever.

With the launch of the console in September in the US coming up, Sony raised the competition stakes slightly by dropping the price of the PlayStation to under $200 – a common tactic. However Nintendo seemed to panic, and in response dropped the price of the N64 pre-launch by $50 from its original proposed price of $249.99. The same could not be said of the console launch in the UK: Nintendo resolutely stuck to its price of £249.99, which at the time made it 60 per cent more expensive than it could be bought for in the US. Realising its

» What a lot of people bought a N64 for in the first place.

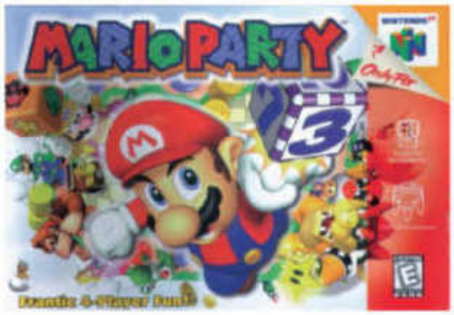


» Nintendo ads tried to persuade people not to buy a PlayStation.

» Guns, girls, gigantic set pieces, what more could you want?

» Worthy of purchase merely for the Katina level, but brilliant overall in all respects.

» A new entry in the series gained a whole new set of fans, but many SNES fans were disappointed by comparison with the game.



» Take the simple board game concept, throw a whole load of mini-games and Nintendo characters into the mix and the result is an entertaining party game. Which has since been milked to death.

» Originally conceived as a powerboat racer, once it turned into a jet ski simulation it gained a more personal quality with the controls being perfect and the wave simulation incredibly accurate.

folly soon after, the price was dropped £100 a few months after launch, heralding scores of furious complaints from early adopters. Nintendo attempted to placate them with vouchers covering the difference, which was mildly received. It wasn't the only reason why being a PAL N64 owner at the time was the equivalent of getting a sharp stick repeatedly up the backside, for reasons that will be touched on later.

What can't be denied is the quality of some of Nintendo's own games. Examples of its great games include: *Star Fox 64* with its marauding levels, challenge, addictiveness and the sheer film inspiration of the Katina level; *WaveRace 64* with its superb water physics and bouncy gameplay; *F-Zero X* for taking the original, giving it a serious rocket from behind and a real heavy metal soundtrack to boot; *Pilotwings 64* for being so wonderful to play.

Three new series also made their debut on the N64, all becoming instant hits. *Super Smash Bros* was Nintendo's answer to the *Power Stone* genre of multiplayer fighter, but with the spark of HAL Labs at the helm, made it a unique creation of backstabbing brilliance. *Paper Mario* meanwhile was a different take on the turn-based RPG concept with plenty of nuances and invention to back up the gameplay. Finally *Mario Party* combined board games with mini-games and the chance to wreck your analogue stick in the process.

And then there are the *Zelda* games. *Ocarina Of Time* was constantly delayed but proved to be a tour de force of concept, idea and execution that has justified it to be labelled repeatedly as the best game ever. *Majora's Mask* on the other hand has been unfairly overlooked by comparison, which is a shame because in some ways, it even trumps *Ocarina*. The relationships and bonds formed within the three days left before the moon strikes are some of the strongest ever produced from a game, and it really hits home when you realise just what the ending actually means.

Nintendo had its own popular games, the powerful hardware, and the new controller. There was just one piece missing from the equation: third-party support. Why was third-party support so lacking on the N64 compared to their two previous consoles? One of the main reasons lies in the choice of remaining with a cartridge media format instead of using optical as Sega and Sony had.

Not that cartridges didn't still have advantages: they were more robust than CDs, less likely to be damaged via general use; they

"THERE WAS JUST ONE PIECE MISSING FROM THE EQUATION: THIRD-PARTY SUPPORT. WHY WAS THIRD-PARTY SUPPORT SO LACKING ON THE N64 COMPARED TO ITS TWO PREVIOUS CONSOLES?"

could hold save data via design instead of making the user buy memory cards; and loading times were non-existent compared to CD, which a generation of gamers unfamiliar with loading tapes into 8-bit machines were about to discover anew. Loading times disrupted the flow of playing a game, something that Nintendo was keen to avoid.

However, there was one over-riding link connecting all these features: they benefited the end user and not the publisher. Cartridges were expensive to manufacture, and as Nintendo still controlled their production, it profited directly from every one made. Cartridges were also harder to pirate, which is likely another reason for sticking with that format. They also held far less data than CDs could, so publishers were in effect being asked to support a console that had a far higher space-to-cost ratio than, say, the PlayStation. Then there were the licensing fees. Sony had been smarting for years over Nintendo's betrayal regarding the proposed CD peripheral for the SNES. Not wanting to cancel the project outright, Sony decided to continue research and build around what it had already created, with the end result being the PlayStation console we know today. Sensing an opportunity, Sony organised its licence-fee structure (the money publishers have to pay to be allowed to release their games on a machine) on a much lower scale to Nintendo.

When you look at everything together, the cost of manufacture, the cost of licensing, the difficulty in getting the best out of the console, it isn't hard to see why third-party publishers made a beeline for the PlayStation compared to the N64. It was far cheaper and easier for them to publish videogames all of a sudden. Their decision was made by the actions of both manufacturers. *Edge* magazine even predicted many of these factors in an article soon after the N64 launch. This situation was further escalated by the choice made by a certain Japanese company with a certain RPG.

"THE N64 IS PROBABLY WHERE THE ADAGE 'YOU BUY A NINTENDO MACHINE FOR NINTENDO'S GAMES' BEGAN"

» *Bangai-O*: the original, and some would say, better version of the panic-inducing shooter-fest.

Software availability from certain publishers and of certain established series is a key factor today towards a console's success. In hindsight it did not matter that the N64 probably had a far better good-to-bad ratio of games in its library; it was the sheer volume of releases at a cheaper price for the PlayStation plus the presence of certain key games that tipped the balance.

Looking at the major third-party publishers during the Nineties, there were wide differences in their output between the N64 and the PlayStation. Capcom and Namco managed a whole three releases each for the N64: a shockingly low level of support. Konami by comparison released 20 or so games, which seems pretty impressive, until compared to the more than 50 released for the PlayStation. Even the king of third parties, Electronic Arts, only managed a similar number of releases.

The biggest blow to Nintendo's fortunes was the loss of Square. Towards the end of 1995, several screenshots were published which were purportedly taken from the next *Final Fantasy* videogame. That's how the journalism went. In fact they were from a technical demo Square had written to test various three-dimensional techniques. Unfortunately no one knew this at the time and huge anticipation built when it was assumed Square was on board and writing the next *Final Fantasy* game for a Nintendo machine, just like it had for the previous six.

When Square announced in January 1996 it was instead going to be publishing *FF VII* on Sony's PlayStation, the collective jaws of Nintendo fans dropped. As it turns out, Square had never planned on publishing *FF VII* on the N64. Early on in development it was decided that the requirements of the game needed a much larger media capacity than cartridge allowed. Square's decision in hindsight was elegantly simple to make, but it didn't stop the accusations against Sony that it had "tied up" Square in a deal to take it away from Nintendo. Square had dealt the N64 a massive blow before it had even been launched.

With *FF VII* scheduled to be released on the PlayStation, other publishers knew that the console would sell in droves just so people could play the game, and this in turn gave them more confidence and knowledge that there would be lots more potential buyers for their games if they also released on the PlayStation. In a way, it was a self-fulfilling circle of cause and effect. Sony also marketed its console towards a different audience from the norm, complete with advert saturation; by comparison promotion for the N64 seemed quite small. Nintendo arrogantly assumed people would automatically go to buy its console regardless, which they did, but more people were flocking to the PlayStation for the games it offered and the "wow" factor that FMV provided via the new CD medium.

With a narrower selection of parties publishing on the N64, it meant that certain genres were neglected, which affected sales levels. For example, role-playing games are huge business in Japan and there are hardly any available for the N64. Likewise fighting games. By comparison the range of sports games available for American fans was sufficiently large to keep them happy. In fact, the US is what really kept the console alive, as it accounted for two-thirds of the worldwide sales, and it managed to sell half of what the PlayStation achieved in that region.

The N64 is probably where the adage 'you buy a Nintendo machine for Nintendo's games' began. Given the magnitude of many, they were worth the entry fee alone and anything else was a bonus. Of the developers who did write for the N64, one stands out above all others: Rare. Having wowed games players with their SNES releases, it was about to pull even bigger rabbits out of an even bigger hat. Put simply, you can't underestimate just how important Rare's games ended up being towards the success of the N64.

From the regal beauty and genius of the *Banjo-Kazooie* games, the addictiveness of *Diddy Kong Racing*, to the offbeat destructive nature of *Blast Corps*, and the frantic bug blast of *Jet Force Gemini*, Rare games were held in high esteem and rivalled the releases of Nintendo itself. Indeed in some ways, *Banjo-Kazooie* and *Diddy Kong Racing* supersede the games they were based upon. Sitting right at the top of the tree however is *GoldenEye*, which was a tour de force of programming, showing that consoles could do the FPS genre and give gamers a multiplayer experience that was incredibly hard to let go. It

» The gaming equivalent of having your brain sucked out through your eyes. Explosively quick, superbly playable and playing a full-on heavy metal soundtrack.

» What might have been if Square had decided to remain with Nintendo.

» If you haven't heard of *Ocarina Of Time*, there's not much hope for you. Simple, sublime, beautifully brilliant.

» As a game, *Majora's Mask* wasn't as epic as *Ocarina*, but it somehow created even more emotion and atmosphere than its predecessor.

» Football (or soccer) may not be that huge in the US, but they received all three N64 *ISS* games with region-specific artwork and design. The game still played brilliantly as always.

» Bear, bird and big-eyed characters. It's bound to be another Rare classic.

» While Treasure is still going strong, you can be sure that quality 2D gaming is never going to die.

» Rare's *Diddy Kong Racing* had a single-player mode that was far more entertaining than what was featured in *Mario Kart 64*. The multiplayer was pretty good as well…

» Bugs and blasters ahoy as Rare do the third-person-shooter-fest in another example of how to get the most from the N64 hardware.

» The ambitious sequel to *GoldenEye*, that delivered in spades but was just perhaps a little too demanding on the hardware.

iQue Test

China has always been one territory that console manufacturers traditionally steer clear of due to the rampant piracy present within the country. Nintendo decided to try to break into the market with the creation of the iQue Player, released towards the end of 2003. On the outside it looks like the offspring of the N64 and Dreamcast controllers, but inside it uses console-on-a-chip technology to provide an N64 playing experience. Games are stored on a 64MB flash card contained within a cartridge that slotted into the device, which connected directly to the TV in a similar way to all those pirate rip-offs you see being sold on street markets. The games were available from an 'iQue depot' where they could be downloaded onto the cartridge. The unit was successful enough that Nintendo has released other versions of its more recent hardware in China to similar effect.

is rightly heralded as not only one of the best N64 games, but one of the greatest games of all time. Not bad for a team where many of the developers were doing their first ever game.

Of the major third-party publishers, Konami was probably the most prolific and consistent in its support of the N64, with versions of *Castlevania*, *Goemon* and *ISS* appearing on the machine among others; *ISS98* especially should be singled out for praise as being the best console football game available until the *Winning Eleven* series started to become known in the West. Konami's sports game contribution was large in general, probably helping the console's performance in the US.

Other developers were just as notable on the N64 even though their releases weren't quite as prolific as Konami. Left Field programmed a couple of good basketball games, licensed with Kobe Bryant, and the excellent *Excitebike*. Camelot transferred its superb golf series across to make *Mario Golf*, and then went on to produce the equally good *Mario Tennis*. Factor 5 produced two *Star Wars* games that almost pushed the N64 to its limit, and then went further and programmed the did-not-think-it-possible *Indiana Jones And The Infernal Machine*. Special word of course must go to the doyen of development, Treasure, which managed to produce its usual wizardry in creating three masterpieces of mayhem, namely *Mischief Makers*, *Bangai-O* and *Sin & Punishment*. All three are well worth finding and buying purely for their unbridled quality.

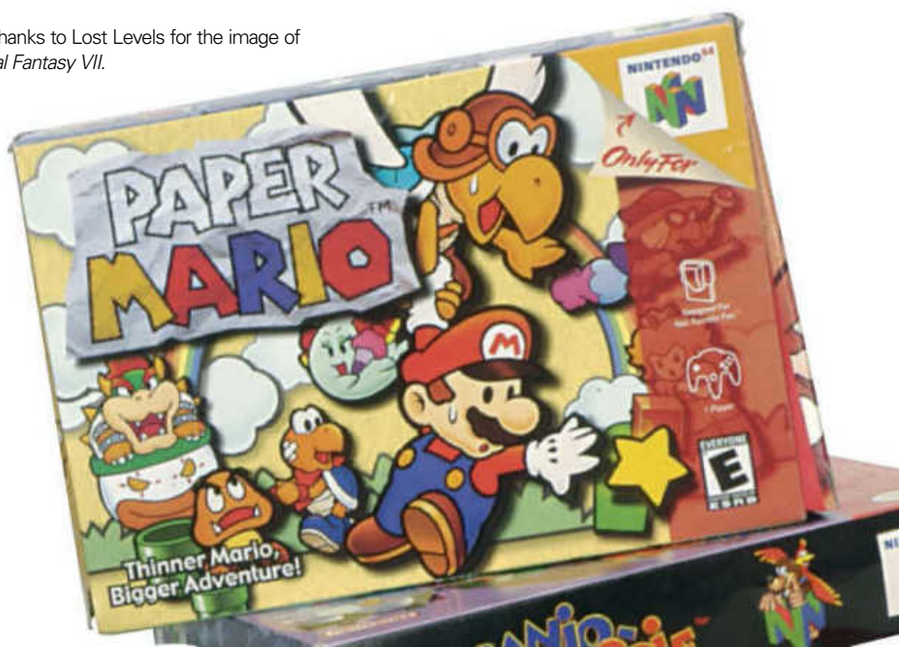
Towards the end of the N64's life, Nintendo belatedly released the 64DD unit in Japan and a 4MB RAM expansion pack designed to double the available memory of the console and allow more demanding titles to be written. Only a few games in the end actually needed it (though many benefited from its presence) but these include *Majora's Mask* and *Perfect Dark*, two of the classics. By the end of 2001, the Nintendo 64 was all but dead with the release of the GameCube, though *Tony Hawk's Pro Skater 3* did make it out in the US in August 2002.

If you missed out on all the N64 fun back then, now is a great time to get into the machine. There is just one consideration when choosing to buy: do not get a PAL machine. Not only can it not be modded for RGB, but many PAL games suffer from no optimisation at all, resulting in those large black borders and much slower speeds also experienced with the SNES. By comparison, buying the US version is probably the way to go, as it can play Japanese games with the removal of the tabs inside the slot and it had available just about everything released in Europe and much more. The N64 is currently something of a cult machine, with a dedicated band of supporters who are gradually winning over people who dismissed it at the time.

"ANY CONSOLE THAT SELLS OVER 30 MILLION UNITS CANNOT RATIONALLY BE CALLED A FAILURE"

In fact, many people consider the N64 to be a failure, especially when compared to the performance of the PlayStation, which has to date sold more than 100 million units. However any console that sells over 30 million units worldwide and has many games present in the bestselling and greatest ever games lists cannot rationally be called a failure. Nintendo revolutionised 3D gaming and controllers via the N64, and it has an abundance of classics waiting to be discovered if you haven't done so already.

Special thanks to Lost Levels for the image of N64 *Final Fantasy VII*.



PERFECT TEN GAMES

GOLDENEYE

GOLDENEYE

» **RELEASED:** 1997
» **DEVELOPED BY:** RARE
» **BY THE SAME DEVELOPER:** SABRE WULF

When Rare's *GoldenEye* first appeared in 1997 first-person console shooters were instantly given a massive shot in the arm (pun fully intended) and its impact sent shockwaves through the industry that continue to be felt to this day. Sniper rifles, four-way split screen, multiple missions, even duel analogue support (via two N64 pads) all made their first-person console debut in Rare's excellent shooter and even today it remains incredibly fun to play.

With its wonderfully designed missions, intelligently structured level design, excellent array of weaponry and utterly amazing multiplayer it should come as no surprise to learn that the only N64 game to ever succeed it was the development team's very own *Perfect Dark*. High praise indeed.

SUPER MARIO 64

SUPER MARIO 64

» **RELEASED:** 1996 (1997 UK)
» **DEVELOPED BY:** NINTENDO
» **BY THE SAME DEVELOPER:** DONKEY KONG

Few videogames have made the tricky leap from 2D to 3D as successfully as Shigeru Miyamoto's *Super Mario 64*. From the moment the Italian plumber's cheerful fizzog appears on the title screen to the final boss encounter, Mario's first three-dimensional outing feels as natural as breathing. Beautifully structured, perfect to control (unlike the recent DS outing) and home to one of the finest 3D cameras ever created, *Super Mario 64* retains its title as the finest 3D platformer ever made. And if that's not a good enough reason to include it in this top ten, then we don't know what is. A masterpiece of game design that no true gamer should miss.

F-ZERO X

F-ZERO X

» **RELEASED:** 1998
» **DEVELOPED BY:** NINTENDO
» **BY THE SAME DEVELOPER:** WAVE RACE 64

Okay, so it was yet another SNES update, but no other racer on the N64 (with the exception of Nintendo's very own *Wave Race 64*) came close to matching the sheer speed and excitement that *F-Zero X* offered. It may not have been the prettiest of games – there's a distinct lack of detail and plenty of fog – but it was amply compensated by the fact you could race against 29 other cars and that its snaking tracks zipped along at a blisteringly smooth 60 frames per second (something no 360 racer has currently achieved). With *F-Zero X* Nintendo managed to capture the very essence of racing in a 128-megabit cart – nothing more, nothing less.

THE LEGEND OF ZELDA: OCARINA OF TIME

» **RELEASED:** 1998
» **DEVELOPED BY:** NINTENDO
» **BY THE SAME DEVELOPER:** SUPER MARIO BROTHERS

We remember playing *Ocarina Of Time* like it was yesterday. Link's tearful farewell to Saria, learning about the Deku Tree's imminent death, walking out onto the vastness of Hyrule field, playing the titular ocarina for the very first time – they're all moments that become indelibly etched on your mind forever. If *Super Mario 64* proved that classic 2D franchises could work perfectly well in 3D, it was *Ocarina* that truly showed console owners just how much breathtaking scope the third dimension could actually offer them. No other adventure in recent memory has matched the perfection of *Ocarina Of Time*, and it's quite possible that none ever will.

LYLAT WARS

» **RELEASED:** 1997
» **DEVELOPED BY:** NINTENDO
» **BY THE SAME DEVELOPER:** SUPER MARIO WORLD

Playing through *Lylat Wars* (or *Star Fox 64* if you're reading this overseas) is like taking part in your very own space movie – hell it's actually better than many of the *Star Wars* games. Everything about *Lylat Wars*, from its soaring operatic music, to its jaw-dropping visuals has been done on such an impressive scale that you can't helped but get fully immersed within the on-screen action. This sense of immersion is captured perfectly by your more-than-able Arwing co-pilots. Slippy, Peppy and Falco are now fully fleshed-out characters, while the opposing Starwolf team ignites an intense rivalry that was never apparent in *Starving*. Fighting the forces of Andross has never been so much fun.

THE LEGEND OF ZELDA: OCARINA OF TIME

LYLAT WARS

BANJO-KAZOOIE

NINTENDO 64

Selecting our favourite ten titles from a console's back catalogue never gets any easier. In fact, when it comes to the N64 it's probably even harder. Just remember that these are only our opinions and we don't mean any harm

WAVE RACE 64

BLAST CORPS

BANJO-KAZOOIE

» **RELEASED:** 1998
» **DEVELOPED BY:** RARE
» **BY THE SAME DEVELOPER:** DIDDY KONG RACING

If proof was needed that Rare could do no wrong on Nintendo's N64, look no further than this superb platformer. Featuring a fascinating gameplay mechanic – Banjo and Kazooie could be manipulated in a variety of different ways to solve problems – beautiful looking visuals and some fiendishly clever level design, Rare nearly managed to do the impossible and create a game that was better than *Super Mario 64*! Brimming with charm and humour – special mention must go to the hilarious hoedown at the beginning of the game – and with just the right amount of item-collecting, *Banjo-Kazooie* is a platform fan's dream and should be played by anyone with even a passing interest in the genre.

WAVE RACE 64

» **RELEASED:** 1996 (1997 UK)
» **DEVELOPED BY:** NINTENDO
» **BY THE SAME DEVELOPER:** F-ZERO

***Wave Race 64* was one of the first launch games for Nintendo's new 64-bit console and it instantly set a precedent due to its incredible physics, convincing water and superb gameplay.** The aforementioned physics allowed you to feel every ebb and swell that your jetbiker raced across, while the beautifully constructed courses ensured that you'd constantly return to them to shave precious seconds off your previous lap times. Over ten years on it's still considered by many to be one of the Nintendo 64's greatest racers. And this is not a statement with which we're going to argue.

SUPER SMASH BROS

» **RELEASED:** 1999
» **DEVELOPED BY:** HAL LABORATORY
» **BY THE SAME DEVELOPER:** KIRBY'S DREAM LAND

Trust Nintendo to take a popular genre (in this case the beat-'em-up) and add its own unique spin to it. *Super Smash Bros* allowed 12 of Nintendo's most popular videogame characters to battle against each other in an ecstatic orgy of over-the-top cuteness. Four brawlers could take part and the aim of the game was simplicity itself: send your opponents flying from the ring before they do the same to you. While it lacked intricate special moves and the depth of titles such as *Street Fighter II*, the sheer amount of items you had access to – everything from Lightsabers to Pokémon balls – and the chaotic battles easily made up for *Smash Bros*' few shortcomings. It marked the beginning of a great series.

BLAST CORPS

» **RELEASED:** 1997
» **DEVELOPED BY:** RARE
» **BY THE SAME DEVELOPER:** GRABBED BY THE GHOULIES

Rare's second N64 title was a game of such twisted brilliance that we're surprised a sequel to it has never appeared. When an out-of-control missile is set to destroy the world, you have to clear a path for it by jumping into a variety of different machines (including two giant robots) and destroying as much of the landscape as possible. The sheer destructive nature of the game harks back to the old arcade games of old, while Rare further fuelled the nostalgia buds by offering a variety of bonus levels that mimicked everything from *Pac-Man* to *Defender*. A refreshing, unique title that proved just what a powerhouse the N64 could be in capable hands.

SIN & PUNISHMENT

» **RELEASED:** 2000
» **DEVELOPED BY:** TREASURE
» **BY THE SAME DEVELOPER:** MISCHIEF MAKERS

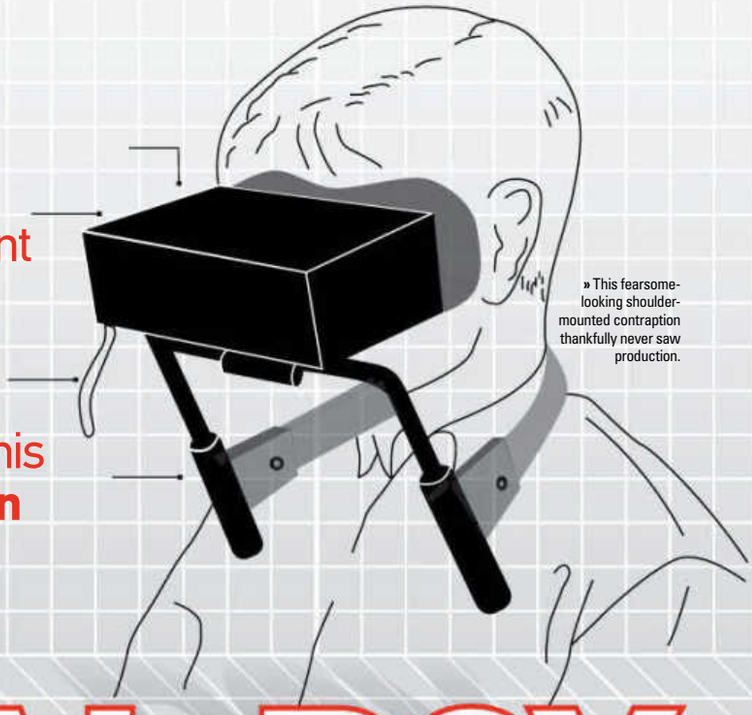
Treasure may have only released three games for the Nintendo 64, but we consider every single one of them to be a work of art that deserves to be played again and again and again. For the Perfect Ten we've gone with the superb *Sin & Punishment*, though, because it pushed the machine like no other videogame. A simple on-rails shooter at heart, *Sin & Punishment* is nevertheless a giddying roller coaster of a ride that instantly grabs you by the balls and doesn't let them out of its vice-like grip until the whole dizzying experience is over. Yikes.

SUPER SMASH BROS

SIN & PUNISHMENT

“ Game Boy creator Gunpei Yokoi hit upon the notion of using two displays to create a three-dimensional image ”

It's the console Nintendo doesn't want you to know about. The company's most high-profile bomb has been vilified as a headache-inducing monstrosity with little merit, but is this assessment fair? **Damien McFerran** pops a few aspirins and prepares to find out...



» This fearsome-looking shoulder-mounted contraption thankfully never saw production.

VIRTUAL BOY

Everybody has an awkward secret that they'd rather not share with the world. Be it an old school photo that showcases your crimes against fashion, or an acutely embarrassing vinyl LP in your record collection, we keep these things hidden in the hope that if we ignore them they might cease to exist. In the case of Japanese videogame giant Nintendo, the Virtual Boy is unquestionably its 'dirty little secret'. Almost two decades after this unusual console sank almost without trace after enduring a period of consumer indifference, it remains a byword for dubious videogame hardware.

Year released: 1995

Original price: ¥15,000 (Japan), $180 (US)

Buy it now for: £80

Associated magazines: Virtual Boy Tsushin (special one-off issue)

Why the Virtual Boy was great... It offered an experience that you simply could not get anywhere else. Okay, so the hardware was flawed, the software could have been better and prolonged use often came with unbelievable neck strain, but it's certainly worth sitting down with this wholly unique console at least once in your life.

The genesis of the Virtual Boy came about when Nintendo was approached by US firm Reflection Technologies in the early-Nineties. Reflection was attempting to find a buyer for its independently produced display technology, and Game Boy creator Gunpei Yokoi was quick to identify the system's potential. He hit upon the notion of using two displays to create a three-dimensional image.

In 1992 Nintendo acquired exclusive worldwide videogame licensing rights to Reflection Technologies' innovative system and Yokoi's Research & Development 1 team set about creating the console that would become the first fruit of this union.

As development progressed, Yokoi and his staff toyed with several different designs. Despite the machine's close ties with the concept of 'virtual reality', the idea of having a head-mounted system was ruled out almost immediately. Yokoi claimed that as soon as it was decided that the console would not support motion tracking to detect head movements, the decision was made to mount the system on a stand, rather than affixing it to the player's head.

While R&D1 furiously tinkered away within Nintendo's Kyoto HQ, news of this potentially ground-breaking new console – codenamed 'VR-32' – began to slowly trickle through to the gaming press. The biggest news was that it would pack a 32-bit CPU, like the upcoming Sony PlayStation and Sega Saturn. The next revelation was the ground-breaking 3D display, which promised a new standard of immersion. However, the timing of this news – not to mention the entire project – was somewhat perplexing as Nintendo was also making a tremendous amount of noise about its 64-bit 'Project Reality' console (which went on to become the Nintendo 64). Bearing this in mind, it's not surprising that most gamers interpreted the VR-32 as the spiritual successor to the ageing Game Boy, and the fact that Yokoi was involved only served to confirm this assumption. Regardless of this confusion, Nintendo fans were hungry for new hardware and therefore their interest was sufficiently piqued.

However, within the walls of Nintendo's HQ, Yokoi was unsettled. Nintendo was keen to get the VR-32 on to the market before committing all of its energies to the Nintendo 64, but it has been alleged that Yokoi felt it needed further fine-tuning.

» The adjustable stand was agonisingly close to production in Japan, but the plug was pulled on the Virtual Boy before it could come to the aid of long-suffering owners.

A COLLECTOR'S DREAM?

Given its status as Nintendo's most high-profile balls-up, it's not surprising to find that the Virtual Boy is a hot collectable among Nintendo fans. However, consoles that are commercial failures are, as a rule, difficult to collect for – is that the case here? "A lot of the hardware and software is freely available on eBay," says Christian Radke, editor-in-chief of the excellent *Planet Virtual Boy*. "But if you want to go for a complete collection, you'll need a few thousands bucks, especially for the 'rare four'. These are *SD Gundam Dimension War* and *Virtual Bowling* – which both fetch about $800 – closely followed by *Virtual Lab*. *Space Invaders* is the fourth rare game, but can be found much cheaper, maybe $200." Peripherals are equally in demand: "Every Virtual Boy owner should have an AC adaptor. Another highly desired accessory is the FlashBoy, a semi-professionally made USB flash cartridge which I produced and distributed together with its creator, Richard Hutchinson, from December 2007 to February 2009."

» A Japanese magazine advert for the Virtual Boy. As with TV commercials, it was difficult to show off its unique 3D capabilities.

> "With the gaming press expecting a 32-bit powerhouse, the red and black 2D visuals were a shock"

His reservations were disregarded; Nintendo was losing face because of Sony and Sega's impending entry into the 32-bit race, and it was clear that the company needed something to tide fans over until the N64 hardware could be completed. Having expended millions on VR-32 development already, Nintendo was understandably eager to get the hardware out to shop shelves in order to recoup its costs. Yokoi and his team prepped for launch but unfortunately the VR-32 (by this point officially rechristened Virtual Boy) experienced one of the most disastrous unveilings in the entire history of the videogame industry.

The first inkling that Nintendo might have a turkey on its hands was the overwhelmingly negative reaction to the Virtual Boy's debut at the Shoshinkai show in November 1994. With the gaming press expecting a 32-bit powerhouse to rival Sony and Sega's recently announced offerings, the red-and-black 2D visuals generated by Yokoi's TomyTronic 3D-lookalike were something of a shock and many journalists at the time were surprisingly frank with their opinion of the device. Some openly questioned Nintendo's sanity, while others predicted there and then that it would fail miserably. Few had anything positive to say. Despite this devastatingly unenthusiastic reaction, Nintendo of Japan supremo Hiroshi Yamauchi remained bullish about the Virtual Boy's prospects and confidently predicted it would shift 3 million consoles in Japan, as well as 14 million cartridges between its launch and March 1996.

Prior to launch, Nintendo was extremely cagey about revealing the secrets of its new machine – possibly out of fear that rival firms would copy the concept. Inside the console was a fairly complex array of cutting-edge technology that was able to create the impression of 3D depth. "For each eye there is a bank of vertically stacked red LEDs," explains programmer Steve Woita, who worked on Ocean Software's *Waterworld* Virtual Boy title. "These are arranged with 224 LEDs per bank and spray their information on to a mirror that is spinning at 50 times a second and delivering the game screen image to the retina. This is done for both eyes and means there has to be a grand total of 448 LEDs continually spraying information into your eyes." Jason Plumb, who worked alongside Woita on *Waterworld*, expands on this. "This process presents a separate image to each eye," he says. "If these images match the disparity that you are used to seeing in real life, then you perceive a sensation of depth related to the disparity between the images. Objects in the distance appear in the same position in both images, but the closer an object is in the scene, the more the horizontal position changes between the images. You can see this effect by holding a finger in front of your face, and comparing the image you see with each eye by closing the other. Your right eye sees your finger on the left side of what you can see, and the left eye sees it on the right side." Industry experts voiced their reservations about the predominantly 'red' visuals, but as Plumb explains, this was a cost-cutting measure more than anything else. "The main reason was that colours other than red were cost prohibitive," he comments. "Red LEDs were also more power efficient and easier to see than others."

The much talked about 32-bit CPU might have placed the console in a different league to the ageing Super Nintendo and Sega Mega Drive, but because of the additional effort of marshalling two displays instead of the traditional one, the power of the NEC810 CPU processor wasn't instantly apparent. "From a programming point of view it was difficult; the machine essentially had to keep twice as many screen buffers ready for display in the next frame than it would in a normal console game," says Woita. It also didn't help that the console lacked many features that were just starting to be incorporated into modern home consoles at the time. "The strange thing about the Virtual Boy was that it was a 3D device without

COMMUNITY VIRTUAL BOY SITES TO WATCH

Planet Virtual Boy
www.vr32.de/

Presided over by the ebullient Christian Radke, this excellent site sports a look as distinctive as the Virtual Boy itself. A wealth of information and media is at your fingertips, and there's also a well-attended forum, which attracts posts on a daily basis. It's one of the only Virtual Boy sites that still gets updated.

Virtual Boy.net
www.virtual-boy.org/

Planet Virtual Boy's only real rival, Virtual Boy.net has sadly remained dormant for a couple of years now, but it's still a gold mine of data. Webmaster Ferry Groenendijk is something of a Virtual Boy expert, so you can be assured of an enlightening experience if you happen to point your web browser this way.

The Unofficial Nintendo Virtual Boy Home Page
http://tinyurl.com/kgvg9

The official home of the 'Reality Boy' Virtual Boy emulator, this site also contains information on hacking the system. If you're brave enough to crack open your machine, you'll find plenty that's of interest here.

Virtual Boy Odyssey
http://tinyurl.com/dhtrgt

This site chronicles one man's quest to obtain a complete collection of sealed Virtual Boy games. The design may be amateurish and the layout confusing, but the author's enthusiasm shines through; this guy insists that the Virtual Boy changed his life and, to be honest, we're not brave enough to argue with him.

PERFECT FIVE

Vertical Force

Released: 1995
Published by: Nintendo
Created by: Hudson Soft
By the same developer:
Super Star Soldier

A part of Hudson's legendary *Star Soldier* series in all but name, *Vertical Limit* is perhaps the most effective (and obvious) use of the Virtual Boy technology. As the title suggests, it's a vertically scrolling shooter with one unique twist: you can switch between two planes of depth at the touch of a button. While it's arguable that the game could have been achieved just as effectively on 'normal' consoles, the visual trick is undeniably impressive.

Virtual Boy Wario Land

Released: 1995
Published by: Nintendo
Created by: In-House
By the same developer:
Galactic Pinball

Often cited by hardcore fans as the best piece of software available on the machine, *Virtual Boy Wario Land* follows on from the excellent Game Boy title and sees Mario's arch-nemesis searching for treasure in the Amazon. While it plays like a fairly traditional platformer and showcases Wario's penchant for wearing ability-giving headgear, the Virtual Boy's unique display is utilised to create gameplay situations.

Red Alarm

Released: 1995
Published by: Nintendo
Created by: T&E Soft
By the same developer:
T&E Virtual Golf

Otherwise known as 'that game that looks like *Star Fox*', *Red Alarm* is one of the only 'true' 3D titles available on the system. However, due to the limitations of the hardware, it displays wire-frame graphics rather than 'filled' polygons. Still, the effect is striking and despite the undistinguished reputation of the developer, *Red Alarm* is actually pretty good fun to play. It's still a distant second to the illustrious *Star Fox*, though.

Mario Clash

Released: 1995
Published by: Nintendo
Created by: In-House
By the same developer:
Mario's Tennis

Alongside the simplistic *Mario's Tennis*, this is the only other Virtual Boy title to feature Nintendo's famous plumbing mascot. Rather than replicate the gameplay of the 'classic' Mario adventures, it instead apes the single-screen blueprint laid down by the ancient *Mario Bros.* It's very easy to pick up and is incredibly addictive, even if the repetitive nature of the gameplay makes it more of a short-burst proposition.

Panic Bomber

Released: 1995
Published by: Nintendo
Created by: Hudson Soft
By the same developer:
Bomberman

Although it features Hudson's most famous creation, Bomberman, this isn't your usual bomb-based outing – like the PC-Engine version before it, *Panic Bomber* is a *Puyo Puyo*-style puzzle title. While the 3D effect generated by the Virtual Boy has no actual bearing on the gameplay, *Panic Bomber* is nevertheless a marvel to behold. The only real drawback is that it doesn't contain a two-player option – what a shame.

dedicated 3D hardware," comments Plumb. "3D hardware acceleration was just starting to blossom at the time and required too much power to incorporate into what was essentially a portable device. So, the Virtual Boy had a standard NEC810 processor with a couple of other chips to handle rendering sprites and sound." While it might have been lacking from a technological viewpoint, elsewhere it was genuinely ground-breaking; take the unique controller – which arguably had a massive influence on the design of the N64 pad – for example. "It has extensions that you grip with the palm of each hand," says Plumb. "Most controllers of the day were designed to sit in your fingers." The controller also features two D-pads – something that would later be mimicked by the twin analogue sticks of the PlayStation Dual Shock. "I really liked the Virtual Boy controller," admits Woita. "I thought it was ergonomically designed to meet the needs of all kinds of potential game designs."

When the Japanese launch arrived on 21 July 1995 it heralded some unusual scenes. The anxious queues of hardcore fans that greeted the launch of the Super Famicom in 1990 were suspiciously absent and day-one reports suggested that stores failed to shift all of their Virtual Boy consoles – something that is almost unheard of with a Nintendo hardware release, even to this day. This was despite the fact that the console had seen its initial RRP slashed from ¥19,800 to ¥15,000 – an attempt by Nintendo to make it "more appealing to a wider range of gamers".

The reasons for this dismal debut were manifold, but perhaps the most important was the lack of truly killer software; while the opening salvo of titles was fairly enjoyable, there was no *Super Mario World* or *F-Zero* to convince people the machine was worth owning. Third-party support – usually so muscular with Nintendo hardware – was suspiciously light on the ground, and it transpired that this was largely down to Yamauchi's orders. In a somewhat misguided attempt to ensure that the Virtual Boy only got the very best standard of software, he made sure that only a select few companies were shown the technology and permitted to sign up for development. It was a bizarre method of 'quality control' that ultimately backfired, as the system struggled to gain any kind of third-party support after its catastrophic opening week sales – in fact, only 22 games were ever produced in its entire life span.

The system's position within Nintendo's catalogue also caused bewilderment. People had been expecting the next Game Boy and the fact that 'out of the box' the Virtual Boy was only able to run when powered by six AA batteries seemed to confirm its portable nature. However, after seeing the finished hardware in the flesh it was painfully obvious that this wasn't a mobile system. Woita thinks that in this regard the company was probably guilty of not being transparent enough with the aim of the project. "What Nintendo really meant by portable is 'transportable' in that you could carry the device from one stationary place to another," he says. "They never really meant 'portable' as in the Game Boy or DS type of portability. Imagine if you were to try and play the game while walking around… you'd fall down the stairs or bump into a wall."

» *C&VG* produced a supplement called 'Go', which was devoted to handheld machines – the Game Boy being the main focus.

» [Virtual Boy] Based on the flop film, *Waterworld* saw you controlling a boat and blasting Smokers' boats to stop them capturing Atoll inhabitants.

INSTANT EXPERT

Only 22 games were ever officially released for the system. Of those 22, 19 were released in Japan and 14 in North America.

The Virtual Boy was never officially released in Europe.

Nintendo spent a whopping $25 million attempting to promote the machine in the US.

Ironically for a system that only has 22 games in total, the Virtual Boy has two versions of *Tetris*: *3D Tetris* and *V-Tetris*.

On the Japanese version of the machine, the connector, which would have enabled the link cable to be used, is called the 'EXT port'. However, on the US model it is accompanied by the words 'Play Link'.

Although the Virtual Boy's twin D-pad setup was revolutionary at the time, only three titles (*Red Alarm*, *3D Tetris* and *Teleroboxer*) made proper use of both pads.

The eyepiece of the Virtual Boy is made of neoprene and can be removed for cleaning.

The Virtual Boy's stand is notoriously fragile and second-hand units often display cracks in the plastic that holds the legs in place.

Only 140,000 units were sold in the US, with 630,000 making their way into Japanese homes (and probably the back of the cupboard not long after that).

Nintendo advised parents that children under the age of seven should not be allowed to play the Virtual Boy – apparently the 3D effect could damage their still-developing eyes.

For Nintendo, the bad news didn't end with the disappointing opening week sales. Those consumers who took the plunge and made a purchase, complained of headaches after prolonged use. This was possibly a side effect of the harsh red visuals, but it's just as likely that these users weren't adjusting the focus settings correctly. "Because the distance between the left and right eye is different for everybody, the Virtual Boy had to have a way for the user to adjust the independent spinning mirrors," explains Woita. "The knob at the top of the device would let you adjust what you see in the same way that you adjust a pair of binoculars to visually feel comfortable for your eyes." Nausea was another apparent side effect, but again this was probably down to users failing to calibrate the hardware properly – while the images generated by the Virtual Boy had the potential to cause sickness, programmers made efforts to ensure that this unwelcome feature was not included in the finished software they produced. "You could display whatever you wanted in each display," explains Plumb. "The hardware did not force any correspondence at all. I'm sure that if you displayed images that were too outside what the brain is used to seeing then it would be somewhat stressful to experience." To prove this point, Woita recalls a moment during the production of *Waterworld* when proper procedure wasn't followed: "When we were tuning the horizontal distances between the left and right eye, our manager took a copy of the game to the test lab without us knowing and the testers got a little bit queasy. Of course, this all got fixed the next day."

These scare stories – combined with Nintendo's own admission that using the system could damage the eyesight of children under the age of seven – did much to harm the public perception of the console, but hindsight has proved that the vast majority of owners could play their machines without experiencing any of these problems. Still, there was no getting away from the fact that the Virtual Boy was not a particularly comfortable console on which to game; it required the user to adopt a hunched, seated position, which led to further complaints of neck strain. Compared with the glorious liberation offered by the Game Boy, these issues made the Virtual Boy look distinctly non-user-friendly. It didn't help that Nintendo made some significant blunders with other vital aspects of the console, too. Although the system showcased an 'EXT Port' interface, which would allow two machines to be linked together (a feature that arguably contributed to the Game Boy's incredible mass-market success), a link cable was never produced. "A two-player cable was in the works," reveals Plumb. "I remember working with *Waterworld*'s Head-to-Head mode, but in the end this feature was dropped from our plans for the game pretty early in production, as the cable didn't appear."

Despite the Virtual Boy's frosty reception in its homeland, Nintendo continued to plan the US release. However, this time it was eager to enlist support from as many third-party developers as possible. "Nintendo was great to work with all along the way," admits Woita. "They had a two-day development conference up in Seattle before the US launch and I learned about some cool new features that had never been found in a gaming device before, nor since. I've worked on so many different types of consoles and development environments and I must say the Virtual Boy was a very interesting console to develop for. You'd compile your code on the VB development box that was hooked

» A small selection of games for the Virtual Boy – in total, only 22 titles were ever released for it.

» This one-off edition of *Virtual Boy Tsushin* magazine was produced to commemorate the launch of the console in Japan.

to your PC and then you'd slide your head over to the Virtual Boy itself to look in and see what your change did, then you'd move your head back over to your PC screen, recompile and repeat the process."

The Virtual Boy hit American store shelves in August 1995 and it was welcomed by the same consumer apathy that greeted its launch in Japan. Nintendo of America tried to remain confident and boasted of a complete sell-out, but what the company failed to disclose was that many of the larger electronics chains had taken as little as two units per store. As if to confirm the lacklustre retail performance of the console, the price was swiftly slashed from $180 to $159 before dropping to an official RRP of $99 in May 1996. When this failed to shift stock, stores took it upon themselves to drastically discount the system and it has been reported that Virtual Boys were changing hands for as little as $20 in some parts of the US. In total just 800,000 units had found their way into the homes of gamers worldwide – way short of Yamauchi's modestly predicted 3 million, and as you might expect, such dire performance in the Japan and US effectively destroyed any chance of a European release. It was a disaster of truly epic proportions and the impact it had on Nintendo's status in the videogame industry was considerable.

Of course, someone had to take the blame and that person was Gunpei Yokoi. The man who had generated untold wealth for Nintendo thanks to an astonishing string of high-profile successes (including the Game & Watch series and the Game Boy) found that his reputation was in tatters and rumours suggest that he was treated like an outcast within the walls of Nintendo's Japanese HQ. He took the failure of the console incredibly personally and left the company under a cloud in August 1996 to form his own studio (a seismic act that caused nervous traders to offload Nintendo shares so vigorously that the Tokyo Stock Exchange had to cease trading), which went on to collaborate with Bandai on the Game Boy rival WonderSwan. Sadly, he never saw the latter machine make it to the market – he was tragically killed in a roadside accident in 1997. He was 56 years old.

Although coming up with an explanation for the failure of the Virtual Boy seems simple enough, many of the reasons behind its poor performance are more subtle than you might otherwise expect. "I think the antisocial nature of the machine was the main issue," comments Plumb. "In my opinion, even with a full-colour display and fantastically powerful 3D hardware, users would be reluctant to accept it as a day-to-day system because of that." Woita has his own take on the fiasco: "I'd go into a toy store and see the Virtual Boy display set up and nine out of ten times it would be broken, so point of purchase wasn't working for it and the only way you can really sell this unit is to try it first hand. TV commercials couldn't do the machine justice because the TV couldn't show the Virtual Boy's cool 3D capability."

The console lasted less than a year before Nintendo unceremoniously switched off the life support, and bearing in mind that most videogame hardware doesn't really hit its stride until at least a couple of years into its life span, is it possible that the Virtual Boy could have improved had it been given opportunity to shine? "Most definitely," insists Woita. "The whole Virtual Boy development community at the time was cutting their teeth on their first round of games. It takes a few years to start figuring out tricks that allow you to squeeze the most out of a given platform."

Despite the negative reputation that the machine has, it's surprising to find that those who have had the chance to work with it have positive things to say. "The Virtual Boy was a fantastic piece of technology," says Woita. "We just started to scratch the surface of what could be done and I was really excited about creating games in what I would call closer to real 3D then we 'see' now."

Over the years, Nintendo's attitude towards its unwanted child has warmed slightly. The Virtual Boy has made some notable appearances in the *WarioWare* series – Virtual Boy title *Mario Clash* is one of the mini-games in the Game Boy Advance version, for example. The machine itself is now a highly valued collector's item among dedicated Nintendo aficionados and merely owning one grants you entry to the upper echelon of fandom. It may have been a non-starter, but there is one thing you simply cannot deny when talking about the Virtual Boy: it was a truly unique experience, the likes of which we may never see again.

Thanks to **videogameimports.com** for supplying the hardware and software used to create this feature.

VIRTUALLY THE SAME

Incredibly, the Virtual Boy has been emulated by industrious coders whose creations actually offer a fairly good impression of what it's like to play the real thing. "The best known and most up-to-date emulator these days is 'Reality Boy' by David Tucker," explains Planet Virtual Boy's Christian Radke. "It offers pretty high compatibility, some debug features and even rudimentary emulation of the EXT Link Port over TCP/IP. The official Link Cable has never been released and therefore no commercial games support it, but there are some homebrew games that do so and more will follow. The 3D effect can be replicated in several ways on the emulator. You can use Shutter Glasses, a CyberScope, over/under or side-by-side goggles, or a wide range of two-colour 3D goggles, like red/blue. Nothing comes close enough to the 3D of the Virtual Boy, though, so most people prefer the real thing."

» Another abstract advert for the Virtual Boy. Note the complete absence of screenshots.

» The Virtual Boy's stand was notoriously fragile, so many second-hand models will have cracks.


POWER
GAME BOY COLOR
Nintendo
GAME BOY COLOR
CGB-AOVP-EUR
MADE IN JAPAN
FABRIQUÉ AU JAPON
pong
ACT
LICENSED BY
Nintendo
ONLY FOR
GAME BOY
COLOR
THIS SIDE OUT
CE CÔTÉ À L'EXTÉRIEUR
AUSSEN SICHTBARE SEITE

Year released: 1998

Original price: £80/$129

Buy it now for: £5-10/$8-16

Associated magazines: Nintendo Official Magazine

Why the Game Boy Color was great… The Game Boy Advance was released so soon after the Game Boy Color that many of its best games were lost in the rush to upgrade to the 'next big thing'. Returning to the GBC now reveals a wealth of great games that you never knew existed, especially those available on import... besides, if you want to train a monkey to box in between sending it out for curry then you can only do it on the Game Boy Color

GAME BOY COLOR

AFTER RELYING ON THE ORIGINAL GAME BOY FOR OVER NINE YEARS, NINTENDO FINALLY UPGRADED TO A COLOUR MODEL, ONLY TO REPLACE THE MACHINE TWO YEARS LATER. ASHLEY DAY LOOKS AT ONE OF NINTENDO'S MOST SHORT-LIVED CONSOLES AND SHOWCASES THE GAMES YOU MIGHT HAVE MISSED THE FIRST TIME AROUND

Rumours of a colour Game Boy began to circulate almost as soon as the original monochrome handheld was released in 1989. Atari's Lynx proved that colour gaming was possible on the move, which prompted some to question why The Big N chose the less-impressive black-and-white route. Nintendo's answer, as always, showed that it had done its homework. Colour handhelds, although possible, were not practical: the massive drain on batteries and reliance on oversized hardware forced the user to play at home (close to a plug socket) and completely defeated the point of a portable games console.

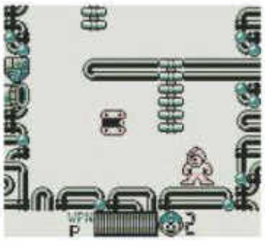
Nintendo chose instead to produce a handheld that was cheap to run and light enough to carry around, pledging to only upgrade the console when technology caught up with demand. That strategy proved more than wise as the Game Boy went on to sell over 70 million units despite the lack of colour. A string of hits from Nintendo's familiar brands, as well as new properties like *Pokémon*, ensured that the handheld fought off all competition and stayed in the hands of gamers for the next nine years until technology finally caught up.

By November 1998 Nintendo made good on its promise and revealed the Game Boy Color to the world at that year's E3. The console originally used a tech demo, featuring schools of multicoloured fish, that clearly showed how advanced the handheld was in comparison to its forebears. By featuring a crisp 256x256 pixel TFT (Thin Film Transistor) screen the GBC could output vibrant colour visuals, without eating the batteries, while also keeping the machine small and light. In addition, the processor was twice as fast as the original Game Boy, 56 colours could be displayed from a palette of 32,000 and the unit included an infrared device that could wirelessly transfer data between two machines. Since various coloured machines

Hardware Homebrew

As console manufacturers move on to better hardware, the homebrew community is often left to discover what more can be squeezed out of an ageing system and the Game Boy Color is no exception. The portability of the device has proved especially attractive to the homebrew developers who have managed to use the GBC for many purposes that Nintendo never dreamed of. Most impressive of these is surely the GPS BOY, a Global Positioning System that uses a custom piece of software to communicate with a GPS receptor board to display the user's current position on a full-colour on-screen map. Some receptor boards are now so small that they barely protrude from the Game Boy Color's cartridge slot. If you fancy converting your Game Boy Color into a cheap GPS device then head over to **http://members.fortunecity.com/kookie** where you can download the ROM and read a handy tutorial.

» Spain's *Club Nintendo* magazine got rightfully excited about the motion sensing *Kirby Tilt 'N' Tumble.*



» An example of a monochrome Game Boy game running on the Game Boy Color.

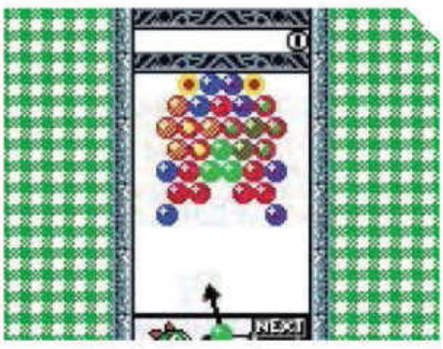
» Some games, like *Bust A Move,* benefited from the colour upgrade more than others.

had proved successful for Nintendo in the past it planned to release the GBC in six different colours with more to follow. The first six were Atomic Purple, Berry, Teal, Dandelion, Lime and Grape although only Atomic Purple initially made it to Europe in time for launch.

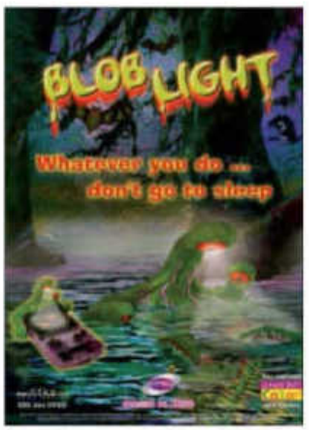
With the GBC's impressive specs and long battery life (from only two AA batteries) Nintendo fans were eager to see what games were in store for them, but some were disappointed as the first batch of releases did little to take advantage of the new handheld's power. As with the transition from NES to SNES, Nintendo was reluctant to alienate those who had stood by the Game Boy for so long, and implemented a backwards compatibility system that turned out to be both a blessing and a curse. The Game Boy Color was fully backwards compatible, making it capable of playing thousands of classics straight out of the box in a simple colour scheme. Many of the original Game Boy games had a default colour palette, which Game Boy Color made use of to ensure that Kirby stayed pink and Yoshi green, for example. Those games that did not have a default colour scheme could be altered by holding down different combinations of buttons upon powering up the machine, although this did have its drawbacks as the palette always coloured the sprites differently from the background, which meant the games that tried to surprise the player, by having sprites suddenly move, didn't quite work as intended.

The backwards compatibility was a first for any handheld and a smart move, but Nintendo took the plan a step further and ran the risk of angering those who had paid the £80 asking price for the GBC. To ease the move from monochrome hardware to the Game Boy Color the first few games would be playable on the original Game Boy in black-and-white. This meant that owners of the 'Game Boy Classic' could enjoy the new games without feeling pressured into upgrading but, frustratingly, it also meant that early adopters of the GBC had to make do with launch titles that didn't take full advantage of the handheld's capabilities. Early titles like *Tetris DX* and *Link's Awakening DX* were decent enough, but some gamers couldn't help but feel that they were playing monochrome games that had been 'coloured in'. This continued until the release of *Super Mario Bros DX* (1999): a cartridge that used the full power of the GBC to perfectly re-create a portable version of the NES classic for the first time.

Quality software was finally beginning to appear, but the Game Boy Color hadn't quite captured the hearts and wallets of portable gamers just yet as it faced its stiffest ever competition. Although the previous Game Boy had enjoyed an unbelievable 99 per cent market share, the new console was up against two new rivals that were carving major inroads towards Nintendo's once-captive audience. Bandai's



» Taito's *Monkey Puncher* is one of the GBC's best-kept secrets, and a great source of amusing Japlish.



» **Far left:** If proof was ever needed that the Game Boy Color was a magnet for shovelware then this is it. **Left:** An advert for one of the GBC's many flood light add-ons highlights the lack of a backlight in the handheld.

» Capcom actually put three GBC *Zelda* games into production, but unfortunately only two could make it to release

WonderSwan exploited Nintendo's rocky relationship with Squaresoft by securing the rights to all portable versions of *Final Fantasy* and captivated the Japanese market in the process. SNK meanwhile had a handheld of its own, in the shape of the Neo Geo Pocket, which was very popular with hardcore beat-'em-up fans. Nintendo needed a strong, system-selling game if it was to fend off these two considerable enemies. It needed a 'killer app'. It needed 'Pokémania'.

With well over 16 million copies of the original *Pokémon* sold by 1998, the popular RPG can take sole credit for saving the monochrome Game Boy from obsolescence. The original game had spawned a worldwide addiction for all things *Pokémon,* and kids across the globe hungrily consumed anything with Pikachu's face slapped on it, but what they really wanted was a brand new Game Boy adventure. After all, even though Nintendo had exploited the *Pokémon* brand to the nth degree, the original RPG by Game Freak was still a very compelling and highly polished game. *Pokémon Gold* and *Silver* were released in 1999 in Japan, 2000 in the USA and 2001 in Europe. The considerable gaps in release dates can be attributed to the time needed to translate the in-game text, but Nintendo had the added bonus of prolonging the Game Boy Color's life span on a global scale. The new *Pokémon* did the trick, and even though it could be played on a monochrome Game Boy, Pokémaniacs all over the world bought a Game Boy Color just so they could see their favourite Pocket Monster in the correct hue. Sales of the handheld, helped by a '*Special Pokémon Edition*' skyrocketed and by 2001 had reached an estimated 50 million units.

With sales of the Game Boy Color guaranteed by *Pokémon*'s colour debut in 1999, the machine started to receive much more support from third-party developers. The handheld had previously been littered with shovelware (mostly sports games and cartoon licences), but the major developers soon realised that there was major sales potential in the GBC and started to take the handheld seriously. Konami offered an original adventure called *Survival Kids* as well as an exclusive *Metal Gear* game, Rare created a handheld *Perfect Dark* and ported the SNES's *Donkey Kong Country* while Capcom ported *1942* and *Street Fighter Alpha* and even created a GBC *Resident Evil* game that debuted in the UK. Not all of these games stood up to the high standard that their names suggest, but some of them were excellent and showed that the Game Boy Color had more to offer than just Nintendo franchises and children's games.

By 2001 the Game Boy Color was just beginning to hit its stride. Sales of the machine were healthy and both Nintendo and third parties were turning out some great software until the life span of the handheld was cut short when Nintendo released its next-generation handheld: the Game Boy Advance. The GBA arrived in Europe on the 22 June 2001, only two and a half years after the Game Boy Color, making the GBC Nintendo's shortest lived console after the Virtual Boy. Quite why Nintendo chose to supersede the capable hardware so soon after its launch is still a mystery and remains a questionable decision.

As the Game Boy Advance naturally gathered momentum the Game Boy Color stayed in production for a short while. At the slightly reduced price of £60 it cost half as much as the GBA, making it an affordable alternative to the new Game Boy and it quickly became the handheld that parents opted to buy for very young children who would not notice or care about the difference in performance. As such, most publishers returned to the safe market of cartoon licences, but there were still some worthwhile releases in the GBC's final months. Most valued of these were two new *Zelda* games: *The Oracle Of Ages* and *The Oracle Of Seasons*. Each was co-developed by Nintendo and Capcom and they were considered such great additions to the *Zelda* series that many Game Boy Advance owners happily bought them despite their being developed for a technically inferior machine. Development continued, but due to the diminishing popularity of the console, many new games were only released in certain territories. The US got Enix's *Dragon Warrior III,* for example, while Japan got several *Dance Dance Revolution* games in 2001 and three exclusive *Goemon* (*Mystical Ninja*) games. One of the greatest Game Boy Color games to make it to Japan and the States (but not Europe) was the innovative *Kirby Tilt 'N' Tumble*, a *Marble Madness*-style game that actually required the handheld to be tilted in order to roll Kirby around the stage. *Tilt 'N' Tumble* will only work on the first model of Game Boy Advance so if you have a GBA SP or a Micro then it's worth investing in a Game Boy Color just to play this highly inventive Nintendo title.

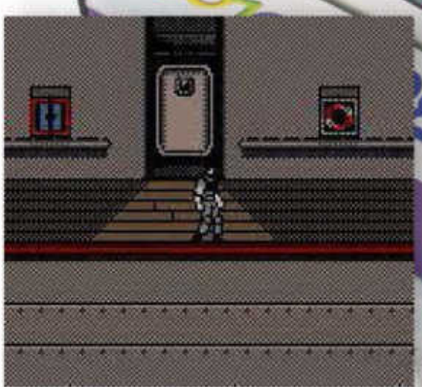
The final Game Boy Color game was, *Hamtaro: Ham Hams Unite*, released in Europe in January 2003 a little over four years after the launch of the hardware. As with many of the GBC's last games, Hamtaro was lost amid hundreds of Game Boy Advance games and was sadly overlooked by most gamers. This has given the Game Boy Color an unfair reputation as the one Nintendo handheld with few worthwhile titles, but this simply isn't the case. Dig around for the games that made it out between 2001 and 2003 and you are sure to find many lost gems that, although overlooked, were great titles well worth your attention.

Something in the air

Think Game Boy Color's infrared link was an under-used gimmick? Well, with a two-inch range it mostly was, but that didn't stop developers trying to get some kind of functionality out of it. Here are some of the most interesting uses:

Super Mario Bros DX
Merge high scores
Pokémon Gold/Silver
Trade Pokémon
Mission Impossible
Point a TV remote at the GBC to clone its signal then use your GB to control the TV
Austin Powers
Beam secret messages to an opponent (not very useful when you're sitting next to each other)
Robopon
Point a TV remote at the GBC to open unlockable chests
Bomberman Max
Each unique signal from an infrared device unlocks a different secret area
Pokémon Crystal Link up to the cyberpet Pocket Pikachu Color to unlock hidden items and monsters
Perfect Dark
Exchange unlocked multiplayer maps
Dogz
Trade dogs and toys

» *Super Mario Bros DX* was the first full-colour *Mario* game to appear on a handheld.



» The Game Boy *Resident Evil* was originally a port of the PlayStation version, but was canned due to poor playability.

PERFECT TEN GAMES

It may have had a short production run but Nintendo's Game Boy Color still had plenty of great games available for it, from *Resident Evil Gaiden* to *Metal Gear Solid*. Of course, any top ten is entirely subjective and open to violent debate

01

THE LEGEND OF ZELDA: LINK'S AWAKENING DX

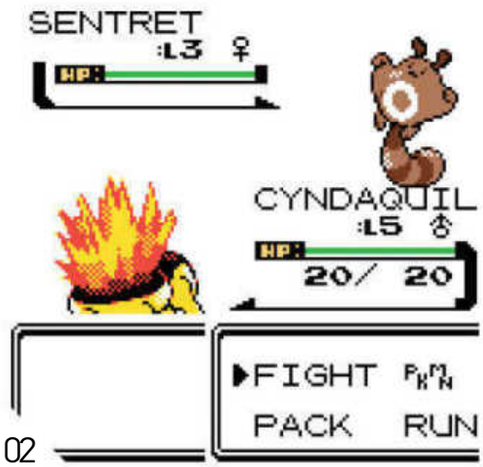
- **RELEASED:** 1998
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SUPER MARIO KART

01 We felt cheated when Nintendo's deluxe version of *Link's Awakening DX* appeared. After all, it was essentially a five-year-old Game Boy game (albeit with one brand new dungeon, Game Boy Printer support and full colour graphics). Nevertheless *Link's Awakening* remains as captivating as ever, and once you get drawn back into its beautifully crafted game world you'll never look back. Link's quest to wake the Wind Fish is filled with memorable characters, well-designed dungeons and the sort of magical gameplay that Nintendo seems able to create with its eyes shut. A great RPG that will please *Zelda* fans the world over.

POKÉMON GOLD/SILVER

- **RELEASED:** 2001
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** GAME FREAK
- **BY THE SAME DEVELOPER:** POKÉMON RED

02 GBC's first two *Pokémon* titles not only gave you gloriously coloured critters to battle with, they also brought several excellent new gameplay mechanics to the table – the most ingenious being a real-time clock. Pokémon and certain events now appear at specific times of the day, giving *Gold* and *Silver* a 'real life' quality missing from previous *Pokémon* titles. Another handy new feature was the addition of the cell phone, which made it easier to keep in touch with key characters. You were even able to breed Pokémon, although sadly it was impossible to create mutant offshoots. The end result is a sprawling adventure that no RPG or *Pokémon* fan should be without.



02

SUPER MARIO BROS DX

- **RELEASED:** 1999
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SUPER MARIO LAND

03 *Super Mario Bros DX* is yet another great example of Nintendo taking a game from its impressive back catalogue and revitalising it for a brand new generation of gamers. Not only did you receive a perfect port of Mario's first real adventure, Nintendo also included extras to ensure that it deserved its 'deluxe' tag. Challenge mode required you to achieve a certain level to complete all of the levels, collecting five red coins and a Yoshi egg within a time limit, while Versus mode was a race against Luigi that made full use of the Game Boy Color's link-up cable. Unmissable.

METAL GEAR SOLID

- **RELEASED:** 2000
- **PUBLISHED BY:** KONAMI
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** GRADIUS

04 Despite abandoning the single-screen cel-based design of previous 2D instalments, *Metal Gear Solid* (aka: *Ghost Babel*) is regarded by most as one of the GBC's finest releases. It takes the best elements from previous games, and adapts them to work within the GBC's limitations. There are now individual connected stages, which eliminates backtracking and allows shorter bursts of play. Plenty of well-implemented stealth sections, a bountiful roster of gadgets and weapons, an assortment of wonderfully depraved bosses, plus the expected story line of betrayal and moral ambiguity, make for the perfect handheld adventure.

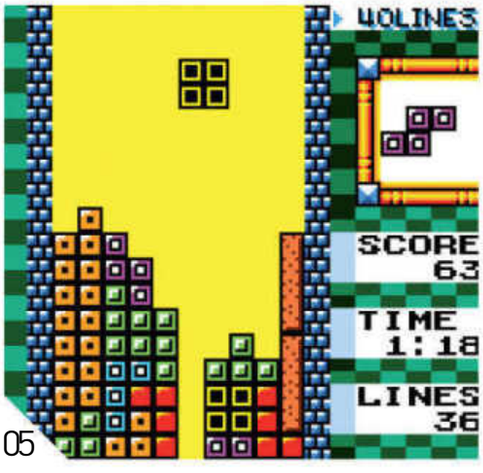
TETRIS DX

- **RELEASED:** 1999
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SUPER MARIO BROS

05 You seriously have to hand it to Nintendo, it certainly knows how to get people to part with their hard-earned cash. *Tetris* was already owned by practically everybody that had access to a Game Boy (it was originally given away free with the machine) but people still went crazy when *Tetris DX* was eventually released. Not only could you now play the game in fantastic colour, but Nintendo had also included a variety of new gameplay modes that made the popular puzzler even more hellishly addictive than it already was. You would be doing yourself a disservice if you let this one pass you by.

03

04



05


06


07

08

R-TYPE DX

- **RELEASED:** 1999
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** BITS STUDIO
- **BY THE SAME DEVELOPER:** CONSTANTINE

06 Shoot-'em-up fans got real value for money with *R-Type DX* as it came equipped with five variations of Irem's hit blaster. You get both the colour and black-and-white versions of *R-Types I* and *II*, and Bits created the all-new *R-Type DX*, an amalgamation of the first two games with spruced-up graphics, some nifty parallax scrolling and a new level to fight your way through.

Of course, *R-Type DX* wasn't without its problems (the GBC's small screen meant that certain parts of the game were particularly tricky to navigate), but there's no denying that it remains one of the greatest shooters available for Nintendo's portable system.

WARIO LAND 3

- **RELEASED:** 2000
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** THE LEGEND OF ZELDA

07 Now more famous for his *WarioWare* franchise, Nintendo's antihero has starred in a superb selection of platformers. Wario's third Game Boy outing is widely considered his best. The graphics feature huge, well-drawn sprites complete with fantastic animation. Wario now has several new transformation skills and there are plenty of new gameplay touches such as levels that switch between night and day after they are completed. Wario doesn't start out with as many skills as in previous titles, but Nintendo gradually allows him to reclaim them as the game progresses. A solid and amusing platformer.

THE LEGEND OF ZELDA: ORACLE OF SEASONS/AGES

- **RELEASED:** 2001
- **PUBLISHED BY:** NINTENDO
- **CREATED BY:** NINTENDO/CAPCOM
- **BY THE SAME DEVELOPER:** THE LEGEND OF ZELDA: THE MINISH CAP

08 Released simultaneously, *Oracle Of Seasons/ Ages* featured detailed visuals, memorable music and plenty of new items that enhanced the already-rich gameplay. Both were similar in design, but they were centred on certain gameplay aspects of the *Zelda* universe. *Seasons* featured a strong emphasis on fighting, while *Ages* often required you to solve devious puzzles. They could also be started with a code that enabled you to begin either title with items and abilities gained from the previous game.


09

RESIDENT EVIL GAIDEN

- **RELEASED:** 2001
- **PUBLISHED BY:** VIRGIN INTERACTIVE/CAPCOM
- **CREATED BY:** M4 LTD
- **BY THE SAME DEVELOPER:** MARY KATE AND ASHLEY: WINNER'S CIRCLE

09 Many gamers were disappointed with *Resident Evil Gaiden* as it shared little in common with its PlayStation brethren. No more spooky camera angles, no more carrying a certain number of items and no more scares. Don't be disappointed, though, *Gaiden* remains a superb actioner with a gripping story line, plenty of recognisable characters and a brand new way of destroying zombies. When you meet said zombies, the game switches to first-person and shows them approaching. A power bar appears at the bottom of the screen and careful hits stop your foes and allow you to continue exploring.

STRANDED KIDS

- **RELEASED:** 1999
- **PUBLISHED BY:** KONAMI
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** LOST IN BLUE

10 Anyone who has played the DS sequel *Lost In Blue* will know exactly what to expect from this cult hit that combined the best elements of *Zelda* and *Monkey Island* to great effect. As a virtual castaway, you must learn to survive the dangerous environment of a desert island and find a means of escape using only the materials you find lying around and the help of a native chimp. Whether exploring the island, building tools and weapons, or discovering the secrets of fire, *Stranded Kids* rewards thoughtful experimentation as well as resourcefulness to create an enchanting adventure that you'll play until the batteries run dry.

10

DREAMCAST

A BRIDGE TOO FAR OR MISUNDERSTOOD MASTERPIECE? WHATEVER YOUR OPINION OF SEGA'S FINAL FORAY INTO THE VIDEOGAME HARDWARE SCENE, THERE'S NO DENYING THAT THE DREAMCAST IS WORTHY OF A SECOND LOOK. JOIN LIFELONG SEGA FANBOY DAMIEN MCFERRAN AS HE TEARFULLY REVISITS ONE OF THE INDUSTRY'S MOST UNDERRATED CONTENDERS

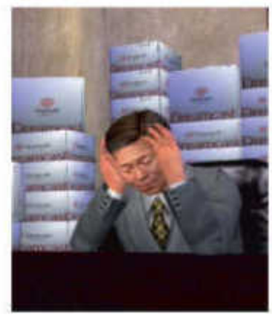
Year released: 1998 (Japan), 1999 (US/Europe)

Original price: £200/$323

Buy it now for: £105/$170+

Associated magazines: DC-UK, Official Dreamcast Magazine

Why the Dreamcast was great… Sega's 128-bit console promised arcade-perfect gaming and the ability to go online for under £200. A flood of Sega classics followed and although Sony's PS2 was technically superior, it took a while for it to catch up in terms of quality games



» Yukawa Hidekazu's tortured cameo in the *Shenmue* demo ended up being prophetic in ways Sega possibly didn't imagine.

Sega's Dreamcast holds a special place in the history of home videogame entertainment. It was an innovative beast, being the first 128-bit home console to offer online connectivity out of the box and setting the modern trend for sourcing internal components from PC manufacturers. It also proved to be Sega's last entry in the notoriously difficult hardware development race and brought an end to the days when arcade conversions sold consoles. Released in 1998 the ill-fated machine was culled just three years later by a Sega undergoing seismic internal restructuring that would ultimately see the company emerge as one of the world's leading third-party software publishers.

The Dreamcast enjoyed a somewhat convoluted genesis. Back in the late-Nineties, Sega was still smarting from dismal hardware disasters such as the Mega-CD and 32X, and its Saturn console was losing the 32-bit war against Sony's PlayStation. As is usually the case when companies are against the wall, cracks began to appear inside Sega's corporate architecture. Newly appointed Sega of Japan president Shoichiro Irimajiri decided that the company's internal hardware development division was firing blanks and was determined to look elsewhere for the talent to create a new machine. This was not an entirely new stance. As early as 1995 there were rumours that the Japanese company would team up with aerospace firm Lockheed Martin to develop a new graphics processing unit (GPU), and while this proposed union came to nothing, it set the wheels in motion for further excursions abroad in search of new hardware partners.

Around 1997 Irimajiri decided to enlist the services of Tatsuo Yamamoto from IBM Austin to work on a new hardware project. The idea was that the team would operate externally and therefore be unhampered by the internal politics that were pervading Sega's Japanese HQ at the time. Not surprisingly, when Hideki Sato – head of hardware development at Sega Japan – caught wind of this, he was less than happy and made it clear that any technical production should happen within the walls of Sega's Japanese HQ. This resulted in two different teams working in secrecy on two different prototypes in two different parts of the world.

'Black Belt' was the original codename given to the machine being constructed in the US, which was based around 3dfx Interactive's Voodoo 2 graphics technology. The Japanese counterpart was initially known as 'White Belt' (later 'Katana') and made use of NEC/VideoLogic's PowerVR2 chip. Both machines utilised off-the-shelf central processors, with the American team picking the IBM/Motorola PowerPC 603e and their Japanese competitors favouring Hitachi's SH4. Ironically, despite Irimajiri's bold move of outsourcing development, it was Sato's team that ultimately won in the end with the 'Katana' prototype being

"SEGA'S DREAMCAST WAS AN INNOVATIVE BEAST THAT CONTINUES TO HOLD A SPECIAL PLACE IN THE HISTORY OF HOME VIDEOGAME ENTERTAINMENT"

INSTANT EXPERT

The PAL Dreamcast came with a lowly 33kps modem, but the US machine boasted a faster 56kps variant. Both were later superseded by a broadband adaptor.

Sega never officially released the lightgun peripheral in the US amid fears about the negative perception of gun crime at the time.

The rather limp UK advertising campaign didn't feature any videogame footage at all, instead relying on seemingly unconnected imagery, and the vocal talents of Robbie Williams.

There is no reset button on the machine. Instead users must press all the fascia buttons and the start button at the same time to return to the boot menu.

The Hong Kong/Asian edition of the machine did not ship with a modem. In its place was an empty, modem-shaped piece of plastic.

Sega had originally intended to place 8MB of RAM in the console, but it had to up this to 16MB when it found that graphical memory demands were higher than expected.

***Shenmue* is one** of the few Dreamcast games to sell over a million units, yet its commercial performance was well short of expectations and the expensive project failed to actually generate any profit.

In Japan and the US the Dreamcast swirl is orange, but it had to be changed to blue in Europe due to a German company using the exact same logo.

In an attempt to battle the PS2, Sega Europe started bundling a DVD player with the Dreamcast for the same price as Sony's machine. The ploy wasn't a success.

Sega's final Dreamcast game was 2004's *Puyo Pop Fever.*

DREAMCAST

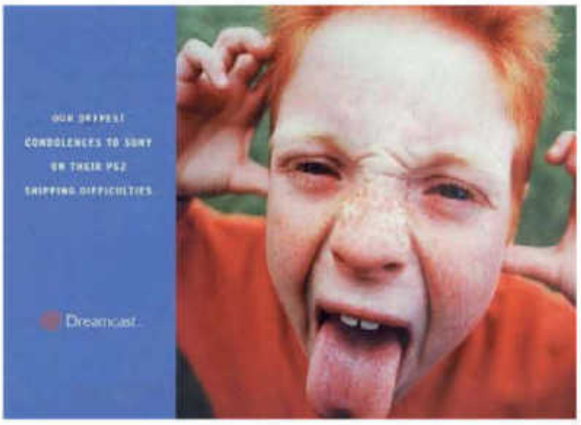
ADVERTS

Now regarded as one of the most inventive and amusing advertising campaigns in videogame history, Sega of Japan's Dreamcast promotions were refreshingly self-deprecating. They featured real-life Sega managing director Yukawa Hidekazu getting into all kinds of unpleasant situations as he dutifully attempted to make the fledgling console a success. The 30-second ads proved that not only did Sega have a sense of humour, but it was also willing to admit it had made mistakes with past hardware and that the Dreamcast represented a fresh start. The campaign was a tremendous success with Japanese audiences, and Hidekazu became a star overnight. Scenes from the adverts were plastered over the packaging of promotional consoles and the humble managing director even featured in the *What's Shenmue?* demo disc – sitting in a warehouse packed with unsold Dreamcast systems.

selected as the basis for the new machine (naturally, rumours abound that Irimajiri's move was merely a bluff in order to give the Japanese hardware division a much-needed kick up the backside). A disgruntled 3dfx promptly sued for breach of contract, claiming that documents had been signed that stated that Sega would use its technology in the proposed 'Black Belt' concept for the new console (the first version of *Metropolis Street Racer* started development for the 'Black Belt' and Bizarre Creations even had a prototype of this hardware). The two projects, which had been kept top secret up until this point, were made known to the world thanks to 3dfx's lawsuit against both Sega and PowerVR2 manufacturer NEC. The former was reportedly furious about having its dirty washing aired so publicly and the legal impasse was later settled out of court for an undisclosed sum. Needless to say, it marked an inauspicious start for the life of the new super console.

With the technology decided upon, the next step was to give the new project a name. With Sega's stock pitifully low, the company was well aware that any new machine would have to represent a new beginning and distance itself from the tainted public perception created by the poorly performing Saturn. To the Sega management, this meant one thing – completely remove the Sega name from the console and establish a new gaming 'brand' in the same way Sony had done with the successful PlayStation. According to reports, over five thousand different names were considered, with the positive-sounding 'Dreamcast' winning out. A combination of 'dream' and 'cast' – as in the way a magician would cast a spell – this pleasant moniker hinted at the expanded connectivity the system eventually brought to the home via its online services. Thankfully for fanboys, Irimajiri's management team later, wisely, relented and permitted the Sega logo to be reinstated to the console's outer casing.

Internally the new system was a marvel of cost cutting, off-the-shelf componentry – Sega had certainly learned valuable lessons from the failure of the Saturn. The Dreamcast's 32-bit predecessor was hampered by high production costs and the complex nature of the hardware made it difficult for programmers to get the most out of the system. With Dreamcast, Sega made sure the console was cheap to manufacture by using parts more commonly associated with PCs. The motherboard was a masterpiece of clean, uncluttered design and compatibility, with Microsoft's Windows CE operating system meaning that development would be a potentially pain-free exercise (although it should be noted that in the long term, programmers favoured Sega's own development tools over Microsoft's). In order to keep costs down, the decision



» Sega wasn't above taking cheap shots at its rivals, as this American advertisement proves.

was made not to include a DVD drive as the technology was still quite expensive at the time. Instead, Sega used its own proprietary GD-ROM format, which could store a gigabyte of data. Not including DVD compatibility later proved a costly mistake.

If proof is needed to ascertain how serious Sega was about the new machine, you need only look at the amount of money involved in designing, creating and marketing the console. Around $500 million was earmarked for the Dreamcast worldwide, with roughly half of that figure being spent on creating the hardware and software. The rest was splashed on promoting the machine all over the globe. Irimajiri, who found fame and fortune in the automotive industry with Honda, jokingly commented a few months before the Japanese release that the figures baffled him – car manufacturers would spend roughly the same amount on creating a new automobile, yet here was Sega throwing millions at the production of a diminutive box that sits under your TV. Nevertheless, Sega's Japanese president was well aware that this was the amount of capital it took to get a new machine on the shelves and into the consciousness of the consumer. The company knew that it would take something special to regain market share from the dominant Sony. "We have the strength of a beaten company," Sega's PR guru Yasushi Akimoto commented at the time. But for all this bravado, the new hardware launch was undoubtedly a huge gamble. The poor performance of the Saturn had pushed Sega into the red, and even before the Dreamcast hit store shelves in Japan the distressed firm had posted a shocking 75 per cent drop in half-year profits. With such a massive amount of money being devoted to doing battle in the console arena once more, the top brass at Sega knew that this could potentially be the last throw of the dice.

Nevertheless, as the console's Japanese launch grew ever closer there was a tangible sense of confidence in the Sega camp. Consumer interest was high and retailers reported that strong pre-orders were expected. However, this optimism was knocked slightly when NEC made the shock announcement that it was struggling with the manufacture of the PowerVR2 chipset. Issues were being encountered when the company mass produced the chip at the required 0.25 micron thickness (with one-in-three processors failing to meet production standards) and this invariably resulted in Sega having to halt Japanese pre-orders (which had reached around 80 thousand by this stage) and reduce the projected number of units available at launch from 500,000 to 150,000. To make matters worse, several key titles such as *Sega Rally Championship 2* and *Sonic Adventure* were also hit by development delays.

The machine was finally launched in Japan on 27 November 1998 and the 150,000 available units promptly sold out before the day was over. In an eerie precedent to the Saturn launch four years earlier, the only title really worth bothering with on day one was *Virtua Fighter 3: Team Battle*. Unperturbed by the PowerVR2 production fiasco, Sega confidently predicted that it would sell half a million units by March 1999. When this target was missed

COMMUNITY THE BEST DREAMCAST WEBSITES

PlanetDreamcast
www.planetdreamcast.com
Affiliated with the IGN network, this is a great resource for all things Dreamcast related. If you're digging around for some decent software reviews or just want to get yourself acquainted with the history of the console, this should be your first port of call.

DC News
http://dreamcast.dcemu.co.uk
Predictably, most modern Dreamcast sites are concerned with emulation, seeing as many high-spec PCs can now comfortably pretend to be Sega's 128-bit machine. This site is an intriguing snapshot of what is possible when amateur coders really put some effort in.

Dreamcast-Scene
www.dreamcast-scene.com
Another site with a heavy 'emu' bias (and we're not talking about that bird Rod Hull used to hang about with). However, there's lots of other interesting content on here, as well as a nice community dedicated to keeping the machine's memory alive.

Dreamcast Junkyard
http://the-dreamcast-junkyard.blogspot.com
A collection of (often-amusing) blog posts that deal with almost every aspect of the Dreamcast. Entertaining and passionate, it's also one of the few fan sites on the net that still gets regular updates and is well worth looking into.

KEEPING COOL
Due to the raw power contained within the Dreamcast, it was necessary to fit a cooling fan to keep the internal components from overheating. Sega even employed unique heat sinks to keep the main CPU and GPU chips from getting too toasty. This bizarre setup was rumoured to use liquid to carry heat from the chips to the fan using metal pipes via the principle of 'convection circulation'. However, before you excitedly go opening up your PAL machines in order to gaze upon this remarkable feat of technical engineering, it's worth noting that it was sadly only utilised in Japanese launch consoles, and we've only just discovered from an ex-member of Sega's PR that the presence of liquid inside the pipes was actually true. Manufacturing improvements meant that main chips generated less heat and therefore the internal fan proved to be more than enough to keep things running smoothly.

"SEGA PROVED HOW SERIOUS IT WAS ABOUT THE DREAMCAST... AS AROUND $500 MILLION WAS EARMARKED FOR THE DREAMCAST WORLDWIDE, WITH ROUGHLY HALF OF THAT FIGURE BEING SPENT ON CREATING THE HARDWARE AND SOFTWARE"

and the news started to filter through that key software titles were failing to sell in the numbers expected (Capcom's stunning *Power Stone* was one high-profile commercial disaster, prompting a public apology from the developer who, wrongfully, seemed to assume the end product wasn't up to scratch), those individuals inside the walls of Sega of Japan's boardroom started to worry. Prior to the Western launch, the price of the Japanese console was reduced from ¥29,000 (about £150) to ¥19,900 (about £100), effectively removing all profit from hardware sales. The reduction had the desired effect and units started to sell in larger numbers, although this could have had something to do with the release of Namco's superlative *Soul Calibur*, which, when confirmed as coming to Sega's 128-bit console, caused a 17 per cent jump in the value of Sega's shares.

As the Dreamcast was struggling to maintain pace in its homeland, Sega's American and European divisions prepared to launch the console in their respective territories. The North American release occurred on 9 September 1999, with the European debut taking place just over a month later. The US launch was an astonishing success with Sega struggling to meet the initial demand for the product. Half a million Dreamcast consoles found their way into US homes in the first two weeks alone – something the machine had failed to do in several months in Japan. The company proudly boasted that it made $98 million on software and hardware sales thanks to the 9 September launch. By anyone's standards it was a successful introduction and ranks as Sega's most successful hardware launch in the territory. In Europe the figures made for equally encouraging reading; by Christmas 1999 half a million units had been sold meaning that Sega Europe was

DREAMCAST

» Small but perfectly formed – the Dreamcast VMU was a neat idea, but never really made the impact it should have.

OTHER VERSIONS WHEN ONE MACHINE ISN'T ENOUGH

Divers 2000 CX-1
Shaped like Sonic's head, this all-in-one solution remains one of the most desirable pieces of Sega hardware. Bundled accessories included a keyboard, rumble pack and headset. It even had teleconference software and a remote for when you wanted to use it as a bog-standard TV.

Hello Kitty
Years before Nintendo cornered the female gamer market with the pink DS, Sega of Japan had been wooing young Japanese schoolgirls with this sickly sweet limited edition Dreamcast. Strictly limited to 2,000 units, many grown men hanker after this effeminate piece of hardware.

R7
The R7 was originally manufactured as a network console in pachinko parlours in Japan. Predictably many units have made it out 'into the wild' and into the hands of Sega collectors. The sleek black exterior reminds us of the Mega Drive, which is certainly no bad thing.

Treamcast
Not strictly an official hardware release, this Chinese modification was sold as a 'portable' solution for Dreamcast fans. Complete with a TFT screen and carry case, it offered incredible power on the move, but didn't trouble the established handhelds of the era.

six months ahead of the schedule it had set itself.

Given Sega's strong coin-op heritage, the Dreamcast, not surprisingly, saw many arcade conversions during its life span. Shortly before the Japanese launch, Sega announced that it would be replacing its popular Model 3 arcade hardware with a new standard called NAOMI (New Arcade Operation Machine Idea). NAOMI and Dreamcast were essentially the same systems, with the former possessing twice as much RAM and four times as much sound memory. This meant that home conversions were more often than not exact replicas of what was seen in the arcade, and for the first time since the days of the Neo-Geo AES the term 'arcade perfect' actually meant what it said. A slew of Sega-produced arcade ports arrived including *Crazy Taxi*, *Outrigger*, *18 Wheeler*, *F335 Challenge*, *Dynamite Deka 2* and *Virtua Tennis*. Superb support also came from many leading Japanese arcade companies, most notably former Saturn ally Capcom, which not only released some excellent NAOMI titles (*Capcom Vs SNK*, *Marvel Vs Capcom 2* and *Project Justice* to name but three), but also seemed to release a new 2D fighter on an almost weekly basis, with titles like *Street Fighter III*, *DarkStalkers/Vampire Chronicle* and *Jojo's Bizarre Adventure* proving that Capcom was as serious about standing by the Dreamcast as it had been with the Saturn. Capcom offered another title for Sega's machine, a game that was arguably more important than any of its available fighters. *Resident Evil Code: Veronica* instantly caused a large amount of buzz for Sega's system, mainly down to the fact that until that time the series had been entirely Sony exclusive. The game was eventually ported to PlayStation 2 and even Nintendo's GameCube as *Code: Veronica X*, but many fans feel the Dreamcast original was far superior.

"THE THRILL OF PLAYING CRAZY TAXI IN THE ARCADE KNOWING FULL WELL THAT A PIXEL-PERFECT CONVERSION (AND NOT SOME CUT-DOWN PORT) WAS SET TO ARRIVE ON THE DREAMCAST IS AN EXPERIENCE GAMERS ARE UNLIKELY TO WITNESS AGAIN"

Unfortunately, consolidating further third-party support wasn't going to be easy. Companies like EA had been burned by the failure of the Saturn and ignored the Dreamcast throughout its life, choosing instead to stick with the far more profitable PlayStation (it was believed at the time that EA was offered favourable publishing terms on the PlayStation 2 if it didn't support the Dreamcast). Others adopted a cautious 'wait and see' policy towards the machine, commenting that they would review their stance when solid sales figures came through. Sadly, as positive as the Western launches had been, Sega struggled to keep the momentum going. With Sony's PlayStation 2 looming menacingly on the horizon many gamers decided to stick with their current machine rather than upgrading to the Dreamcast, and as a result interest started to wane. Price cuts, like the one witnessed so early on in Japan, predictably followed in the US and Europe, but these failed to be a long-term solution to the problem.

Invariably, as sales began to diminish, more and more developers chose not to bring their products to the troubled console, and even those that had provided vital support began to lose interest. Namco – an essential partner and the company responsible for the system-defining *Soul Calibur* – dropped Dreamcast support almost as swiftly as it had taken it up. Therefore, throughout the life of the machine it fell to Sega to produce quality software, but while the company was undoubtedly adept at producing engaging coin-op experiences, it struggled to cater for a new audience of gamers that had been weaned on deeper, more feature-packed titles on the PlayStation. Sega's arcade ports were unquestionably arcade perfect, but in the eyes of many critics that was the problem – arcade machines are designed to entertain in short bursts and don't usually stand up to prolonged play within the home. Contemporary reviewers complained of lightweight coin-op ports and even the feature-rich world of *Shenmue* couldn't alter the often-erroneous perception that the Dreamcast was a machine packed with arcade titles that failed to keep your attention for more than a few hours.

Dreamcast's ace in the hole – online connectivity – could have arrested such a sorry slide, but Sega never really managed to exploit this facet to its fullest. The company was unforgivably slow in getting it to the consumer and while the actual service was up and running from day one and boasted internet access and email connectivity, it was let down by the software getting constantly delayed. When the promise of playing against "6 billion players" (a rather lofty boast made by Sega Europe, which seemingly assumed that everyone on the face of the planet would buy a machine) finally came to fruition, it was found to be quite underwhelming due to the slow speed of the bundled modem.

When the PlayStation 2 launched in March 2000 after a series of troublesome delays, it became obvious that the writing was on the wall for Sega's 128-bit challenger. Ironically, the PS2's initial line-up of software was arguably inferior to what was being released on the

» *Shenmue* was arguably the most high-profile Dreamcast release and proved to many that the machine was a true next-generation proposition.

Dreamcast at the time, but Sony's brand was so strong it sold on the name alone. In the US, the Dreamcast was given a shot in the arm as Sega announced that it would grant a $150 rebate – basically the price of a Dreamcast system – to anyone who signed up to the SegaNet service for two years. Another price cut followed and these two manoeuvres resulted in an astonishing 156 per cent rise in hardware sales. However, it's always worth looking at the bigger picture when quoting numbers like these. The Dreamcast still only held around 15 per cent of the US gaming market, with Sony and Nintendo out in front with 50 per cent and 35 per cent respectively.

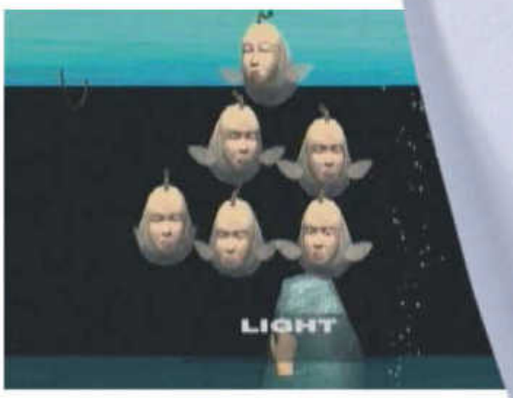
Sega was in dire financial straits before the Dreamcast arrived, but its disappointing performance meant the company was in even more trouble. It clearly couldn't continue and although the announcement in 2001 that Sega would be discontinuing Dreamcast production and moving into third-party publishing came as a shock to hardcore fans, most industry experts had been predicting the move for months beforehand. Sega was quick to point out that games were still in development for the Dreamcast, but for all intents and purposes the Japanese firm had taken its eye off the struggling system and was looking very much to the future.

However, the Dreamcast's connection with NAOMI proved to be a crucial lifeline. The arcade system was incredibly popular and Japanese coin-op developers, finding their earnings diminishing as the industry began to shrink, gladly took up the low-cost solution that NAOMI provided. Over the next few years these companies would keep the memory of the Dreamcast alive with a series of shooting titles that, after successful arcade runs were granted small-scale domestic releases. Titles such as *Radilgy*, *Trizeal*, *Under Defeat* and *Trigger Heart Exelica* all found their way on to the system, and G.rev's *Border Down* was so highly sought-after that it recently received a welcome reprint. Homebrew shooter *Last Hope* was released in 2007 and is (at the time of writing, at least) the last Dreamcast game to receive moderate media attention.

Pinpointing exactly why the Dreamcast failed is trickier than you might imagine. Was it lack of third-party support? Over reliance on arcade conversions? Poor support of online services that could have set it apart from its rivals? Lack of a DVD drive? The impending release of the PS2? Poor marketing in key territories? The most likely answer is that it was a combination of all these factors, but when dissecting the troubled history of the console it's easy to overlook just how potent a gaming platform it was. The thrill of playing *Crazy Taxi* in the arcade knowing full well that a pixel-perfect conversion (and not some cut-down port) was set to arrive on the Dreamcast is an experience gamers are unlikely to witness again. Rudimentary as it was, online play with a console was nothing short of revolutionary at the time, and Sega basically offered access to the internet for under £200/$323 – something that PCs of that era were asking an awful lot more for. With titles of the calibre of *Rez*, *Jet Set Radio*, *Daytona USA*, *Dead Or Alive 2*, *House Of The Dead 2* and *Skies Of Arcadia*, the Dreamcast was unquestionably heaven for videogamers who appreciated the finer things in life. Sadly, out of those "6 billion" potential players that Sega spoke about, the message only seemed to get through to a lucky few.

EVERYTHING BUT THE KITCHEN SINK

The range of peripherals available for the Dreamcast is nothing short of staggering. As well as the usual arcade-stick controllers and dedicated 'fighting type' joypads there was also an updated version of the Saturn's Twin Stick controller (for mecha-fighter *Virtual On*), a steering wheel, rumble pack, keyboard, fishing rod, camera, microphone and motion-sensitive maracas (for *Samba De Amigo*, naturally). Possibly the best-known addition to the Dreamcast stable was the Visual Memory Unit (VMU for short), which stored saved game data and acted like a small console when separated from the Dreamcast itself. Sega had audacious plans for this glorified memory card (as did Sony with its PocketStation), but battery life wasn't perhaps as good as it could have been and anyone who has owned a Dreamcast will be all too aware of the painfully annoying beeping tone a battery-less VMU makes whenever the console is switched on.



» The unique – not to mention disturbing – *Seaman* made use of the Dreamcast microphone.

DREAMCAST

PERFECT TEN GAMES

There are far, far too many great Dreamcast games, so here's a quick role call of the other titles that just missed our list. *Street Fighter III: 3rd Strike*, *Sega Marine Fishing*, *Jet Set Radio*, *Border Down*, *Power Stone 2*, *Castle Of Shikigami II*, *Crazy Taxi* and *Cosmic Smash*. So many amazing games, so little space

01

SOUL CALIBUR

- **RELEASED:** 2000
- **PUBLISHED BY:** NAMCO
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** PAC-MAN

01 While Street Fighter III: 3rd Strike is easily the superior fighter, we've given the beat-'em-up slot to Soul Calibur because Namco went above and beyond the call of duty with its actual conversion. Unlike Capcom's *3rd Strike*, *Soul Calibur* offers all the amazing playability and gameplay of the arcade original but enhances it by delivering a truly staggering additional mode that increases the longevity no end. As well as delivering some truly spectacular visuals, *Soul Calibur* upped the ante on the Dreamcast by offering a whole host of console-exclusive extras including the fantastic Mission mode and more unlockables than you could imagine. Little wonder, then, that it went on to sell over 1 million copies.

SAMBA DE AMIGO

- **RELEASED:** 2000
- **PUBLISHED BY:** SEGA
- **CREATED BY:** SONIC TEAM
- **BY THE SAME DEVELOPER:** NIGHTS INTO DREAMS

02 The Dreamcast featured an astonishing range of peripherals during its release, but none could match the sheer magnificence of *Samba De Amigo*. Essentially a port of the popular arcade game and coming with a set of maracas, *Samba De Amigo* is an excellent rhythm-action game that had players shaking the maracas in a frenzy, as they matched the on-screen prompts. With its gaudy visuals and brilliant tunes that ranged from Quincy Jones's *Soul Bossa Nova*, to a bizarre take on A-Ha's *Take On Me*, *Samba De Amigo* proved utterly essential, even if the original package saw little change from 100 notes. Fans may wish to seek out the Japanese-only add-on *Samba De Amigo Version 2000*.

02

RESIDENT EVIL CODE: VERONICA

- **RELEASED:** 2000
- **PUBLISHED BY:** EIDOS
- **CREATED BY:** CAPCOM
- **BY THE SAME DEVELOPER:** POWER STONE

03 Capcom's fourth Resident Evil title caused quite a stir upon release: mainly because it was the first time the franchise didn't debut on a Sony console, but also because it was the first game in the series to use proper 3D backgrounds. Spread over two discs and focusing on the exploits of Claire and Chris Redfield, *Veronica* moves away from Racoon City and focuses on a small island owned by the Umbrella Corporation. Granted, its gameplay is almost identical to the original *Resident Evil*, but it's saved thanks to more impactive cut-scenes and a shockingly good story line.

IKARUGA

- **RELEASED:** 2002
- **PUBLISHED BY:** ESP SOFTWARE
- **CREATED BY:** TREASURE
- **BY THE SAME DEVELOPER:** GUNSTAR HEROES

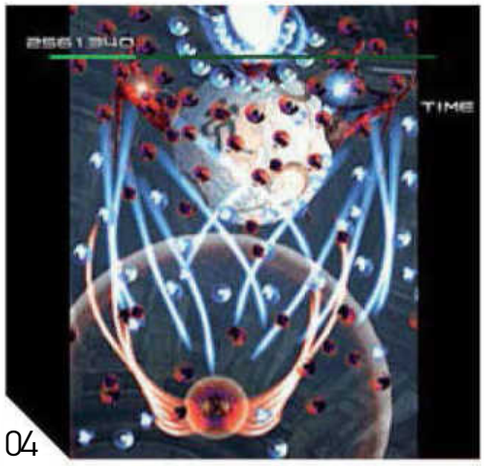
04 There's a slew of great shoot-'em-ups on the Dreamcast, but none of them can touch the elegance of *Ikaruga*. The first of many 'last ever' Dreamcast releases, *Ikaruga* expanded on the duality themes that Treasure explored with *Silhouette Mirage* by having your ship flip between two polarities. While you could absorb bullets that were the same colour as your ship, enemies succumbed quicker to opposing coloured fire, which presented a superb risk-and-reward system. Add in its complex chain system and Treasure proved that when it comes to high-quality shooters, it's pretty untouchable.

METROPOLIS STREET RACER

- **RELEASED:** 2000
- **PUBLISHED BY:** SEGA
- **CREATED BY:** BIZARRE CREATIONS
- **BY THE SAME DEVELOPER:** GEOMETRY WARS: RETRO EVOLVED

05 We'll gladly sing *Metropolis Street Racer's* praises because it's just such an innovative racing game. Part simulator, part arcade racer, *Metropolis Street Racer* was essentially the forefather to the now-popular *Project Gotham Racing*, and delivered a driving experience that few other games of the time could match. With its excellent handling, well-constructed tracks and inventive Kudos system, *MSR* was a welcome alternative to Sega's hardcore racers that were available on its system and proved that Dreamcast owners had little need for Sony's *Gran Turismo*.

03



04

05

06

07

08

SHENMUE I & II

- **RELEASED:** 1999, 2001
- **PUBLISHED BY:** SEGA
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SPACE HARRIER

06 Okay, so we're cheating here, but you can't talk about Yu Suzuki's highly acclaimed game without including its incredible sequel. Greatly revered and reviled in equal measures, the *Shenmue* franchise cost Sega millions to make, while *Shenmue II* remains its most requested game. Huge in scope and with an incredibly complex narrative – which, annoyingly, has yet to be completed – the *Shenmue* franchise delivered an experience that no other game of the time could match. Here was a series that not only allowed you to visit an arcade and play many of Suzuki's past hits, but even made menial tasks like working enjoyable.

SEAMAN

- **RELEASED:** 1999
- **PUBLISHED BY:** SEGA
- **CREATED BY:** VIVARIUM
- **BY THE SAME DEVELOPER:** ODAMA

07 Sega's *Seaman* isn't really a game as such, but that doesn't mean that you should miss out on this incredibly clever piece of software. Narrated by Leonard Nimoy, *Seaman* requires you to raise the titular character from an egg to a fully grown adult, and sees you raising and coaxing the creature via Sega's microphone peripheral. Despite never receiving a UK release, we urge you to track down the US version and a boot disc so that you can experience this utterly bizarre creation for yourself. If you need further insight into *Seaman*'s strange world visit Lofarius's diary at **www.rllmukforum.com/index.php?showtopic=179577**.

PHANTASY STAR ONLINE

- **RELEASED:** 2000
- **PUBLISHED BY:** SEGA
- **CREATED BY:** SONIC TEAM
- **BY THE SAME DEVELOPER:** SONIC ADVENTURE

08 Falling asleep at your keyboard was a common experience in *Phantasy Star Online*. Not because it was boring, you understand, but because it was so damned addictive. Never mind that level grinding was a chore or that phone bills could run into three-digit numbers, Sonic Team had created a world that was so imaginative you couldn't stay away from it. Incredibly basic when compared with recent offerings like *World Of Warcraft*, it's easy to forget what an impact it made on its release and just how successfully Sonic Team had evolved the franchise from its RPG roots.

09

SKIES OF ARCADIA

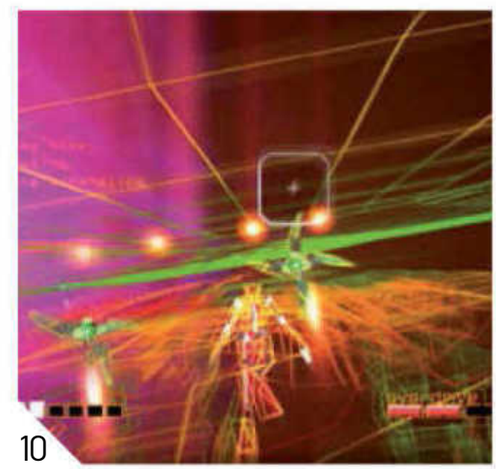
- **RELEASED:** 2000
- **PUBLISHED BY:** SEGA
- **CREATED BY:** OVERWORKS
- **BY THE SAME DEVELOPER:** SHINOBI

09 We absolutely adore *Skies Of Arcadia*. The score is sweeping and magnificent, the world you explore is incredibly huge and full of mystery. Add to this the fact that each and every character you meet is larger than life in a way that only the best role-playing games can manage, and you have yourself a beautifully immersive title. Following the story of a young air pirate called Vyse, *Skies Of Arcadia* is a wondrous adventure that's set in a Jules Verne-inspired world where islands float in the sky and flying ships are the main form of travel. While *Skies Of Arcadia* follows the well-trodden path of many other games in the genre, it has been put together with so much passion that you can't help falling in love with it.

REZ

- **RELEASED:** 2001
- **PUBLISHED BY:** SEGA
- **CREATED BY:** UNITED GAME ARTISTS
- **BY THE SAME DEVELOPER:** SEGA RALLY

10 Okay, so the frame rate is lower than its PS2 counterpart and the lack of built-in vibration hurts it somewhat, but there's no denying that *Rez* on the Dreamcast remains an utterly compelling experience. Arguably one of the greatest contenders for those many 'Are videogames art?' discussions, *Rez* pushes boundaries and mixes gameplay, sound and vision in a way that few other titles have been able to manage. Beautifully abstract and boasting the sort of creative gameplay that matches its truly astonishing aesthetics, *Rez* is just as much an experience as it is a game and is further testament to just how innovative and imaginative Sega once was. A truly stunning game that needs to be in every Dreamcast owner's collection.



10

Year released: Pocket Color 1999 (UK)

Original price: £59.99/$97

Buy it now for: £20/$32+ (depending on model)

Associated magazines: No specific titles

Why the NeoGeo Pocket was great… Solidly built with a ridiculously large battery life, the NGPC could and should have posed a serious threat to Nintendo's handheld dominance. Go back to it today and you find a small but varied back catalogue with something for everyone. Highly recommended gaming on the move

NEOGEO POCKET

ALTHOUGH NINTENDO HAS SEEMINGLY BEEN THE DOMINANT FORCE IN THE HANDHELD SECTOR, THERE WAS A RIVAL THAT HAD THE POTENTIAL TO SUCCEED WHERE OTHERS, LIKE THE ATARI LYNX AND SEGA GAME GEAR, HAD FAILED. THE NEO GEO POCKET COLOR WAS A GREAT PIECE OF KIT THAT OFFERED EXTENSIVE BATTERY LIFE, HIGH-QUALITY VISUALS AND REASONABLE SOFTWARE, YET IT FAILED TO TAKE THE WORLD BY STORM. WE TAKE AN IN-DEPTH LOOK AT THE COMPANY BEHIND THE HANDHELD MARVEL, THE SUBSEQUENT LAUNCHES OF THE MACHINE IN DIFFERENT TERRITORIES, AND THE COCK-UP THAT LED TO THE DOWNFALL OF A FANTASTIC HANDHELD

Shin Nihon Kikaku (SNK) first began on 22 July 1978 and was initially founded to develop software and hardware components for business clients, quickly turning to the world of arcade development. Its first arcade titles were *Ozma Wars* (1979), *Safari Rally* (1980), and *Vanguard* (1981). And it was around this time that SNK created SNK Corp of America founded in Sunnyvale, California. While SNK still developed coin-op titles it shifted its focus to console games and signed up as a third-party licensee for Nintendo in 1986. SNK released *Ikari Warriors* in 1986 for a variety of formats including the NES, but then decided to return to the arcade industry.

In 1989, SNK aimed to re-invent the arcades and manufactured interchangeable game cartridges. Christened the Multi Videogame System (MVS), this arcade cabinet could allow up to six separate games to be installed into one machine. This innovative invention proved vital in keeping the arcades alive, and it meant that SNK went on to release its own home console using the motherboard from the arcade system, which was flexible enough to adapt to home use.

The console was the Neo Geo Advanced Entertainment System (Neo Geo), and although it was the most powerful home videogame console, its high price tag and expensive games meant it was only ever purchased by the mega-rich. Even today, Neo Geo titles can fetch colossal sums of money, with rare titles selling for thousands of pounds. The release of the Neo Geo CD in 1994 saw the first batch of 25,000 rapidly sell out in Japan, but complaints of slow loading times meant sales tailed off and the American launch in 1995 was mostly ignored.

Despite starting to struggle financially, SNK decided to release a handheld to compete with Nintendo's Game Boy and would feature ports of its classic franchises.

Game Boy Color: The Rival

The Game Boy Color launched in 1998 in the UK, about a year before the arrival of the Neo Geo Pocket Color. Just like the original Game Boy destroyed the Game Gear and Atari Lynx, the latest Nintendo handheld drove the nail into the Neo Geo Pocket Color's coffin. The Game Boy Color was technically superior to its predecessor with the ability to display games in colour minus a backlit screen to keep battery consumption down. As the machine was backwards compatible, it meant any Game Boy game could be played on the handheld while at the same time adding a bit of colour to the visuals. Key titles such as a brand new *Tetris*, a re-release of *The Legend Of Zelda: Link's Awakening* with an extra dungeon, plus subsequent releases of *Pokémon* and a huge back catalogue of Game Boy games meant that, sadly, Nintendo had won the battle before it had begun.

» **Would you have the balls to go up against the Game Boy Color? SNK thought it could and it proved to be a costly mistake.**

» One of the most desirable aspects of the Neo Geo Pocket were its lovely clamshell cases. It also helped that, for once, the UK art looked great.

NEO GEO POCKET: THE LAUNCH

SNK's mono handheld, the Neo Geo Pocket (NGP) launched in Japan on 27 October 1998. Featuring a liquid crystal display screen that could produce eight shades of grey, a stereo headphone socket, over 20 hours battery life and internal battery for game saves meant it was technically better than the Game Boy. The handheld also included volume and contrast buttons as well as some basic PDA functions such as a clock, calendar and horoscope generator. Unlike the Game Boy, which was held vertically, the NGP was held horizontally and included a finger groove indentation for better grip. Like the Game Boy, cartridges would slot into the back of the unit, and the handheld featured two action buttons as well as Power and Options buttons.

The NGP's retail price was ¥7,800, with cartridge prices varying from ¥3,500-¥4,500. *Tsunagete Pon!* was part of the first wave of software to hit the market along with *The King Of Fighters R1, Dokodemo Mahjong, Neo-Geo Cup '98, Shogi No Tatsujin, Pocket Tennis* and *Melon-Chan's Growth Diary.* While it initially had some success, the lack of releases meant the public began to lose interest. SNK made a classic mistake; in its desire to beat the Game Boy, it failed to keep a close eye on the competition, and two months after launch, Nintendo's Game Boy Color was released to universal acclaim.

In December of 1998, two big games finally reached stores: *Samurai Spirits* and *Baseball Stars.* To go along with *Samurai Spirits, SNK* also released a special edition NGP box set that included a limited translucent NGP, copy of *Samurai Spirits*, and a strap for the system. Still struggling to gain a foothold on the market, SNK realised it needed to do something, so in 1999 the Neo Geo Pocket Color was unveiled.

NEO GEO POCKET COLOR: THE GLOBAL EFFECT

March 1999 saw the release of the machine in Japan; displaying an impressive reflective colour TFT screen and an incredible 40 hours of power just from two AA batteries. The new handheld kept the previous functions of the original, with the exception of the contrast dial, which was no longer required. The Dreamcast link-up function finally became a reality with the release of *The King Of Fighters R2*, which would upload stats to *The King Of Fighters 99*. The machine was available in Camo Blue, Carbon Black, Crystal White, Stone Blue, Platinum Blue, and Platinum Silver. Due to poor planning, *The King Of Fighters R2* was the only major title to purchase, giving the recently released WonderSwan and Game Boy Color consoles an immediate advantage.

Undeterred, SNK decided it was time to release its beauty into the West and plans were made for a May release through its website. This fell through, but it eventually emerged in June and *Fatal Fury: First Contact*, along with *Metal Slug: First Mission* were launch titles. August saw the portable arrive in the US and this time retailers were armed with an impressive array of software, including *The King Of Fighters R2, Puzzle Bobble Mini, Samurai Shodown, Baseball Stars Pocket, Pocket Tennis, Neo Cherry Master, Neo Dragon's Wild, Neo Mystery Bonus, Crush Roller Pocket* and *Neo Geo Cup '98.*

Disappointingly, NGPC's clamshell casing was replaced with cardboard boxes in a bid to cut costs. This time SNK USA was guilty of poor management, with many stores lacking machines to sell for launch. Shop staff knew little about the handheld due to a lack of information because SNK focused mainly on promoting its new baby on the internet. Despite the hiccups, the machine sold well, with many stores selling out. Games such as *Dive Alert* were translated into English and SNK USA went on to publish titles on other systems. A small re-modelled colour handheld was released in Japan to drum up sales along with both versions of *SNK Vs Capcom Card Battle*, and *Densha De GO! 2*. Despite SNK's best efforts in the Japan, the handheld sold only 250,000 units prior to the UK launch and was deemed a failure.

October 1999 saw the machine launch in Europe and SNK was slowly learning from its many mistakes. The machine was marketed with lifestyle adverts in the UK media and retailers were far better informed about the machine. Games were released regularly (unlike in the US and Japan)

» SNK used all sorts of marketing tricks to ensure that the Neo Geo Pocket range was a success, sadly it couldn't shake Nintendo's firm grip.

» This is an example of SNK's more adult advertising approach in the UK, which seemed to have some success.

» This rare white Neo Geo Pocket handheld (above) was released with fantastic packaging in Japan. Sadly, the packaging was replaced elsewhere.

» *Melon Chan's Growth Diary* was a Japanese-only title that appealed to the Tamagotchi crowd with its virtual life gameplay.

and throughout its short life span, 39 titles made it to the UK. In a surprising move, all games were released in the clamshell packaging, instantly increasing their desirability.

Sales reached an impressive 100,000 in the UK, although the lack of marketing in other countries meant that it sold poorly elsewhere. Europe saw games like *Faselei*, *Last Blade* and a host of gambling and card titles that never made it to America. Despite games like *Sonic Pocket Adventure, Puzzle Bobble* and *Puyo Pop*, the software diversity wasn't enough to capture the public's interest. The handheld needed more third-party developers and although Capcom, Atlus, Acclaim and Sega helped, it wasn't enough to compete against Nintendo's unstoppable Game Boy.

In comparison to the Game Boy Color, the NGPC was a technical marvel. Its micro-switched thumb pad offered far greater precision than the traditional D-pad, and the design was solid compared to the Game Boy Color's cheap plastic. The NGPC screen not only offered superior colour visuals, its larger size and improved visibility meant that technically, it was miles ahead of its rival. By rights the machine should have gone on to have a fruitful life, but the mistakes of the past proved far too costly. SNK Japan was in control of SNK USA, which resulted in the botched NGPC launch, a neglected arcade market and poor marketing. As a result, the company went deeply into the red and lacked the financial backing to support its impressive (yet ultimately doomed) handheld.

Pachinko maker Aruze bought SNK in January but paid little attention to the videogame market, so SNK closed outside Japan in June 2000. The NGPC was officially withdrawn from the USA and Europe, having only been for sale in the latter for a paltry eight months. As a result, certain titles such as *Evolution, Gals Fighter* and *Pocket Reversi* that were meant to be crushed/recycled were accidentally released (hence their high prices today). The biggest shame about the NGPC's failure is that an MP3 player was due to be released for the it and could have raised awareness for the NGPC. Again, SNK was miles ahead with this device because Nintendo only released its MP3 add-on a few years ago. Sadly, despite various buyouts, SNK never really recovered and the entire company was declared bankrupt in 2004.

END OF AN ERA

Although the NGPC had a short innings, it was a superb handheld with plenty of classic titles that are well worth tracking down. With hardware prices constantly plummeting and the wide availability of the software, boxed or otherwise, there hasn't been a better time to snap one up. So if you're craving a piece of handheld history that doesn't have Nintendo stamped on it, then allow us to recommend SNK's superb Neo Geo Pocket. You certainly won't regret it.

» *Cool Cool Jam* was a musical title that used the link-up feature, unlocking bonuses in Dreamcast game *Cool Cool Toon*.

» Many Neo Geo Pocket conversions were brilliant. The *Metal Slug* titles perfectly captured all the thrills of the original games.

» *King Of Fighters R1* was the main launch title for NGP although it was a while before other games were released.

» SNK's advertising approach in Japan was aggressive and placed it as superior to Nintendo's Game Boy.

» A poster promoting the NGPC and Dreamcast's link-up functions with *King Of Fighters R2* and *King Of Fighters '99*.

Places Of Purchase

If you have read this article and fancy getting hold of one of these lovely handhelds, your best bet is to go down the import and second-hand market area. eBay, of course, is home to quite a few bargains, and import favourites Play Asia and Lik-Sang stock some titles, although, regrettably, a lot of titles are Japanese and/or cartridge only, which may not be ideal for collectors.

If you just want to start your collection, some retailers such as GameStation still sell a basic package for around £50-£70. That includes the handheld along with six games, again unboxed. While the games can vary, usually they include *Pac-Man, Metal Slug, Turf Masters, King Of Fighters R2, Fatal Fury* and *Pocket Tennis*. For complete versions, particularly Europe Clamshell editions, eBay is the best place to look, although expect prices to vary depending on the title. Other popular resources include dedicated import sites such as **www.neo-geo.com** and **www.ntsc-uk.com**. A Neo Geo Pocket fetches around £10-20/$16-32 although it can only play the early black-and-white titles, while the colour edition can fetch anything from £20-50/ $32-64 depending on the model and whether it comes with its original packaging. Due to handhelds being region free, it doesn't matter where you buy the machine or games from, so look around to get the best bargains.

http://www.ebay.co.uk
http://www.gamestation.co.uk
http://www.videogameimports.com
http://www.play-asia.com
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NEOGEO POCKET

PERFECT TEN GAMES

The Neo Geo Pocket and Pocket Color may not have boasted a stunning number of games, but that doesn't mean that they didn't have some cracking titles available for them

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SNK VS CAPCOM: CARDFIGHTER'S CLASH

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** NEO TURF MASTERS, SNK VS CAPCOM CHAOS

01 A card game starring Capcom and SNK characters might not sound like a recipe for success, but it has proved to be one of the handheld's most enduring titles – hell, there's even a DS version on the way. For those unaware of its heritage, the *Cardfighter's* series is best described as a hybrid of the now-popular *Yu-Gi-Oh!* and *Pokémon* games that are available for Nintendo's current handheld range (it also came in SNK and Capcom editions). For us, it was the beautifully drawn images that prove to be the game's real trump card (ouch). It takes a while to get used to the duelling system, but once mastered you'll never put it down. Easily our favourite Pocket title.

PUZZLE BUBBLE MINI

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** TAITO CORP
- **BY THE SAME DEVELOPER:** BUBBLE BOBBLE, RAINBOW ISLANDS, SPACE INVADERS

02 No portable gaming console could ever be complete without a classic puzzle game, and the Neo Geo Pocket is no exception. While the Neo version of *Puyo Pop* is extremely good and definitely well worth owning, if we had to choose one puzzle title, we would go for the amazing *Puzzle Bobble Mini*, mainly because it has everything you could ask for in a good puzzler. The visuals are perfectly defined, the various computer characters are charismatic and put up a fantastic challenge (especially on the later levels), and the gameplay is fiendishly good. The final product is utterly compelling and will keep you entertained for hours, as well as frustrate you to no end with the more difficult levels.

SNK VS CAPCOM: MATCH OF THE MILLENNIUM

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** NEO TURF MASTERS, THE LAST BLADE

03 There's a host of excellent little fighter games available on SNK's diminutive handheld, but few can match the sheer diversity and greatness of the sublime *Match Of The Millennium*. The game's key word seems to be choice: there's a staggering number of options on offer, a huge roster of fighters to choose from, and the ability to link up to both of the original *Cardfighter's* games and Sega's Dreamcast. Add in three vastly different fighting styles, the ability to play one-on-one or use a tag-team system that mimics Capcom's *Vs* series and it's little wonder SNK had to use a 32MB cartridge in order to cram all the goodness in. With so much content in one game, it seems a sin not to own it.

NEO TURF MASTERS

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** 2020 SUPER BASEBALL, 3 COUNT BOUT, IKARI WARRIORS

04 *Neo Turf Masters* was an essential purchase for the Neo Geo AES (providing you were able to afford its hefty price tag) and this pocket translation is just as vital as its bigger brother. Essentially, it's a scaled-down version of the classic arcade game and is instantly accessible thanks to its elegant control system and wonderful presentation. Eight different golfers are on offer (each with their own distinctive attributes) and the three available golf courses are all beautifully designed.

Like many Neo Geo Pocket titles, everything has been given an extra cute look and the end result is an utterly charming game that's an essential purchase for SNK's handheld and is sure to please many fans. Whether you like golf or not, you're sure to find some entertainment in this game.

METAL SLUG 1ST MISSION

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** CYBER-LIP, IRRITATING MAZE, CHOPPER I

05 While *2nd Mission* is generally considered to be the better title, it's the original *Metal Slug* game that has managed to secure a special place in our hearts. Considering the sheer size of the original arcade games, it's amazing to think that so much of *Metal Slug's* spirit was captured so perfectly. Like its arcade parents, the level design throughout *1st Mission* is flawless; it's also extremely tough in places, but is balanced so perfectly that you'll constantly return to it.

Add in some truly fantastic animation and quirky graphics, a wide variety of extremely detailed locations, and some boisterous sound effects and you have yet another must-have title. An entertaining game worthy of being called a classic.

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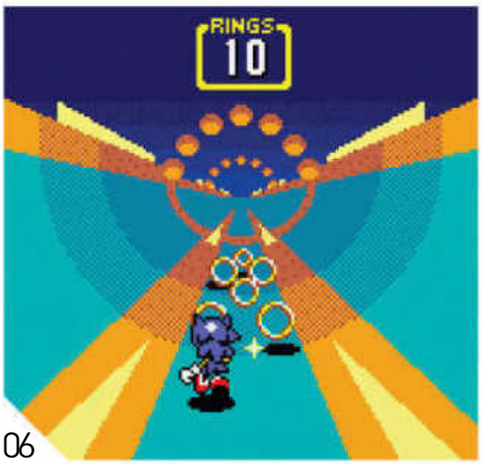

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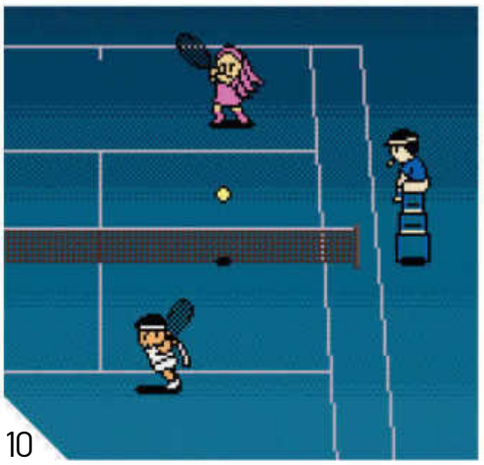
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SONIC THE HEDGEHOG POCKET ADVENTURE

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** SEGA
- **BY THE SAME DEVELOPER:** SONIC THE HEDGEHOG, OUTRUN, PANZER DRAGOON SAGA

06 Sega had a very strong business relationship with SNK at one stage, but never for one moment did we expect its flagship mascot to appear on a rival machine. Nevertheless that's exactly what happened and Sonic and platform fans alike squealed with joy. From the moment "Sega" blared through the Neo's humble speakers to the sheer addictiveness that the fantastic multiplayer offered, *Sonic Pocket Adventure* was handheld perfection. Sure, it was easy to complete (although collecting all the puzzle pieces took time), but its wonderful visuals, level design and playability were the perfect payoff. This game was the product of a perfect dreamteam that'll last for the ages.

FASELEI!

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** SACNOTH
- **BY THE SAME DEVELOPER:** SHADOW HEARTS, KOUDELKA

07 *Faselei!* is one of the Neo Geo Pocket's most coveted titles, mainly because SNK pulled out of the US before it was released, mostly due to disappointing sales in relation with its bad timing. Surprisingly, this excellent little strategy title did make it to the UK in limited quantities, so the demand for *Faselei!* remains extremely high. While you can pick up a bog-standard cart for around a tenner, a mint condition specimen can go for as much as £70. Don't be fooled by the giant mechs, bland visuals and less-than-impressive sound, *Faselei!* is an incredibly absorbing strategy title and definitely worth its high price tag. Just the intense storyline, including a Third World War, a country torn by two warring factions, a rebellious group of mercenaries, a prince and his corrupt brother and more, makes this game worth a try.

GANBARE NEO POKE-KUN

- **RELEASED:** 2000
- **PUBLISHED BY:** SNK
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** METAL SLUG 3, MUTATION NATION

08 Don't be put off by the fact that this quirky-looking title appears to be nothing more than an upgraded Tamagotchi experience as it contains some of the most enjoyable experiences that the Neo Geo Pocket has ever offered. The idea is to keep your little Ganbare happy by manipulating his surroundings to his liking – a pretty familiar concept. The happier he is, the faster he'll create the 30 mini-games that you'll eventually get to savour. The mini-games are based on a variety of arcade hits that range from *Asteroids* to *King Of Fighters* and will be instantly recognisable to any who played the original games. One of the most charming titles Neo Geo had to offer, and one that deserves another look if you missed it back in the day.

THE LAST BLADE: BEYOND THE DESTINY

- **RELEASED:** 2000
- **PUBLISHED BY:** SNK
- **CREATED BY:** IN-HOUSE
- **BY THE SAME DEVELOPER:** SAMURAI SHODOWN!, KING OF FIGHTERS SERIES, 'NAM 1975

09 We have always preferred *The Last Blade* franchise to the more popular *Samurai Shodown!* series and the NGP version is no different. While *Samurai Shodown! 2* is a solid little brawler in its own right, we just found that there's so much more depth to *Beyond The Destiny*, making it a more rewarding experience. Like the fantastic *Match Of The Millennium*, there's a strong roster of varied, interesting characters, a variety of playing styles and a heck of a lot of depth. Add in amazing animation, the ability to collect special scrolls and two nifty little mini-games and the end result is a wonderfully epic game for those who prefer slashing blades to simple fisticuffs.

POCKET TENNIS COLOR

- **RELEASED:** 1999
- **PUBLISHED BY:** SNK
- **CREATED BY:** YUMEKOBO
- **BY THE SAME DEVELOPER:** BLAZING STAR

10 Don't be tricked into buying the original black-and-white version, this is the one you want. Like *Neo Turfmasters*, *Pocket Tennis* features cute character design, instantly accessible gameplay, and some increasingly tough opponents that'll keep you coming back for more. Sadly, due to the cart capacity, the animation isn't quite as good as some of the later Pocket titles that are available, but what's on offer is perfectly acceptable considering the time of release. And besides, it's the actual gameplay that's important for the experience and you'll find no quibbles from us. With four different arenas to choose from, the ability to play against a human opponent and some nice unlockable features, *Pocket Tennis Color* is another must have for the Neo Geo enthusiast.

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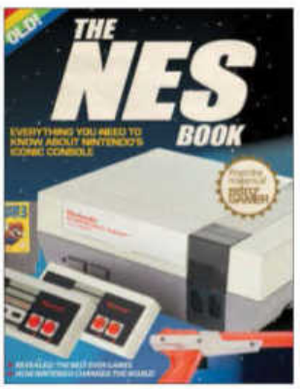

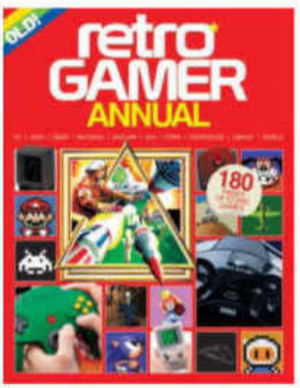

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