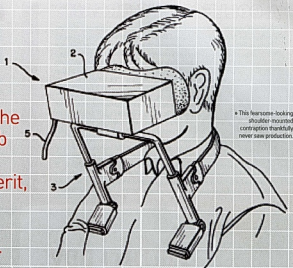It's the console that Nintendo
doesn't want you to know about. The
company's most high-profile bomb
has been vilified as a headache-
inducing monstrosity with little merit,
but is this assessment fair?
Damien McFerran pops a few
aspirins and prepares to find out...

▶ 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'.
More than a decade after this unusual
console sank almost without trace
after enduring a period of consumer
indifference, it remains a byword for
dubious videogame hardware.

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 spot potential in
the system; 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'

◀ 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.

VIRTUAL BOY
ACCESSORIES
ADJUSTABLE STAND

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.

innovative system and Yokoi's Research
& Development 1 team set about creating
the console that would be 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 would go on to become
the Nintendo 64). Bearing this in mind, it's
unsurprising that most gamers therefore
interpreted the VR-32 as the spiritual
successor to the aging 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 onto 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. His

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 amongst 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.

◀ Despite Gunpei Yokoi's previously successes – which included the Game Boy – the failure of the Virtual Boy resulted in him losing his coveted position at Nintendo.

> " With the gaming press expecting a 32-bit powerhouse, the red and black 2D visuals were a shock "

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 onto 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) would experience 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 espoused 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 onto 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 aging 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 entirely 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

3D DISPLAY GAME SYSTEM
VIRTUAL BOY
バーチャルボーイ

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 lots that is 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: Nintendo
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: T&E Soft
Created by: T&E Soft
By the same developer:
T&E Virtual Golf

Otherwise known as 'that game that looks like *StarFox*, *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 *StarFox*, though.

Mario Clash
Released: 1995
Published by: Nintendo
Created by: Nintendo
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.

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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 Wolta. "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 for. 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 an 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. Wolta 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!' that was devoted to handheld machines, with the Game Boy being the main focus.

*Virtual Boy adverts failed to convey its unique stereoscopic 3D aspect.

VIRTUAL BOY

▶ [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 that 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 proven 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 which had 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, or 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; however, 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 (an seismic act that caused nervous traders to offload Nintendo shares so vigorously that the Tokyo Stock

Exchange had to cease trading), which would go 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." Wolta 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 Wolta. "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 Wolta. "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 amongst 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 videogamesnparts.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 which 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.