EDGE

Yarouze!
DIY PLAYSTATION GAME DESIGN

M2
EXCLUSIVE TECH SPEC EXPOSÉ

(and *more* Mario mania)

3Dfx vs PowerVR
LEADING THE PC VIDEOGAMING REVOLUTION

The 16bit SNES classic *Super Mario Kart* deserves to go down in history as one of the greatest videogames ever created, and possibly *the* greatest twoplayer game of all time. **Edge** premieres its 96-megabit big brother being readied for an N64 rollout in December...
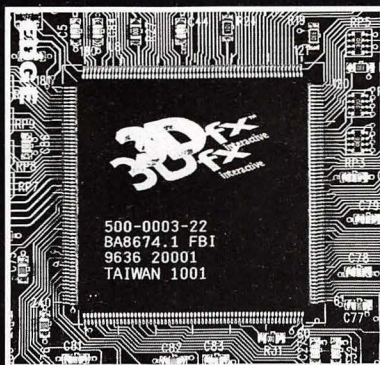
13

9 771350 159014
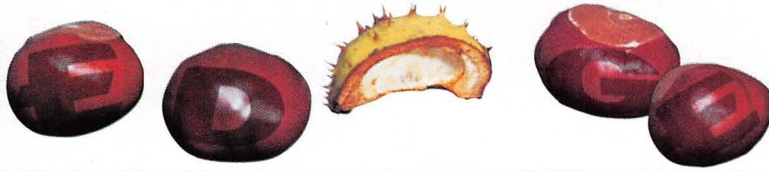
500-0003-22
BA8674.1 FBI
9636 20001
TAIWAN 1001

Like a child with learning difficulties, the PC's archaic architecture and inadequate graphical capacity have long stifled its progress as a games machine. Since it was never designed for games in the first place, it's little surprise that progress has been slow and unresponsive - many leaps in PC games technology have simply been a reflection of technological progress made in other PC markets.

Until the turn of the last decade most PC games existed in two dimensions. However, those that employed a third were usually faster than their equivalents on the alternative formats of the day - for a while, at least, the PC had the 3D market to itself. Nowadays, of course, with most games using sophisticated 3D and demanding some serious power, even the 64bit Pentium often falls short of requirements. To make matters worse, owners of £2000 PCs are constantly reminded that £200 consoles are running rings around what was once their domain.

The advent of dedicated 3D card technology signposts an important new direction for PC videogaming. For 3Dfx buyers it marks a period where CPU power can take a back seat to custom rendering muscle, and, for once, a marked upgrade in graphics performance will *not* be synonymous with a processor upgrade. However, for PowerVR disciples it signals the arrival of an era in graphics that not even the current generation of superconsoles can hope to match - but such state-of-the-art performance does have a price: a truly state-of-the-art PC is essential...

The Future is almost here...

inside

Contacts

Photography: Mark Koehler

FEATURES

26

54

A prototype M2 unit (above). Sony's 'DIY' PlayStation (top right). QuakeWorld (above right)

Mario Kart 64 (left). Metal Gear (above)
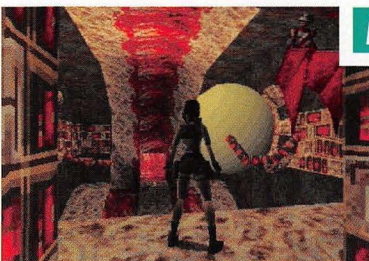
Photography: **Jude**

Tomb Raider (left). Privateer 2: The Darkening (above)

Cultural, Political and Economic Implications of the Internet
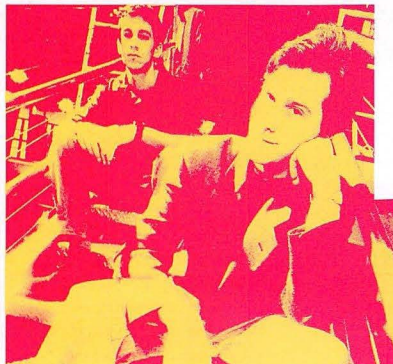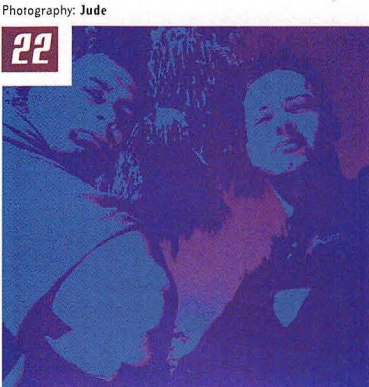
cutting edge

THE LATEST NEWS FROM THE WORLD OF INTERACTIVE ENTERTAINMENT

Matsushita holds back as new M2 specs come to light

The most powerful gamebox ever conceived edges another step closer to reality

M2 Specifications

CPU : 2 x Power PC602 @ 66MHz
Video Engine: 320x240 – 640x480, full colour
Audio DSP: 16bit DSP @ 66MHz
Quad speed CD-ROM
BDA (custom ASIC): Memory Control, system control and video/graphic control. Includes set-up engine, triangle engine, MPEG decoder, DSP for audio and different kind of DMA control and port control. Random access of frame Buffer and z-buffer possible at the same time.
CDE (Custom ASIC): Includes a power-bus which is connected the BDA and the CPU. The 'bio-bus' is used as a low-speed bus for peripheral hardware.
Memory: unified memory system of 8Mb SDRAM (64bit bus) @ 500 Mb/sec, average access greater than 400Mb/per second
Shading: flat and Gouraud
**Texture mapping: decal, modulation blending, tiling (16K/128K texture buffer built-in)**
Filtering: linear, bi-linear, tri-linear, mipmap, LOD, 3D perspective.
Hardware buffer (16bit)
Alpha Channel (4 or 7bit)

Panasonic chose not to unveil M2 at recent trade shows (left). The console is rumoured to be aesthetically similar to this prototype (above)

Despite M2 being absent from the recent, and rather low-key, Tokyo E3 show (taking place concurrently with the PlayStation Expo – see page 10), where Panasonic initially planned to reveal its technology, **Edge** has uncovered further information of the console slated to be launched by Matsushita during the first half of next year. The M2 system will go by a slightly different name when it is unveiled to the Japanese press early next year.

As previously understood, the console will include two Power PC602 chips (each delivering over 70 MIPS), although **Edge** has discovered that eight megabytes of unified RAM will also be included as well as a quad-speed CD drive. DVD compatibility, it seems, will not be exploited until Matsushita's more grandiose consumer electronics plans for the technology become clearer – the issue that has apparently been holding back the announcement of any launch by the division responsible for the console's development.

Panasonic Wondertainment.

In addition, **Edge** has uncovered details of the way that the much vaunted, souped-up M2 graphics engine works – previously the subject of much idle speculation. It now appears that Matsushita's machine utilises one Power PC for calculating geometry while the second is used for running ordinary game code. While the polygon engine itself is capable of processing over one million polygons per second, it's expected that M2 will be able to display around 500,000 polygons per second *with* texturing and lighting effects applied [NB while no benchmark polygon size exists for comparison, few PlayStation games exceed 120,000 polygons/sec]. M2 will also be able to map MPEG footage onto polygons as a texture.

In design terms, Matsushita's console is expected to be a top-loading device, slightly smaller and thinner than Sega's Saturn and with a front-loading memory card slot

Architecture

Graphic Processing

Warp's *D2* (E39) is the first title to provide evidence of M2's potent realtime rendering capabilities. But when will it see the light of day?
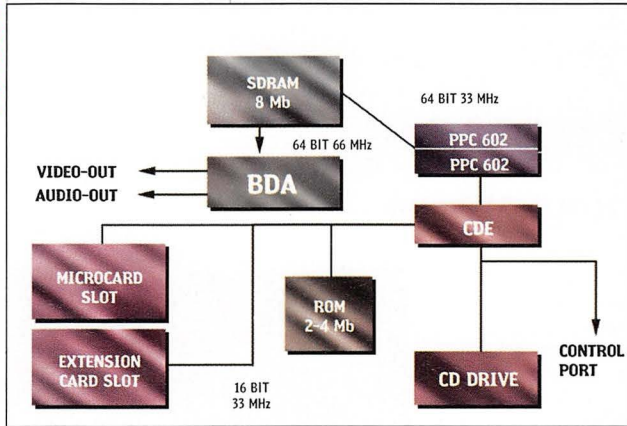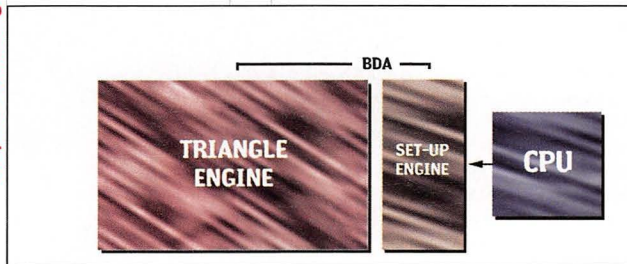
M2 Development (tasks)

At the heart of Matsushita's M2 technology are two PowerPC CPUs and the formidable graphics chip, here referred to as the BDA (centre). This is a custom ASIC and comprises the set-up engine, triangle engine, MPEG decoder as well as a DSP for audio and DMA controls

Rendering power

At its graphical core, M2 uses a set-up engine (which handles geometry) and a triangle engine which does all of the actual rendering. Several different layers of software abstraction sit on top of the engines to minimise coding difficulties.

positioned in the centre (cards will start at a standard 128K but could theoretically reach 32 Mb). The console's controller will have six main buttons and also two shoulder buttons like the Saturn's pad. On the left part of the controller the player will be able to use a regular directional cross-pad which, strangely enough, is surrounded by a rotating analogue, jog-shuttle-type wheel. In addition a separate analogue joystick is also included on the pad.

In terms of expansion, Matsushita's console will feature a standard PCMCIA slot to allow connection to planned peripherals such as a modem, DVD player, etc. although in the beginning the machine will be marketed a straight games machine, mirroring Sony's efforts. Contrary to previous plans (and likely to cause upset with many 3DO disciples) is the news that there will be

no compatibility with the ageing 3DO technology – apparently because of the inclusion of the quad-speed drive.

Software development is perhaps the most ambiguous area, though. While Panasonic Wondertainment is developing over ten software titles internally in Japan, development work was recently stopped on M2 titles 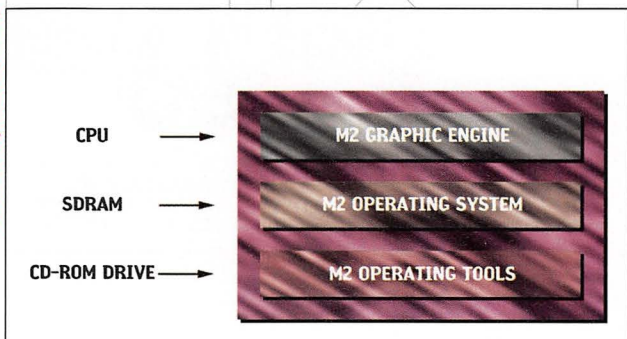within The 3DO Company's US offices – allegedly because Acclaim was working on these as M2 arcade titles and when delays started snowballing for the M2 launch, it ported its resources to the PlayStation. It is expected that Panasonic will launch with around 10 M2 titles although the only known companies with third party contracts are Warp (which recently revealed the first M2 game, *D2* – see E39), Konami and Capcom. By the beginning of next year it is expected that a few other M2 developers will be officially introduced, and a complete software line-up planned for a possible late Spring launch.

Given the arcade interests of both Capcom and Konami it's interesting to note that there no link between the technology in M2 and that powering new arcade boards by Konami and Capcom – in fact, no arcade games using the M2 technology have yet been shown. Naturally there are differences between the technology planned for the console and the arcade – in this case there is more RAM on the arcade motherboard and cartridges will be used as a coin-op storage medium instead of CDs.

According to industry sources, with the M2 hardware now finished and software development continuing, Matsushita's plans for the technology to form the hub of a consumer electronics range could be the only obstacle to an early '96 roll-out. It's expected an announcement will be made early next year. Until then **Edge** will keep its finger firmly on the M2 pulse. E

What is it?

It costed $5 million, weighed almost a ton, was remarkable for its vector calculations, and needed liquid freon to keep it cool. Not unsurprisingly, only 85 were ever sold

DIY PlayStation revives bedroom coding scene

Sony's black PlayStation, already on release in Japan, is set to hit the UK in early 1997

The days of the bedroom programmer may return to the UK if Sony's new programmable PlayStation takes off.

Affordably priced at £600, the package was unveiled at this summer's E3, launched in Japan late last year, and will be available to buy in the UK in early '97.

Developed by original PlayStation creator Ken Kutaragi, the system allows home users to program Sony's 32bit hardware from a PC or Mac without the going to the expense of buying the fully-fledged development kit.

Yarouze, which translates as 'Let's create,' is the Japanese title for the tools that many hope will revive the golden days of home games programming and provide a valuable pool of talent to draw upon for the future, while simultaneously prolonging the life of Sony's console.

The Yarouze software suite comprises a C compiler, debugger, tools for converting graphics and sound to the PlayStation format, and a complete set of C libraries, which should provide the budding home programmer with enough power to create high-quality games for an initial outlay similar to the original cost of Commodore's Amiga 500 home computer.

In terms of hardware, the black Playstation itself is similar to the standard commercial model, the only real differences being new boot ROMs and the notable absence of Sony's territorial lockout chip (so UK users will be able to play Japanese and US titles without customising their consoles). The Yarouze system varies more from the official development kit, and has just the standard 2MB main memory, but no CD-ROM emulator or PC board.

Games programmed on the system will exist only as 'living code', as Yarouze does not allow for any CD storage. All games will therefore have to load entirely into RAM from the host machine, which will limit them to a size of 3.5MB (2MB main, 1MB VRAM and 512K sound). This prevents unauthorised distribution (and, incidentally, any financial gain) and piracy, while forcing designers to work within strict limitations. Those limitations, it is hoped, will promote a return to a culture of gameplay over graphics.

If that sounds a little too constricted then consider this: Namco's *Ridge Racer* fits entirely within the system RAM. Classics such as *Sentinel* and *Elite* – graphically simple titles but rich in depth – could quite easily

Sony's new PlayStation is identical to the original – apart from its Henry Ford colouring

THE YAROUZE SOFTWARE SUITE SHOULD PROVIDE BUDDING PROGRAMMERS WITH ENOUGH POWER TO CREATE HIGH-QUALITY GAMES FOR AN OUTLAY SIMILAR TO THAT OF THE ORIGINAL AMIGA
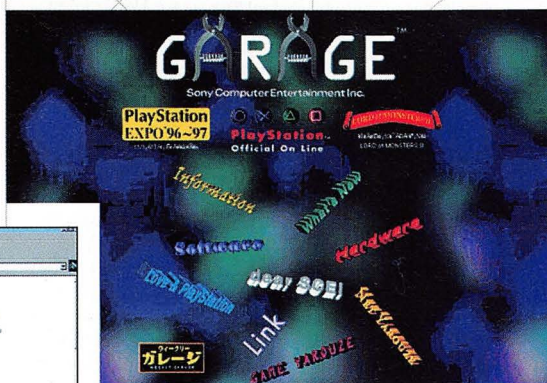
Along with the basic development kit, adopters will find that Sony has provided a number of useful websites. Those interested in this latest development should point their browsers at www.scee.sony.co.uk

Sony's Yarouze website will provide online support for users, as well as a number of design and programming forums and chat groups

find a new lease of life on such a system, and provide a welcome change from the stock genres of racing games and beat 'em ups that have come to be expected on the system. Should Yarouze catch on, games creation will no longer be at the mercy of the big budgets and guaranteed returns that have for so long squeezed much of the originality out of the industry.

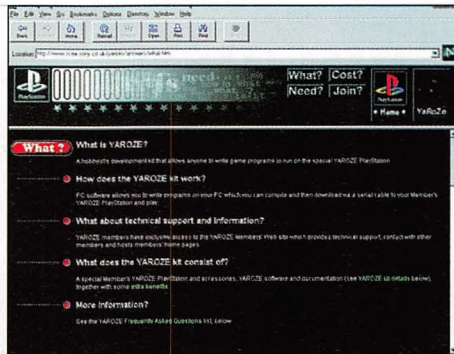The UK in particular has a rich heritage of home-grown talent. Peter Molyneux of Bullfrog, David Braben, Gremlin's Tony Crowther, Rare's Tim and Chris Stamper,

Yarouze could help to create the next generation of programming talent. There is already talk in Japan of artists, programmers and designers buying a system each and creating their own mini development teams, free to create games independently of current market trends. The potential is clearly enormous. Sony also intends to liaise with universities all over the world to provide Computer Science departments with everything they need to help prospective programmers and fanatics to start creating software – a sound idea in

PETER MOLYNEUX, DAVID BRABEN, TONY CROWTHER, TIM AND CHRIS STAMPER, JON RITMAN AND GEOFF CRAMMOND ALL BEGAN THEIR CAREERS FROM THE SANCTUARY OF THEIR OWN BEDROOMS

Cranberry Source's John Ritman and Geoff Crammond all began their careers writing games from the sanctuary of their bedrooms. They were part of a DIY computing culture that powered the 8bit home market and produced an abundance of innovative and original titles.

theory, and, if Sony is able provide the support to back it up, one that could galvanise an important source of future game-creating talent.

The question mark lingering ominously overhead concerns whether Yarouze will catch on at all. Sony claims to expect thousands of adopters, who it intends to support with a dedicated website and club membership scheme. Once adopters have bought the development kit, they can subscribe; the Yarouze online club will provide them with access to all the forums, chat groups and technical updates they'll need to get the best from the Yarouze development concept.

But will PC owners, who've been living with access to programming materials for their own system for years, switch to a console? What's most likely to happen is that the black PlayStation will be used to code interactive demos which prospective programmers can then use as a calling card to give to prospective employers.

Yarouze has the potential to be either the most important industry development for years or a logistical nightmare for Sony. Next month, **Edge** takes a detailed look at Yarouze in an attempt to find out whether the golden days of home programming are about to return, or whether Ken Kutaragi's dream will remain just that. **E**

The Yarouze development kit, complete with system and libraries discs and computer interface lead – but not territorial lock-out chip

Who is it?

He has created one of the most successful games franchises in the industry, selling over three million copies of a series that has often starred the actor who played Luke Skywalker in Star Wars

PlayStation fortifies at Japanese 96-97 Expo

A swelling library of PS software could capture Sony some ground in its battle with Sega

UK is PS Capital

The UK is officially the PlayStation capital of Europe. With sales predicted to reach a high of 750,000 by the end of March next year, the UK will beat the burgeoning German and French markets hands down.

Sony has already shipped 500,000 units into retail, though it's unclear how many have sold through in total.

Another price drop could also be on the cards, as Sony have just launched the new SCPH 5500 model in Japan which is cheaper to manufacture, retailing at just ¥19,800 (£124). If the price drop does filter through to Europe, Nintendo will be under even greater pressure to review its N64 pricing policy (which currently stands at £250).

Clockwise from above: SCEE's fantasy flight sim, *Beldeselva* (see Edge 38); *Parappa the Rapper* from the same company; R.E.X. Entertainment's unusual *Running High*
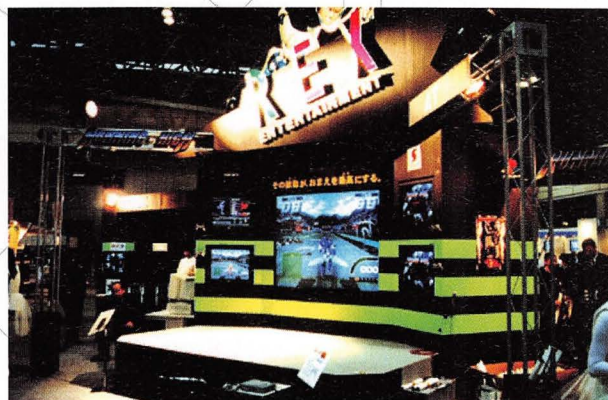
it is...

Chris Roberts, whose career at PC specialist Origin came to an end recently when he left to become an independent. His *Wing Commander* series has repeatedly starred Mark Hamill, the 'resting' actor

Though Namco dominated, Square had the hottest property – *Final Fantasy VII*

The 1996-'97 PlayStation Expo took place on November 1-4 in Japan's Makuhari Messe, where 177 titles were demonstrated for Sony's machine.

Despite a smaller arena than last year (the show clashed with the less-successful Tokyo E3), and an exhibitor attendance down from 79 to 52, the event was widely judged to be a resounding success, with premier developer Namco stealing the show.

All of its games were playable, and included *Rage Racer* which introduced some welcome new features such as a customise option enabling players to upgrade cars using race winnings, *Super Sprint*-style. *Soul Edge*, converted from the mark 2 version of the coin-op, joined *RR*, and included two extra characters as well as time-attack, survival and team battle modes. Unsurprisingly, the game looked encouragingly close to its System 11 parent. The excellent-looking *Time Crisis* made a welcome first appearance (see pages 40-41), along with a conversion of the similarly styled coin-op, *Gun Bullet*.

Xevious 3D/G, another System 11 game, was unveiled, the CD featuring *Xevious*, *Super Xevious* (the 8bit Famicom game) and an enhanced retro version. *Ace Combat 2* was also playable, and made use of Sony's new dual analogue-stick controller.

As expected, Sony's own stand was by far

the most impressive looking, although, disappointingly, only one new game was shown – *Intelligent Qube* (*IQ*), a 3D puzzle game. *Arc the Lad 2*, *RoRou Kenshin* (see **E**38), *Wild Arms* and the still-mysterious *Beldeselva* repeated their Tokyo Game Show appearance, while *Parappa the Rapper* drew crowds with its strange but hilarious Simon-style gameplay. *Depth*, a novel dolphin game, also featured on the stand, and featured odd, music-based gameplay.

Konami had an encouraging show, with *Speed King*, *J-League Winning 11*, *NBA Power Dunkers 2* and *Metal Gear* on display, while Capcom had few surprises, presenting *Star Gladiator*, *Rockman 8* and *Super Puzzle Fighter 2X*, an unusual puzzle game starring the ubiquitous *SFII* characters.

From Software introduced *Armored Core*, a *Virtual-On*-style combat game with the added feature of fully customisable robots, along with *Shadow Tower*, an atmospheric-looking RPG.

Bandai Visual had an almost complete version of its Transformers-style robot game, *Macross Digital Mission VF-X*, which endeared itself to Japanese showgoers thanks to its manga/anime origins.

But the game on everybody's lips was Square's *Final Fantasy VII*, which will no doubt storm to the top of the Japanese charts after Christmas. Square's other titles, including *Bushido Blade*, *Saga Frontier* and *Final Fantasy Tactics*, were shown in a private room, while its new label, *AQUES* (Advanced Quality Entertainment and Sport), was announced along with the first titles to be published under it, *Super Live Stadium* (baseball), *Grand Champion's Rally* (driving) and *Pro Logic* (Mah Jong).

Elsewhere Takara displayed *Toshinden 3* and *Choro Q2*.

Last Christmas belonged to the Saturn in Japan, with Sega's devastating threesome, *VF2*, *Sega Rally* and *Virtua Cop*. This time, Sony may well have the edge, the titles shown at Expo giving it a boost in what represents one of the company's most important territories. **E**
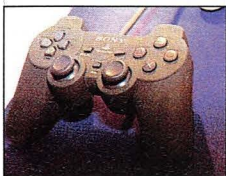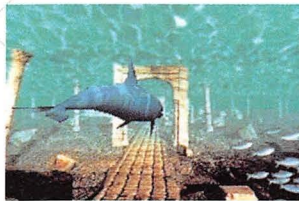

Sony's dual analogue-stick joypad also put in an unexpected appearance at Expo

Namco's Guncon in action (top). Capcom wheeled out *Rockman* for the umpteenth time (above right). Takara showed *Toshinden 3* (above left)

Clockwise from top left: Square's *Bushido Blade*; From Software's *Armoured Core*; Namco's *Soul Edge*; *Xevious 3* from the same stable; *Super Live Stadium* and *Grand Champion's Rally*, both from Square's new sports label, AQUES; *Depth* from SCEE; Koei's fighter, *Sangoku*

Many western-produced games made their eastern debuts at the show, with Naughty Dog's *Crash Bandicoot* grabbing bucketloads of attention

PC 3D **revolution** dawns as **accelerators** arrive

The 3D card wars begin in earnest as Orchid, Diamond and VideoLogic move in

After months of promises and many seductive hi-res screenshots, three companies have at last engineered dedicated PC 3D graphics cards for release. VideoLogic's Apocalypse3D, Orchid's Righteous3D and Diamond's Monster3D are already in UK shops, with more cards planned for release in early 1996.

For veteran PC game players, however, this situation will bring a distinct hint of déjà vu as competing graphics companies fight to establish a standard. At one end of the spectrum lie 2D/3D solutions such as recent arrivals like Matrox's Mystique and Creative's Rendition-based 3D Blaster PCI (the follow-up to the dismal Glint-based VLB version), while at the other are the higher-end, dedicated 3D cards using VideoLogic and 3Dfx technology. While these more advanced chipsets still require a standard 2D video card they offer far superior 3D performance.

Even in the dedicated 3D market, though, things have become more complicated. While VideoLogic has built its own Apocalypse3D card around its Win 95-only PowerVR technology, 3Dfx Interactive has licensed out its Voodoo technology to two card manufacturers, Diamond Multimedia and Orchid, which have produced essentially identical cards. VideoLogic is also in the process of selling its PowerVR technology to thirdparty vendors.

As well as conflicting technical specs (see pages 54-63) these new cards are being offered with different software bundles and at different price points.


Videologic's Apocalypse 3D card is based around the company's excellent PowerVR technology
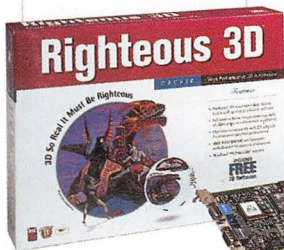
Orchid's card has a small 3Dfx logo on its box, but uses 'Righteous 3D' as its branding...

Apocalypse3D sells at £149 before VAT and includes NetRace (a graphically superb driving game from Mindscape Bordeaux created especially for the chip), and Mechwarrior 2. Righteous3D, on the other hand, the first 3Dfx card to ship, already comes with Gremlin's updated Fatal Racing as well as a rather underwhelming Descent 2. But it will be Core's stunning Tomb Raider and Psygnosis' titles, not to mention Quake, that could swing the balance initially in 3Dfx's favour.

Whether PC owners part with any money at this early stage is debatable, though, and despite the inevitable importance of 3D cards in the PC's future, some game players will be unwilling to take any risks in light of previous hardware failures. After all, anyone remember nVidia? **E**
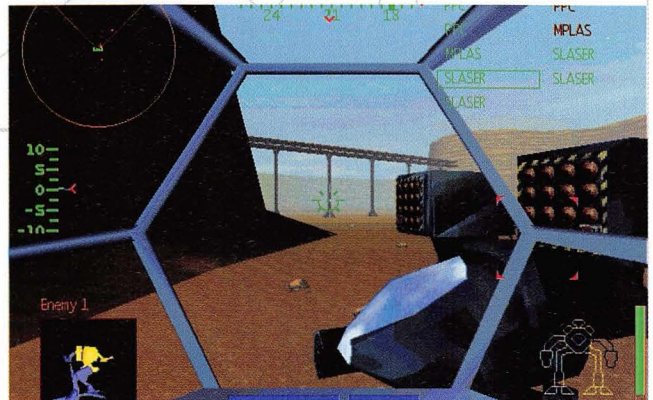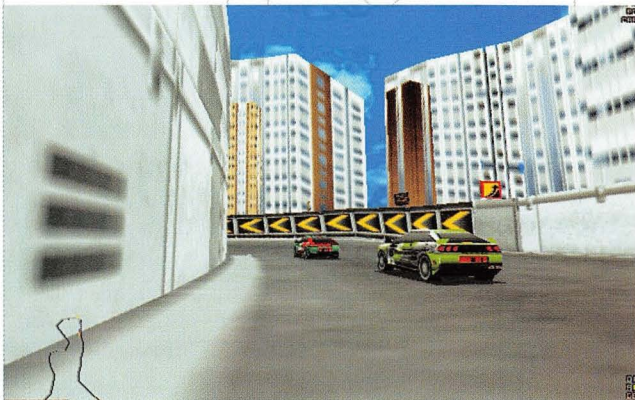
Gremlin's *Fatal Racing* (left) takes on a new lease of life when accelerated with the 3Dfx chip, with smooth albeit glitchy textures, more detailed cars and pop-up suppressed to a minimum. Activision's *Mechwarrior 2* is similarly improved, with more impressive landscapes and very slick mechs

SGI brings digital power to the people

SiliconGraphics Computer Systems

Silicon Graphics introduces new O2 platform offering affordable high performance

Profits down at Nintendo

As the SNES finally runs out of steam, Nintendo has recorded a severe decline in profits.

Last year, almost 14 million carts were sold worldwide, which contrasts steeply with a 'mere' five million during the first half of 1996.

The late arrival of the N64 has been blamed for the decline, leaving a considerable gap between the demise of the SNES and the rise of its 64bit system.

As always, the company remains bullish, predicting increased sales despite the obvious lack of N64 software. Nintendo expects to have sold six million consoles by the end of the fiscal year.
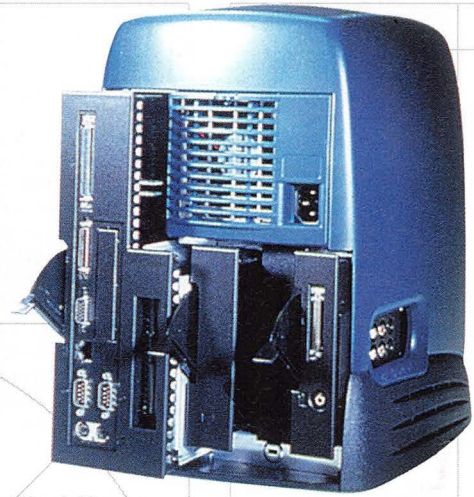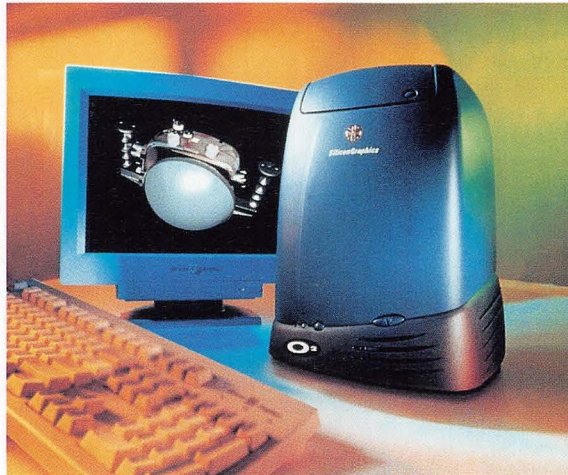
The O2 has been designed in a modular fashion – each component (hard drive, motherboard, etc) can be slotted in or removed in seconds, with not a wire in sight

Silicon Graphics has launched a new low-cost graphics workstation aimed at bringing previously unachievable levels of power to the mass market.

The new O2 unit is intended to beat off competition from Windows NT hardware and its software, the current formats of choice for graphic artists interested in low-cost, high-power 3D graphics generation.

System specifications are hugely impressive and far exceed those of the *Windows*-based competition.

With 32bit double-buffered graphics as standard, the O2 can render 375,000 Gourad-shaded, z-buffered, lit 3D triangles per second – a performance some ten times that of an Indy workstation.

The range starts at £5060 (for a set-up including an R5000 180MHz processor) and includes three models (the topmost including an R10000 150MHz processor). All come bundled with Internet software, something which forms a crucial part of the O2's user strategy – the machine's documention and help system is completely Web-based: when a user requires help with a particular feature, such as publishing a document on the Internet, the system walks the user through each step and then completes the task automatically.

With more than 20 key software companies, including Alias | Wavefront and Adobe, currently working on O2-optimised versions of their software packages, the system has vast support from thirdparties.

The N64's Reality Engine Coprocessor technology has been incorporated into the O2 architecture, yielding unrivalled video, polygon and texturing power, making the unit capable of mapping realtime video onto objects, rotating and scaling them with reflections and lighting, all in real time.

Having lost ground to cheaper PC-based formats in recent years, SGI will be hoping that O2's specs and affordability will put it back in the position where it feels it has always belonged – on top.

Each O2 unit comes bundled with Netscape *Navigator 3.0*, Netscape *FastTrack Server 2.0* (for page publishing), email and news software

British Film Institute
shows classic reruns

The Museum of the Moving Image is building an exhibition to showcase gaming history

Sim City hits Nintendo 64

Imagineer held a conference in Japan in October to establish its commitment to the Nintendo 64.

Its eight-title line-up includes *Sim City 2000*, RPG *Mahoo Seiki Elutale* (below), racing game *Multi-Championship* (below middle), board game *Reason*, an untitled beat 'em up, plus a baseball and football title (bottom).

Its sports titles are due in Japan before Christmas, while its other games are likely to appear in Japan in the first half of 1997.

To be held in the temporary exhibition hall at the Museum of the Moving Image (MOMI) on London's South Bank, Re-Play has been designed as an introduction for the general public to the history, culture and relevant issues of videogaming, and is expected to be visited by between 250 and 300,000 people during its run from November 29-May 15.

'Being our first exhibition the first thing to do is base it on the history, bring everybody up to date as it were,' says Tony Hetherington, videogame researcher for the British Film Institute and one of Re-Play's organisers. 'I would hope that we'll then go into more detail in other areas like the animation and the music in the future. You can't doubt the impact that videogames have had. There are huge recognition figures [for the games] and all the links between videogames and movie studios going on. If it's not becoming part of mainline culture it's certainly influencing mainline culture. If you look at recent films you'll see a videogame aesthetic to them and there are those who argue that the Gulf War was presented to the public as a videogame.'

At the time of writing the exact contents of the exhibition had yet to be finalised, but it begins with an arcade area featuring Atari's pioneering *Pong* (actually running off an old Binatone console) and *Defender*, *Galaxian* and *Space Invaders* coin-ops.

The Eighties and the onset of home computing is explored in some detail with five PCs running programs that explore the development of the different genres of gaming. The advent of the superconsoles is examined as are future trends like online

Old games such as *Pong* will be exhibited at the Museum of the Moving Image, along with titles from later in videogaming's existence

gaming, but possibly the most intriguing exhibit for the gaming community is one called 'Hardware Heaven'.

'We've got a ZX81 with the original open-circuitry RAM pack, a Prinztronic *Pong* machine and loads of others,' says Hetherington. Hopefully we'll also include one display of all the little bits and pieces that were supplied in games boxes over the years, things like ninja hoods and surgery gloves.' Unfortunately, as yet MOMI haven't come up with a way that the machines can actually be played by visitors, but expect such platforms as the C64, VIC-20, etc, to appear.

Also present will be information about how games are developed, their influence on popular culture and other forms of media, and an examination of the psychological effects on the body of playing games. Plans for future exhibitions are uncertain but MOMI is due to expand in size though redevelopment work and it is hoped that there could eventually be a permanent videogame exhibit there.

Re-Play is part of the BFI's ongoing work to preserve videogames as part of the nation's cultural heritage. 'We lost a lot of early cinema and television because of a sort of cultural disdain, nobody thought to keep it,' says co-organiser Kate Stables. 'We've lost seven eighths of early cinema, and we felt we should start collecting videogames now to make sure this didn't happen.'

Video walls will run footage covering the development of the videogame since its commerical origins in the '70s

Help the BFI...

As part of the BFI's effort to preserve videogames, it has an ongoing appeal searching for old software, hardware and any other material relevavant to gaming. Anyone who can help with the project should write to:

Tony Hetherington,

Videogame Researcher,

British Film Institute,

21 Stephen Street,

London W1P 2LN

Develop 96 gathers cream of industry talent

The first truly independent, large-scale UK game developers conference proves a success

The '15 Top Tips' seminar, chaired by Edge's illustrious editor, featured Intelligent Games' Matthew Stibbe, Cryo's Jean-Martial Le Franc, Sensible's Jon Hare, Cranberry Source's Jon Ritman, and Dan Marchant

Bushnell's Back

Atari founder Nolan Bushnell, in conjunction with Aristo International, has unveiled three new arcade-style products.

The first, TeamNet, which is approximately the size of a pool table, allows two teams of eight people to compete with each or with other teams via the Internet.

TouchNet, meanwhile, is a touch-screen computer system which allows users to play online games and send electronic mail.

Finally, MusicNet is a music-playing device which also lets customers buy tickets, recordings and merchandise.

All systems are coin-operated and were introduced into the US market in September.

The UK's premier games development conference, Develop, took place in London on October 26-27. It was its first year as a standalone event after previously being a piggyback event to the Autumn ECTS.

Unanimously hailed as a success by more than 300 delegates in attendance, Develop '96 gave designers, producers and key figures from the games development community valuable advice and opportunities for discussion about the future of the interactive entertainment industry.

Develop opened with an address from *Pong* creator Nolan Bushnell, who emphasised how interactive entertainment was in the process of a major structural upheaval – into something he referred to as a 'global party'. Another distinguished US speaker who flew in for the event was *Civilisation* creator Sid Meier, who delivered a sardonic appraisal of the new technologies in the industry (VR headsets, 3D cards, etc) that were 'distracting' developers away from the fundamental principles of game design. By way of contrast, there were also a number of highly technical, less speculative, seminars, covering such subjects as Intel's new MMX chip and the future of Microsoft's Direct X technology.

One of the most interesting addresses from a commercial standpoint was by Shiny's Dave Perry, who eulogised over the often-missed potential for videogame characters to be extensively merchandised by toy companies. Perry's approach was refreshingly grass-roots, describing in great detail the way in which such deals are cut in the US and how he personally managed to convince toy and TV giants to take on Earthworm Jim and build it into a successful cartoon brand. Proving himself to be a formidable negotiator, it's debatable just how his new image as the wide boy of the industry will affect Perry's own business – it's unclear quite how many games industry figures will savour the prospect of trying to cut a deal with *him* after this...

Of most interest by far, though, was Yarouze – the programmable black PlayStation demonstrated by Sony at the event. With the mood of the conference shifting palpably towards independent development, Phil Harrison had little work to do to convince many that the inherent limitations and nuts-and-bolts appeal of the system were just what the industry needed. A selection of demos were presented and Sony promised a number of downloadable demos on its website before too long.

Given the amount of money generated by the global interactive entertainment industry it's a poor state of affairs that events such as Develop have taken so long to be established. In some respects this year's conference reflected a new maturity, with a wide and varied mix of technical, theoretical and anecdotal speeches that educated and informed. If developers can benefit from such advice, it can certainly do no harm to the quality of forthcoming interactive entertainment. **E**

Sid Meier (top) and Nolan Bushnell (above) were prominent guests

If nothing else, Develop proved that long hair and heavy-metal T-shirts still prevail in some quarters of the UK development community

Cobra specs

General

1 million to 5 million polygons per second

50 million to 250 million pixels per second

Resolution

640x400-1280x1024

144 bit/pixel with special effects of 256 levels

Shading

Sub-pixel anti-aliasing

Flat shading

Gouraud shading

Lighting

Parallel lighting

'Environment' lighting

Mapping

Perspective mapping

'Environment' mapping

Cobra poised to strike

Konami and IBM Japan announce new, high-performance coin-op technology

Konami's Japanese coin-op division has released specs for its new high-performance coin-op technology, which has been developed in conjunction with IBM Japan. Codenamed 'Cobra', the board can generate displays at resolutions ranging from 640x400 to 1280x1024, shifting up to five million polygons per second at its optimum level.

The cooperative development has seen IBM providing the technology – developing the PowerPC-based content which forms the board's nucleus – with Konami contributing the 'interactive' part of the equation.

Though the early Cobra demo game, mysteriously named *PF573*, is still in its infancy, it appears to reveal power beyond that of the current coin-op standard bearer, Sega's Model 3.

Insiders have claimed that Konami's technology is considerably more expensive than Sega's cutting-edge equivalent, however, which would limit its appearance to only a handful of titles.

Edge looks forward to a Cobra-powered *Speed King 2* with interest. **E**

Cobra demo game, *PF573*, is looking very much like *VF3*, right down to its reflective textures (right)
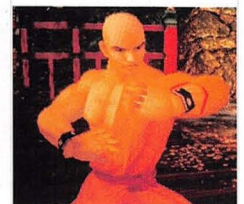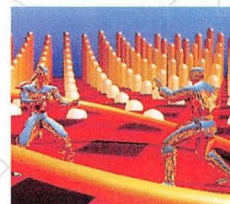
No **polygons** for SFIII

Capcom's long-anticipated sequel shuns polygons in favour of incredible 2D animation

Capcom has officially unveiled the long-awaited *Street Fighter III* to audiences in Japan. In a television special, the game was presented alongside several other key Capcom releases such as *Warzard* (the first title to use the company's new CPS III coin-op system).

The latest episode in the *Street Fighter* legend will not be a polygon-based affair. Instead, it uses the same 2D format as its predecessors, albeit with a graphical quality far in excess of the likes of *Street Fighter Alpha 2*, something that's being achieved simply by jamming the game with previously unheard of levels of hi-res animation.

The new graphical approach, which creates movement sequences more akin to a high-quality Japanese animated movie than a videogame, uses a breathtaking amount of detail in its bitmapped images, going so far as to show fighters' muscles ripple beneath their skin during attacks. Importantly, the excessive animation doesn't appear to hamper the speed of the game, with early demos looking as quick as the fastest play

modes of previous *Street Fighter* games.

Specific details, such as characters and storyline, are currently scant, but the game has put paid to rumours suggesting that Capcom would be using Nintendo's 64bit console technology in what is its most important title in recent years.

Despite using 3D in *SF EX*, Capcom must deem the true *SF* legend not quite ready for the full polygon treatment. **E**

Japanese fans of the *SF* series will doubtless welcome another 2D title to their bosoms, but will westerners be so enthusiastic? It's doubtful

The early demo of *Street Fighter III* was shown to only a handful of journalists

QuakeWorld

Site:	id Software
Address:	www.idsoftware.com
Format:	id home page
Origin:	Texas

Quake is about to become an international sport, with teams, leagues and unlimited live coverage…

The Internet is still searching for that 'killer app' – the one thing that gets people foaming at the mouth, rushing out to buy modems by the dozen and eschewing their VCRs for an extra phone socket. Internet gaming is already a huge growth area in the States, where local calls are far cheaper than they are in the UK, and there's currently a lot of time and money being spent to ensure that online gaming is The Next Big Thing.

With *Quake* replacing *Doom* as the hardy perennial on many PC hard drives, id Software has now created the ultimate Internet gaming experience, QuakeWorld, and if all goes to plan, it could well mark the beginning of an online stampede.

John Carmack, *Quake*'s author and father of one of the most flexible and impressive 3D engines the PC has ever seen, has always maintained that *Quake* was first and foremost a technical project, designed from the outset to provide the company with the know-how to take PC gaming into its next phase – the Internet. Of course, id only has to sigh and the Internet rumour mill goes into overdrive, but QuakeWorld looks like being one of the most significant multiplayer projects ever.

From id's central server, all other *Quake* servers are logged and linked together to

QuakeWorld provides the structure needed to turn *Quake* into a national Internet pastime, complete with individual teams or 'clans'

provide a web of interconnecting levels, joining players from all corners of the globe in what is intended to be one huge, multiplayer game. If all goes to plan, players will be able to jump between servers through the in-game slip-gates, though it's not certain whether this will be available as the service is launched. What's more likely to happen is that id's master server will provide a directory of available games and 'kick-off' times, as well as a high score table for those with the most kills or 'frags'. Id Software will be to Deathmatch *Quake* what the FA is to soccer, providing the coordination, structure and regulation needed to ensure the growth of *Quake* as something akin to the first Internet 'sport'.

The sport analogy is particularly apt as the first Deathmatch teams begin to appear. The Clans have their own websites, 'codes of honour', stories and 'skins' (individual texture maps that give each clan a unique appearance – their 'strip', if you like). In keeping with the id philosophy, there will be no subscription charge for QuakeWorld, although gamers in the UK will obviously find it a more expensive pastime than those in the States, which should ensure that the Americans echo their sporting achievements in the real world and dominate to the point of scooping all the medals…

The stormtrooper 'skins' (top) allow gamers to indulge their Star Wars fantasies as they fight for a place in the QW league tables

Sole Survivor

Virgin-owned Westwood Studios is planning an Internet-only *Command and Conquer* spin-off entitled *Sole Survivor*. The game is so called because each player is assigned only one unit and to win must out-live the 99 other players on the map. Unlike *C&C*, there will be no mining and no resource management, just the opportunity to upgrade your lone unit with the power-ups liberally dotted around the playing area.

Westwood has been developing its own chat system for years now, and it hopes to expand its site to include multiplayer *C&C* as well as *Sole Survivor*. Brett Sperry, the company's president, hopes to create what he describes as 'Planet Westwood' – a worldwide virtual community of Westwood fans all swapping reams of gaming tips and tactics with like-minded pals. Sounds cosy, doesn't it?

Don't say you haven't thought about it.

SEGA PC

Arcade quality games from Sega now on PC CD-ROM.

DAYTONA™ USA

HOT GAME

The excuse you've been waiting for.

B.S.
[Before Softimage]

profile

Neil Young and Chris Yates

vice president of product development and vice president of technologies, Burst, Virgin Interactive Entertainment

Neil Young is vice president of product development at Burst. Virgin Inc's internal development studio. Together with Chris Yates. VP of technologies. it's his eye for quality that Virgin hopes will streamline its loss-making operation to become a leaner. meaner hit factory.

When Dave Perry and his Shiny mutineers left the Virgin fold for the States in 1993. the UK softco's internal development operation lost its way. Since then it's has been working hard to shape its team. known as Burst. into a triple-'A' developer. Yates. a veteran of much-respected American outfit Westwood Studios. and Young. who worked at super-prolific UK development house Probe before joining the Virgin ranks. have played major roles in making this happen.

The pair have recently been working on Virgin's most ambitious project to date. *Toonstruck* (a project rumoured to have cost in excess of $8 million). while also being involved in taking an axe to some of the less auspicious projects elsewhere in development.

Edge What sets Burst apart from the way other developers work?
Chris Yates There are a couple of things in particular that set us apart. Firstly. experience. All our senior producers have between eight and ten years of experience in the industry. Secondly. we're very aggressive about technology and production values – we don't do anything half-arsed. We have an outstanding video department and an outstanding audio department. We have a tools and technologies department of ten people who just focus on creating new technology for the title guys to use. You won't find many companies that are prepared to invest in that way.
Neil Young It's planning ahead.
CY We've taken a long-term approach. Over time. teams become more effective. and you have to have a strong production manager – you can have great people working on a title. but if it's not produced well it goes over budget. it

never reaches the quality it could have reached. Neil and I are very aggressive – we have a unique way of running the building.
Edge Sounds frightening.
NY Yeah. we have a big dog. Seriously. though. I think there are very few companies. actually. that are run by people who really know the business. who really know games. and aren't ashamed that they make video games – who aren't film people. or number crunchers that try and control the business. There are hundreds and hundreds of man years of games experience in this building – people who know all the old games and what makes a game good.
Edge The retrogaming scene has picked up recently. How do you balance the desire to

recreate the old gaming experiences with the need to move forward?
CY Internet gaming should allow us to mix the two. We've taken a slightly different approach to other companies by doing large-scale server-based games. The Internet is a constrained platform – and if you look at our *Subspace* Internet game. you'll see that it looks very retro. 30.000 people have downloaded the game in the last month. and yesterday. we hit a new

record of 700 people online at the same time. The hard-core gamers love that stuff.
NY If you look at retrogaming. then you can see that there are some basic essentials of gameplay that apply right across the board – those fundamental values. The trick is to mix those in with new technologies. Constraints are very important. though. Eugene Jarvis said recently that Chess. if you look at the rules. looks terrible. It's very constrained. but it's those constraints that make it great.
Edge Virgin is almost as famous for its losses as for the games it produces. Costs seem to be spiralling. but is there really any evidence that the PC games market can support these big-budget productions? You must have to be pretty

There are hundreds and hundreds of man years of games experience in this building – people who know all the old games and what makes a game good

sure you've picked a winner.
NY That market is now totally hit-driven. If you have a hit. you'll make a lot of money – more money than you used to make when the costs were lower. in the 'good old days'. A hit will sell a million units on PC. and that's about $15 million in profits.
CY Having said that. the trend is definitely that less is now more. We want to do less games. but make sure that they're all triple-'A' products. so we only pick those we're absolutely 100 per cent sure about. Doing a 'B' title these days is still an expensive proposition. and it can be hard to make your money back. The trick is to know when to quit on a product. If it's not going to fly. then you need to figure that out early on. before you spend a lot of money. That's an important part of our job.
Edge Presumably. *Ectosphere* lacked wings. Was it hard to ditch the project? After all. it's rumoured to have cost $4 million...
NY *Ectosphere* was the Clive Barker game. and. yes. it did cost a lot of money. though I don't know where you got that figure from. You have to pick your battles – you have to decide what to keep and what to cut loose. We took a look at that and deciced to cut it loose. along with a basketball game.
CY Most projects that get canned are down to either poor managment in the early. defining stages. or just plain bad in terms of concept. In the case of *Ectosphere*. it was not so much a flawed concept. it just wasn't executed at all well. In the case of *Hoops* [the basketball title]. I think that it was a poor concept from the start. It's healthier to cut them loose than to drag on with something that you know won't work in the end. It costs a lot – these are multi-million dollar decisions – but they have to be made. The company is a lot better for it.
Edge What happened to the Escape From LA game? We thought Virgin had the licence.
NY That was difficult. We did have the licence. and we had started on the game. It wasn't a great film. and if the movie isn't going to add any value to the game. then there's little point. We weren't going to waste our best people on it. Something we're very mindful of. and that a lot of companies forget. is that our biggest assets go home at night...

Burst's LucasArts-style adventure, *Toonstruck*, is one of Virgin's highest-profile projects to date. The game, reviewed on pages 76-77, features a mix of live action and animation

profile

Mark Cerny
head of product development, Universal Interactive Studios

M ark Cerny designed the 1982 Atari coin-op *Marble Madness* - a landmark game in many respects, not least of which being its pioneering use of FM synthesised sound. He has also designed coin-op hardware for Sega, developed 8bit Master System software and was the first 'technical employee' of 3DO start-up outfit Crystal Dynamics, where he worked on the technology and game design of *Crash 'n' Burn* (E3), one of the strongest original titles to be released for the 32bit machine. He has since lent his expertise to the creation of development tools for M2, a format that he concedes is 'a very nice machine.'

With the demise of 3DO, though, Cerny has moved onto new pastures and now works for LA-based Universal Interactive Studios where he heads up product development. For the past year and a half Cerny's time has been taken up with Naughty Dog's *Crash Bandicoot* - a game that, in artistic and technical terms at least, has a noticeable lead over its rivals. Similarly, he also added a high level of technical content to UIS' other PlayStation tour de force, *Disruptor*

(a quality *Doom* clone that was originally destined for the 3DO and M2 platforms). The result is a firstperson-viewed shoot 'em up that packs some serious pyrotechnical clout (see page 81). Incidentally, in a similar fashion to Naughty Dog's *Crash Bandicoot*, *Disruptor* may have been created under the corporate wing of Universal but it is actually the work of an unproven fledgling developer (Insomniac Games, headed up by Ted Price - left in photograph).

It seems that Cerny's experience and expertise has proved to be a valuable safety harness for UIS's gambles.

In the words on one Sony employee. Cerny is the only person to have ever put Ken Kutaragi on the spot with a technical query about the PlayStation's architecture. And when quizzed about *Disruptor*'s migration from the 3DO hardware to the PlayStation he conceded that it might have been running on Trip Hawkins' hardware, but it certainly didn't run at 30Hz...

E

CREATIVE

3D Blaster

PCI

See What You've Been Missing

If you play games on the PC, you've never seen anything like the Creative Labs 3D Blaster. This breathtaking graphics accelerator takes 3D game play on PCI systems to a whole new dimension of excitement with imagery so realistic your eyes will be out on stalks.

No more blocky graphics or jerky frames. Instead you can feast your eyes on superb quality, super sharp definition and blinding performance which you can't get with conventional cards.

3D Blaster PCI's compatibility also gives no other card a look in, with extensive games support including Direct3D™, DirectDraw™, CGL and Speedy 3D.

Today there are more than 40 top titles launched that support the 3D Blaster PCI, and four of these hot titles come with every card – Quake™, Flight Unlimited™, Battle Area Toshinden™, and Rebel Moon™. Keep your eyes open for more to come.

3D Blaster PCI combines full screen colour with total 3D realism for much richer, more defined and more hypnotising game play than you've ever experienced before.

Harness it with the awesome Sound Blaster 32 card, and you won't believe your eyes – and ears.

See what we mean. Today.
Visit our Entertainment Arcade in 'Creative Zone'
(www.creativelabs.com), the site for serious players' eyes
or call our presales hotline on 01245 265 265

CREATIVE

AN AUDIENCE WITH...

DAVID
ROSEN

A ll videogame players know that Sega, like Nintendo and Sony, is a Japanese company. But very few people know that Sega was founded by an ex-US airman who found himself in Japan in the early 1950s, after the Korean war.

Rosen's story would still be interesting if it was only about establishing Sega as a world power in videogames. Instead, Rosen's story is intertwined with Japan's. And the rise of Sega mirrors the recovery of Japan from the economic mess it found itself in after World War II.

Rosen is still co-chairman of Sega Enterprises, and remains a private man with no desire for publicity – he

interview

seldom meets with the press. He did agree, however, to meet with **Edge** to discuss Sega's legacy as an entertainment empire…

Edge: How did you get started in Japan?
David Rosen: From 1949 to 1952, during the Korean War, I was in the US Air Force, and I travelled around. I started in Shanghai in China, I was in Korea during the war, but most of my time was spent in Japan. After the war, I started a company in Japan called Rosen Enterprises Ltd. This first business actually involved art – which is about as far from the current business as you could be.

At that point in time, the Japanese had a great need for ID photos. You needed an ID photo for school applications, for rice ration cards, for railway cards, and for employment. My idea was to adapt and import those little automated photo booths from the US to Japan.

Edge: Was it difficult to expand your business because of your westerner status?
DR: You would go crazy with the regulations imposed upon businesses! But I don't think they necessarily targeted foreigners.

In the years after WWII, Japan had no dollars – unlike today. So if you wanted to import any product into Japan [and hence spend dollars], you needed a license. And that license application went through MITI (Ministry of Industrial Trade and Industry). It didn't matter if you were Japanese or any other nationality, you couldn't import without a license.

Licenses generally fell into three categories. Category one was absolute necessities. Category two was products that were non-necessities but desirable. And category three was luxury – and getting a luxury license was nearly impossible.

Edge: So how did you start importing videogames? Surely amusements were 'luxury' goods?
DR: Geographically, Japan is very close to Korea. During the Korean war, Japan benefited from the US army procuring some supplies in Japan. This was a big bolster to the Japanese economy.

So around '56 or '57, I recognized that there was starting to be some disposable income. Also, there

was beginning to be a little time for entertainment. By this I mean, up until perhaps the mid-'50s, most Japanese companies worked a full six days a week. In smaller companies, it wouldn't be unusual to work six-and-a-half days, which didn't leave you much time for leisure; you were lucky to get a good night's sleep.

But when the first signs of disposable income and leisure time appeared, I began thinking about how I could enter the entertainment market.

Edge: How did you choose coin-op amusements?
DR: By a method of elimination. The popular entertainment at that point in time in Japan was Pachinko, dance studios, bars, and cabarets. None of these were something I wanted to get involved in, so I thought, 'Gee – coin-operated games.'

Edge: So how did you get started?
DR: I made a quick study of the industry and found that there was only a small number of coin-op manufacturers and they were all in Chicago. They each manufactured between four and six games a year, other than pinballs.

At the time, it was pretty much a dying industry in the US – dying in the sense that it wasn't growing. So I came to the US with the idea that I would seek out the type of games that I felt most suitable for Japan. Then I went back to MITI to try and obtain a license to import them.

Edge: But coin-ops are luxury entertainment items – not 'necessity' photo booths.
DR: Yes, these were luxury items, and it took me over one year with a lot of effort – and certainly a lot of introductions – to convince MITI that coin-ops would be good for leisure. Finally, they granted me a license for $100,000, which meant I could purchase $100,000 worth of coin-ops, and bring them to Japan.

The Japanese had a real desire for hunting and shooting, so I brought an assortment of rifle games from the US based on this $100,000 limitation. The average used game probably only cost me about $200, but the import duties in Japan were like 200%. Worse yet, you had to pay duties on shipping costs too.

Edge: So it was costing you around $800 for a machine that sold in the US for $200. But the cost was worth it?
DR: Right off the bat, the machines were really successful. It's embarrassing to say this, but the return generally came in less than two months.

The profits of a machine are made the same way as the profits of a theatre seat or a plane seat – it depends on occupancy and on the time it's used. You can charge a dollar to play a machine, but if it's only used ten times a day, you only make $10. Our machines were constantly going – from morning to night. So the return was excellent.

Edge: And so you imported more?
DR: I became known as a very live customer in the US because most distributors had warehouses filled with used equipment they had no marketplace for. In those days, trade-ins were a very big part of any distributor's business – when an operator bought a game for around $700, two years later he would trade it in for just $50 or $100. And these trade-ins were just piled up in warehouses.

Edge: And the Japanese loved these old games?
DR: The air-gun games were in big supply and yet very popular in Japan. We were stripping the cabinets off the old machines, just keeping the mechanisms and creating new jungle environments from scratch.

The first Japanese arcades

Edge: So where were you putting these coin-ops?
DR: At this point, I was opening up arcades with

these shooting and hunting games throughout Japan, and we were fortunate.

Based on my initial Photorama experience, we worked out a very good relationship with various movie studios, primarily Toho and Shursheko, so they made their locations available to us.

Edge: How many arcades did you have?
DR: I don't know, but when I left there wasn't a city in Japan that didn't have one of our arcades.

Edge: Several Japanese game companies have told of run-ins with the Yakuza, the Japanese mafia. Was this ever a problem for you?
DR: It was probably less of a problem for us than it was for others. Actually, it was never a problem to us.

Edge: Really? Do you think you were left alone because you were American?
DR: Oh, definitely. Once, when we didn't know any better, we opened a Photorama booth in an area of Tokyo called Iraksho. What we didn't realize was that one has to pay their respects to the local… uh… call them what you will. I hesitate to think of a name.

But you're supposed to pay your respects and acknowledge that you are now doing this business in their, erm, domain. And we didn't. We failed to do this, just out of ignorance.

In this particular case, we didn't realize that this particular party was so sensitive to the issue. He sent some emissaries to tell us of his displeasure. And so we made an apology, and one of our Japanese managers explained to him that we were, of course, a foreign company and we were very sorry that we didn't know better.

Edge: Were you the only person in Japan operating coin-op games?
DR: I probably had the civilian marketplace to myself for about two years, but then other companies learned how we were importing and under what classification. They applied for similar licenses and started to import games and became competitors.

The two companies that were most involved were Taito and a company called Service Games – the Japanese name was Nihon Goraku Bussan.

Edge: And these became major competitors?
DR: Both companies had a fair-sized jukebox operation going, and Nihon Goraku Bussan had a factory that manufactured slot machines for military use. So they were powerful companies.

In the early '60s, I was friends with the principals of both Taito and Nihon Goraku Bussan. And in 1964 going into 1965, the principals of Nihon Goraku Bussan and I had discussions about merging. They were by far the larger company, and Sega was their brand name.

Edge: So Nihon Goraku was the original Sega?
DR: It was Sega in the sense that Sega was its brand name. But we had decided to merge, and in trying to establish the name of the company, we decided Sega was the best-known name, and we took Enterprises from Rosen Enterprises. So our new company became known as Sega Enterprises Ltd, and I became CEO/President after the merger.

Sega's first coin-ops

Edge: When did Sega start making its own games?
DR: By 1961 we noticed that there really wasn't anything new about the games we were importing. There were cosmetic changes – the target or the layout would be different – but basically the games were all the same.

The game business back in the US was going further into the doldrums. So we decided that to survive in Japan, we should think of developing some
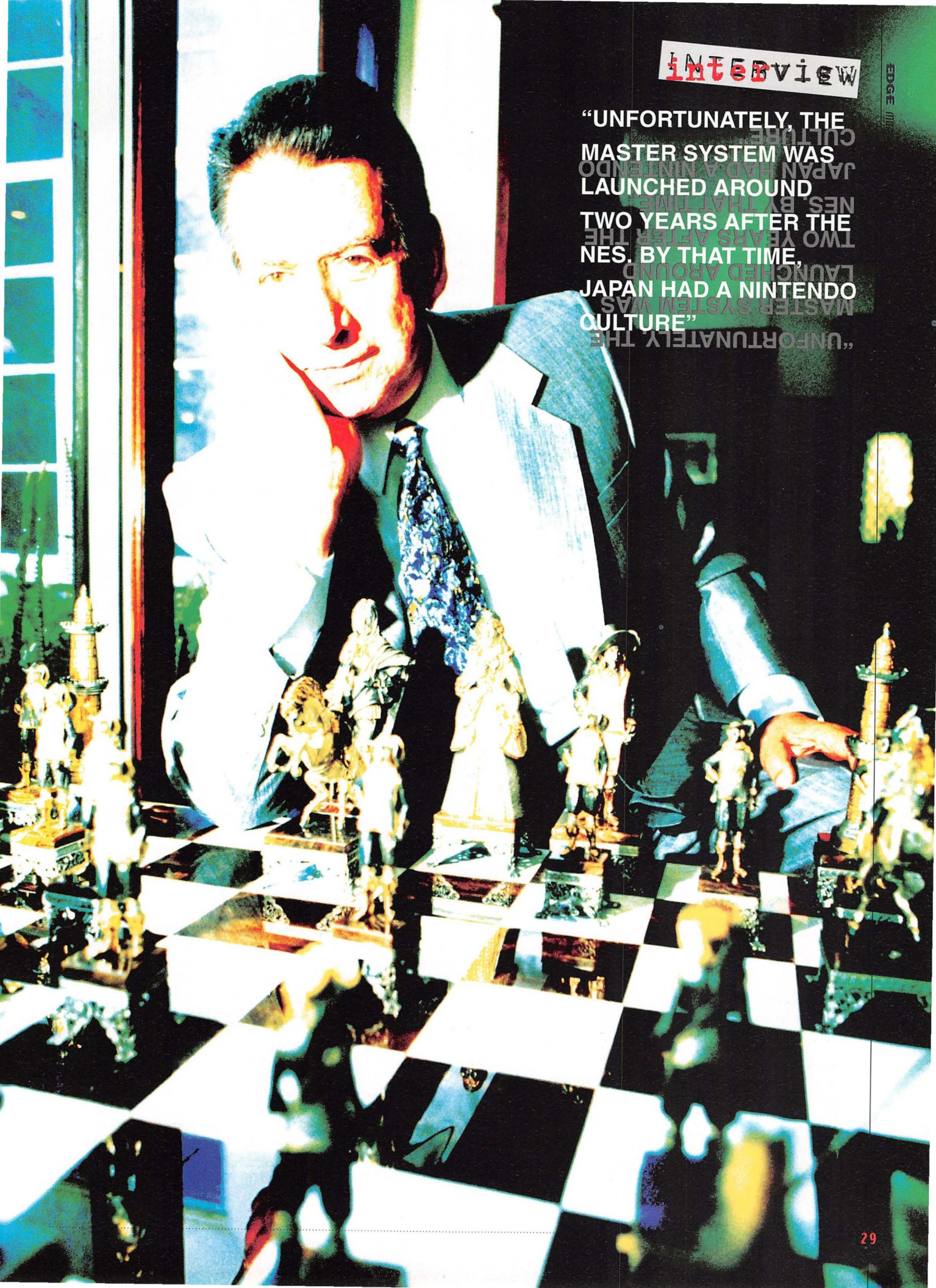
"UNFORTUNATELY, THE MASTER SYSTEM WAS LAUNCHED AROUND TWO YEARS AFTER THE NES. BY THAT TIME, JAPAN HAD A NINTENDO CULTURE"

Continued

new equipment of our own.

Sega Enterprises had the factory and the engineers, from Nihon Goraku Bussan. I had engineers too, of course, and I had some game ideas. We decided to seize the opportunity.

Edge: So what was the first true 'Sega' game?

DR: In 1966, we produced our first game called *The Periscope*. Old-timers in the industry will tell you that *The Periscope* was a turning point for coin-ops. It was a simple game. You stood at one end and shot at cutout ships running on a chain through a periscope.

Edge: Kind of like ducks on a shooting gallery?

DR: Something like that. The aiming device looked like a real periscope and the player had to release torpedoes in time to hit the ships. It sounds simple today, but at the time it was somewhat revolutionary.

It was so successful that US and European distributors flew to Japan to see what it was all about, and we exported it.

Edge: Was it just as expensive to export from Japan as it was to import into it?

DR: Because of the Japanese export tax, *The Periscope* was about twice as expensive as any conventional US piece. Instead of $695 or $795, it cost around $1,295. The operators complained, saying, 'You know it's a great piece, but we really can't make money paying $1,295.' And we said, 'Put it on 25 cents per play, and you'll make money.'

That was the introduction of the 25-cent play in the US and Sega's start in the export business.

Edge: So what happened next?

DR: After *The Periscope*, we realized that we could design acceptable games, and we became very prolific – we probably designed and exported between eight to ten games a year.

For the first time, Chicago realized: one, that there was somebody outside of Chicago that could produce games; and two, that there was still a good industry out there if one really produced games that could attract player attention.

Edge: Did the Chicago companies fight back?

DR: The game that broke the camel's back, so to speak, was a game we built in the late 1960s called *Jet Rocket*. Word got out about this game.

Every game Sega Enterprises introduced was really novel, but *Jet Rocket* introduced a lot of new elements, different types of sound, and different special effects. While we were designing it, we obviously showed prototypes to various people and sent out prototypes for testing. This was going to be an expensive piece.

But unbeknownst to us, the three main Chicago manufacturers decided to knock off this game and each one was racing to be first. Consequently, there was an over supply of *Jet Rocket*, and for a while we stopped exporting games.

Edge: At what point did Sega get involved with actual videogames, as opposed to coin-operated electro-mechanical games?

DR: Sega was involved in videogames very shortly after they were invented. Certainly we were importing games like *Pong* from day one.

We started producing our own videogames shortly thereafter.

Edge: After having enjoyed so much success in Japanese arcades, why was Sega's first home videogame system – the Master System – unable to get a foothold in Japan?

DR: Unfortunately, the Master System was launched around two years after Nintendo's NES. By that time Japan had a Nintendo culture, and it was difficult to launch a similar technology.

Edge: But you made up for this slow start with the launch of the Mega Drive?

DR: Yes, we were first with the Mega Drive. And that's what helped us recapture the market.

Edge: But the Saturn hasn't done as well as people had hoped, obviously…

DR: Saturn is very successful in Japan.

Basically, Saturn has done remarkably well considering the forces against it. There's no question that Sony is a very viable competitor. And there's also

no question that a lot of thirdparties have jumped on the Sony bandwagon.

In spite of this, however, Sega has held its own in Japan very well. To the best of my knowledge and based on the numbers I receive, it was still a 50/50 market in Japan, prior to the launch of Nintendo 64. That is quite an achievement, I think. It says quite a bit about Saturn.

Edge: What about in the US?

DR: By most reports, Sony has outsold Sega in the US, but several factors are involved. First, they were priced less than us to begin with – and the market is unquestionably price-sensitive. Second, Sony was fortunate to have a lot of software when they introduced their system. We obviously didn't have quite as much.

Edge: Many Sega followers are hoping that *Nights* can do for Saturn what *Sonic the Hedgehog* did for Mega Drive. What do you think of the game?

DR: I think it's a very impressive game.

Sega has tremendous engineering and technology capability. Basically, due to the coin-op business we have the ability to translate and transpose our engineering know-how into consumer product.

Certainly, I would say Sega's strength is its engineering R&D capability, which comes out of the coin-operated machine business. Sometimes we become overly sophisticated and think anybody can understand the operating system and thereby program and make great software for it. But that rectifies itself in time.

Edge: So you have long-term faith in Saturn?

DR: I think that this bout is far from over.

A lot will depend on what happens this holiday season, and a lot of what happens this holiday season is going to depend on the software. Certainly, the two 32bit systems are not dissimilar enough to sell on the virtue of the hardware.

Customers buy based on the games they've played and how much they enjoy them. So we hope that a lot of titles that we have coming out will put us back on top.

Hunger, pleasure, pain, loneliness, sex drive...

A day in a-Life

creatures™

Out now for Win'95
RRP. £34.99
Website:
http://www.cyberlife.co.uk

CyberLife®

MILLENNIUM INTERACTIVE

WARNER INTERACTIVE

Mario Kart 64

マリオカート
MARIO KART 64™

**Hot on the heels of Nintendo's premier 64bit meisterwork,
Mario returns – but this time with wheels.** Shigeru Miyamoto's
third N64 title is a tuned-up sequel to one of the most played games in history

LAP 1/3   **TIME 00'29"44**

5th

80 100
60
40
20
0 **Km/h**

Nintendo has purposefully kept *MK64*'s tracks simple, in keeping with the cartoon-esque nature of Mario's world. But there's still room for
traditional racing game incidentals such as an in-game video monitor, which appears on the side of this tunnel. Karting never looked so good

Format:	Nintendo 64
Publisher:	Nintendo
Developer:	In-house
Release:	December
Origin:	Japan

T he prospect of being stranded on a desert island with no food or water might not be so harrowing if you could take a Miyamoto game with you. Any example might suffice, but most gamers would be happiest with their predicament were the example *Super Mario Kart* on Nintendo's creaking SNES hardware. The sugar-coated racing game captured the imaginations of over 3.5 million people worldwide and further cemented designer Shigeru Miyamoto's enviable reputation as the Mozart of console gaming.

The imminent release of *Mario Kart 64* will be music to the ears of every one of those familiar with the 16bit original. Nintendo has wisely chosen to release the 64bit follow-up as soon after the release of *Super Mario 64* and *PilotWings 64* as possible, emphasising the superior quality of its SNES back catalogue, which is to the N64 what Sega's arcade division has been to the tenacious Saturn.

What made the original *Super Mario Kart* such a fine game was its balance of play,

Some parts of the game actually look as if they're torn from *Super Mario 64* – Koopa's Castle (above centre), in particular. Power-ups, which were collected by running over floor tiles in the original, now appear as animated, multi-coloured cubes (top right). Kong avoids a Nintendo bus (top left)

its fascinating and varied track designs and the 'different but equal' characteristics of its drivers, which all added up to one of the most compulsive head-to-head gaming environments ever.

Notable modifications amount to new drivers and power-ups, all-new courses and a fourplayer mode

The recent *Mario* and *PilotWings* updates have both featured significant redesign and innovation – particularly in *Mario*'s case – but *MK64* is set to be the most instantly recognisable of the three.

Notable modifications amount to new drivers and power-ups, all-new contoured courses and a very welcome four-way split-screen mode.

The full character line-up comprises Mario, Luigi, Peach, Kinopio (previously 'Toad' in the west), Yoshi, Donkey Kong, Wario and Koopa (aka 'Bowser'). It's not entirely surprising that such a minor character as Nokonoko (aka 'Koopa') has been dropped in favour of the more heavyweight Wario; the cast now features five characters that have all starred in their own games (*Super Mario Bros.*, *Yoshi's Island*, *Wario's Woods* and *Donkey Kong Country*).
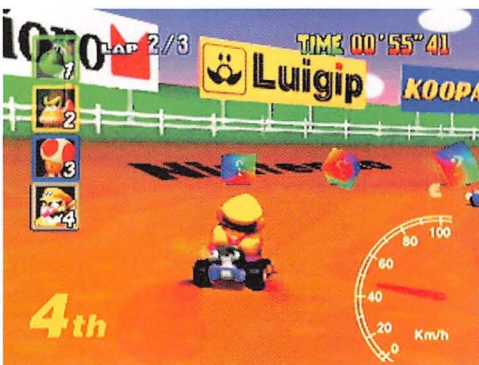
Nintendo's graphic artists have taken familiar brand names and twisted them (left). The dreaded Thwomps return (above centre)

Continued

The multiplayer modes are where the four-controller N64 hardware will come into its own. Even with four racing, game speed is still swift
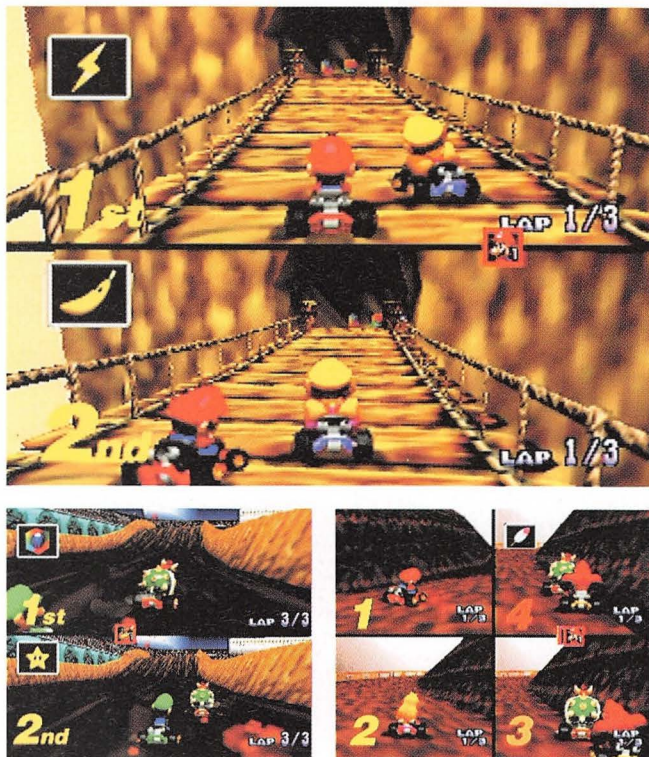
MK64 will feature 20 courses in total – 16 for Grand Prix mode and four for Battle – with the Grand Prix divided into the Kinoko (Mushroom) Cup, Flower Cup, Star Cup and Special Cup, with XX courses assigned to each. All now undulate to provide plenty of jumps, and feature short cuts to exploit, as well as other incidental vehicles to avoid, such as speeding buses and trains.

Bananas and turtle shells will still feature heavily as offensive devices during races, as will new power-ups that allow multiple attacks (carpet-bombing the track with bananas, for example) and a 'reversal' item that allows the player to

All tracks now undulate to provide plenty of jumps, and feature short cuts to exploit

switch the order of the pack, moving from last to first place.

Night stages should provide some interesting challenges, as players negotiate the courses in semi-darkness, using only their headlights to guide them.

Fog will also feature extensively in some of the less immediately visually stimulating levels (such as the Canyon stage), requiring a thorough knowledge of the track.

Perhaps the single, most obvious innovation can be seen in the new

fourplayer split-screen mode. For twoplayer matches, the screen splits horizontally in two, and three plus one blank view for three players. Detail levels appear to suffer slightly in this mode, however, and pop-up is likely to rear its less than attractive head.

Nintendo has paid particular

The original game had no speedometer – the 64bit update adopts an analogue-style affair

PlayStation owners familiar with the *Motor Toon GP* games will draw parallels between them and *MK64*

The game features attention to detail typical of Nintendo – note the 'dizzy' stars
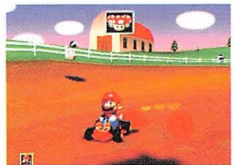
Mario's arch-enemy, Wario, passes a field full of comedy cows (above). The character sprites are very detailed (left)

attention to ensuring that the game's graphics remain faithful in spririt to the original. Though the levels themselves are obviously made up of textured polygons (with many rather simplistic trackside details), though, the characters themselves are prerendered sprites, produced *Donkey Kong Country*-style, presumably introduced to maintain a high frame rate.

Despite the obvious screen-resolution advantages, visually Nintendo's game doesn't look as extravagant as *Motor Toon GP2* on the PlayStation (and Sony's effort uses realtime polygons in generating its vehicles). But it's not visual content that will sell *MK64*, of course, it's gameplay. And, if the 64bit incarnation is able to recreate the subtle nuances apparent in the original's playability – most notably sublime handling and totally devious CPU-controlled opponents – and successfully layer it with a fourplayer capacity that proves at least as workable as the original's multiplayer option, this could be the title to move
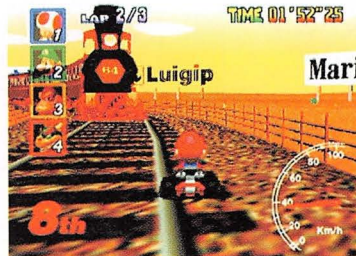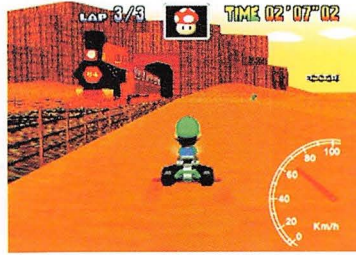
The original's track hazards amounted to little beyond water and pipes; *MK64* goes overboard with a steam train

***Mario Kart 64*'s front-end details are typically Nintendo – twee, gaudy, cute and slick**

the goalposts of the racing game genre, in the same way its predecessor did.

MK64 is certain to be one of the biggest selling games in Japan this Christmas, perhaps being overshadowed only by the imminent RPG, *Final Fantasy VII*, from recent PlayStation devotees Square Soft.

One thing is certain: N64 joypads will sell more than any other gaming accessory this year.

E

Donkey Kong's stages are packed with verdant palms and muddy tracks. The new multiple power-up option allows traditional collectables to be duplicated (above)

J-League Perfect Striker

**The N64's software line-up may feature sequels rather prominently, but
a follow-up to the best 16bit football title is one
revamp that few sports game fans will grumble at**

J-League's smoothness and pace should negate any fears over its rather '32bit' graphics. Its camera system allows the action to be viewed from a TV-like position (top right) or from a distinctly player's-eye angle (far right). The game's replay mode (right) is one of myriad options Konami has refined

In the 16bit console football game market, Konami's *International Superstar Soccer Deluxe* was without equal, its playability and comprehensivity of options pushing it far beyond the likes of *Sensible Soccer* and EA's *FIFA* series.

Now its creators are set to grace the N64 with their design talents in *J-League Perfect Striker* (likely to be renamed using a variant of the *Superstar* monicker when it reaches the west), which takes the original's most lauded aspects and builds a comprehensive 3D environment around them.

The game's stadium and players are, naturally, polygon models, viewed using a customisable camera whose height and distance from the action can be selected from one of three settings.

Though these screenshots look uncomfortably 32bit, Konami promises that *J-League*'s level of detail will be high – the night match mode, for example,

will see the players' shadows elongated, while the pitch itself will be surrounded by advertising hordings from the real world and various weather conditions, such as rain, will affect both the visual and playing aspects of the game.

Playability will obviously benefit from the N64 joypad's analogue stick, which should afford an unprecedented level of control over shooting and passing.

As well as covering many of its precursor options – including man-to-man marking, an extensive range of preset formations plus the opportunity to create custom variants – this 64bit version adds extra touches such as the election of specific players for throw-ins, corners and penalty kicks.

With allowance for up to fourplayer simultaneous play and extensive replay facilities, *J-League* could represent the beginning of a top-notch library of 64bit sports titles on Nintendo's software-starved machine.

Format:	Nintendo 64
Publisher:	Konami
Developer:	In-house
Release:	December (Jap)
Origin:	Japan

Ganbare Goemon 5

One of Konami's classic heroes refuses
to disappear with the SFC –
a move that seems to suit Nintendo no end

This scene (above) from the cockpit of mecha-Goemon, a mediaeval wood-and-lacquer mobile suit, somehow sums up the series' flavour

Ganbare Goemon means literally 'Go for it, Goemon'. As you should know by now

O ff the top of your head, how many times have you been threatened by geishas with piping mugs of sake? In short, how many Goemon games have you played?

Although it borrows its mechanics from *Mario 64* – analogue pad control of a character with freedom of movement in a true 3D environment – this is only one side of *Goemon 5*'s appeal. As with all previous outings, the action-RPG format is merely a framework in which different playing styles and a compendium of bonus games can be accommodated: controlling a giant robot mecha-Goemon, for instance, piloting its movement and weapon systems from a cockpit perspective, or taking part in an

Extreme Sports type of 3D racer which Konami has promised as a sub-game…

Moreover, the choice to play as either Goemon or his differently attributed sidekicks in any particular section introduces a modest element of tactics into the proceedings. Returning to the more RPG-like structure of *Mystical Ninja*, Goemon's quest carves an eventful route across mediaeval Nippon in which conversations with its colourful characters (answered by multiple choice) will determine the direction of the scenario.

With the 64bit credentials of Lincoln's occidental Dream Team still largely untested, it's reassuring to see a stalwart Japanese powerhouse bringing its talents to bear on the N64. **E**

Format:	Nintendo 64
Publisher:	Konami
Developer:	In-house
Release:	Summer 1997
Origin:	Japan

Moody stares from Sasuke, Goemon's dagger-throwing chum (left). Purple-haired Yae will also make a comeback

Metal Gear

If it weren't for moments of thoughtfulness, Konami's warehouse rave might play just like a Bruce Willis action movie...

FA-MAS
ファマス。連射、フルオート可能。
レーザーサイト装備。

LIFE   WEAPON

'Machine pistol, anti-personnel mines, sniper rifle, automatic rifle, strange blobby thing... yes, I think I've remembered everything.'

The name may not be familiar to occidental players, but *Metal Gear* has a history: it shares the title and scenario of a very popular Japanese game which appeared on the MSX2, back in 1987. The success provoked a sequel but it's still puzzling to think that now, ten years later, Konami should consider revisiting an MSX title on the PlayStation. Nevertheless, with the new version promising novel gameplay, CGI story scenes and the distinction of character designs provided by renowned manga artist Kojima, it's just as likely to succeed with Japanese audiences in '97.

Twenty-first century Alaska is the surprising host to a scene of international interest when a warehouse used for the storage of decommissioned nuclear weapons awaiting disposal is seized by terrorists. When an ultimatum is

delivered to the US Government the occupation is revealed as the work of FOXHOUND, once a military unit specialising in hi-tech weaponry, now a renegade outfit.

You assume the role of the unfortunately monickered hero Solid Snake, an ex-member of the FOXHOUND unit who agrees to help fight the terrorists in a solo raid on the warehouse. You know their tactics inside out, naturally, and have a personal score to settle with their leader, Liquid Sanke, a man you once counted as your friend.

And that's where the game starts, although it seems you break into the nuclear munitions deposit packing little more than a handgun at first. Heavier firepower and explosives will only make themselves available in due course.

Your main enemies for the majority

The appearance of prerendered FMV suggests a typically intrusive narrative

Though the game's viewpoint may remind casual observers of Gremlin's *Loaded*, Konami's title is far more involved than merely a balls-on-the-table shoot 'em up
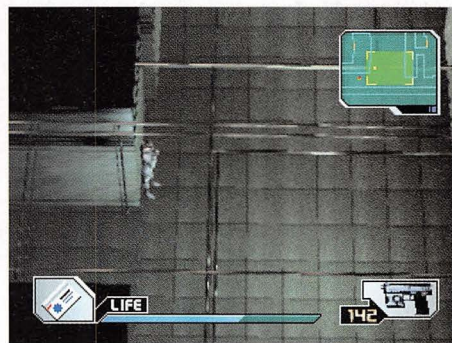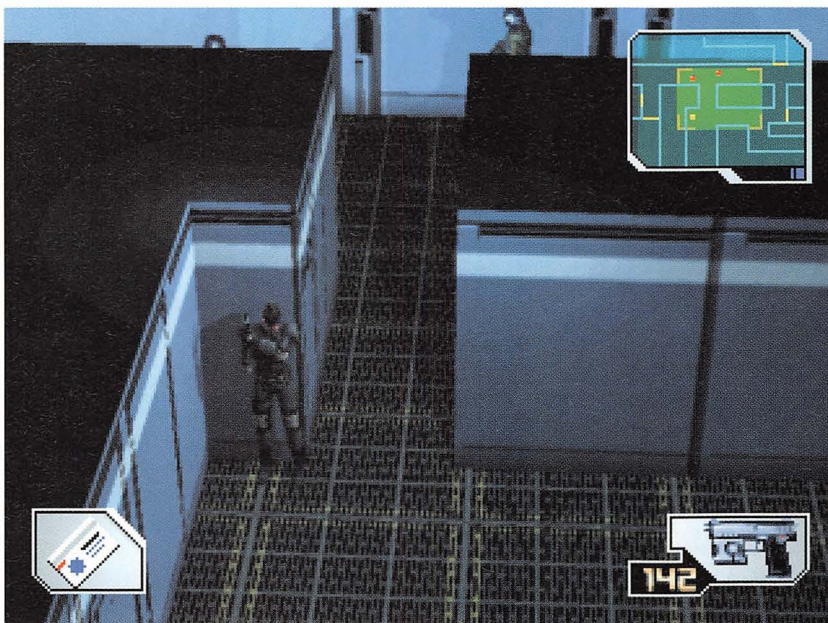
The detail level evident in these shots betrays the gaming environment's realtime 3D nature. Whether it'll be able to generate *Resident Evil*'s level of atmosphere remains to be seen

will be patrolling terrorists, guard dogs and security cameras, and, until you've gathered bigger weapons and body armour, your best tactic is to play safe and use cover, moving between hiding places and picking off lone targets.

Unfortunately, FOXHOUND has rigged

While a gun has its uses, your secondary goal is to seek and employ tools, passcards and security passes

the entire warehouse. So, while a gun with a full clip has its uses, your secondary goal is to seek and employ tools, passcards and security devices. For instance, one of the first gadgets up for grabs is a pair of IR goggles: without this, you won't be able to detect the trigger

beams that criss-cross some corridors. Information-gathering is also vital to your survival, and by rescuing hostages or intercepting radio messages you'll be able to learn the location of helpful objects or be warned of concealed booby-traps.

The game is presently in an early form, and although the very nature of the warehouse and its purpose determines a utilitarian appearance, a few more details should probably be expected to work their way into the 3D environment before completion.

Metal Gear already sounds like a remarkably promising action adventure, and although its current graphics look basic, the design ideas and challenging game mechanics behind them are set to form the crux of its appeal. **E**

Intercepting enemies' communications will form a significant part of the mission, as will negotiating the environment using stealth tactics. The surfeit of Japanese content will make a UK release unlikely until late 1997

Time CRISIS

Namco's undying commitment to the PlayStation sees a conversion of its *Virtua Cop*-beating coin-op wend its way to Sony's machine, along with an innovative lightgun peripheral

In most other lightgun games, reloading is effected by pointing your weapon away from the screen (or, as some sneakier players are wont to do, putting your finger over the gun's light cell). *Time Crisis*, however, reloads ammunition automatically when you manoeuvre into a hiding position

Certain situations find the player enclosed in tighter spaces than those in *V-Cop* et al

Debuting on the arcade scene about a year ago, Namco's *Time Crisis* muscled in on that most limited of genres, the gun game, sitting in a territory dominated by Sega with its *Virtua Cop* series.

In an effort to distinguish it from such critically acclaimed company, Namco incorporated a pedal system in its game, which players depressed during play to hide from the enemy, behind walls and cartons and the like. This hide-and-shoot concept added a fresh angle to the occasionally tiresome proceedings of gun games, making its stablemates look almost half-baked by comparison.

Unlike games such as *V-Cop 2*, *Time Crisis* places the player on foot for its

entirety, creating encounters in cramped stairwells and other close-quarters environments, while enemy-intelligence routines appear to be more advanced than those of Sega's games, ensuring that the bad guys don't merely line up as so much cannon fodder.

The PlayStation conversion, currently at an early stage of development, is looking promising, its polygonal enemies moving around fluidly and without a hint of slowdown, even in the most ambitiously constructed stages.

In order to bring the coin-op experience home faithfully, Namco has developed a PlayStation-specific lightgun called the GunCon (the name derived from NegCon, its previous PlayStation

Importantly, playing environments in *Time Crisis* are varied, including exterior and interior locations. The early conversion Edge has seen manages to handle action-packed scenes such as these (above) with apparent ease

The warehouse setting (above right) may be reminiscent of Sega's
V-Cop series, but Namco's shooter is a considerably different game

As in most games of this type, your route through the game is
predetermined. Varied camera work (above right) spices things up

Namco's GunCon,
which will be released
in Japan at the same
time as *Gun Bullet*

peripheral). Instead of creating a pedal controller, too, however, the lightgun has been designed with an extra fire button on its side, which will be used in subsequent titles as a grenade-launch control and suchlike.

Unlike the coin-op's gun, however, the PlayStation version will not feature recoil, chiefly in order to keep the unit cost down.

The Guncon won't be released until Namco's conversion of *Gun Bullet* hits the PlayStation, incidentally, and in the meantime *Time Crisis* players will be forced to use a standard controller plugged in port two to effect hiding. (And

those planning to use Konami's lightgun instead of Namco's will be disappointed: the game will not recognise thirdparty hardware – a pity, if one source's report of Konami's hardware being more accurate is to believed).

Namco has plans to include at least two modes of play for PlayStation *Time Crisis*, including 'coin-op' and 'arranged' (the latter believed to include bonus stages), which will go some way toward allaying fears over the shallowness of the basic game's premise.

Time Crisis' hide-and-shoot concept adds a fresh angle to the occasionally tiresome proceedings
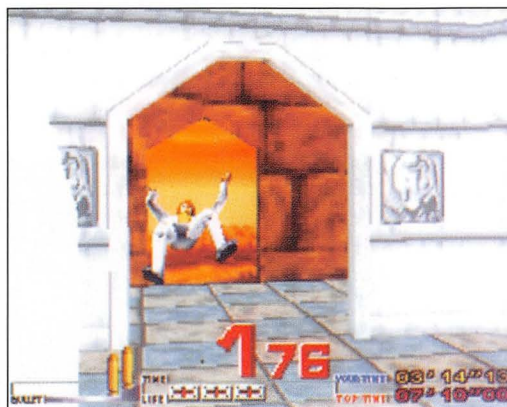
Time Crisis' storyline is routine stuff: you play a commando on a mission to rescue the daughter of the president
of the United States. At least the enemies' artificial intelligence routines lessen the game's predictability somewhat

Diablo

The seemingly ageless RPG genre has seen many advances over time, yet Blizzard's latest eschews true 3D graphics in favour of an isometric viewpoint. Extravagant detail and solid gameplay may be its trump cards, however...

Diablo's environments and themes will evoke memories of Amiga classic, *Faery Tale Adventure*. Its music and effects are similarly atmospheric

The detail evident in external scenes is nothing short of marvellous, while character depiction, animation and scrolling are smooth

T hough to many console owners the acronym RPG conjures up images of games packed with cute, big-eyed characters and magical kingdoms, western variants hold much closer semblance to the pencil-and-paper origins of the genre than the likes of Square Soft's *Final Fantasy* series.

Diablo is one example of the typically western approach to RPGs: ghosts, zombies, skeleton warriors, dungeons, witches and simple villagers make up its blatantly Middle Earth-inspired landscape, while its storyline is lifted straight out of Dungeons & Dragons, with the player taking on the role of either Warrior, Rogue or Sorcerer, battling through huge, complex dungeons to discover the ultimate evil responsible for the deaths of innocent inhabitants of the player's village. **Edge** has seen only one level of a dungeon so far, but, predictably, it's full of monsters to fight, weapons to pick up and potions to drink.

Where *Diablo* really differs from Japanese interpretations of RPG lore is in its realism. Its atmosphere, aided by a well-composed acoustic score, is sombre and eerie, while its SVGA graphics are convincingly grubby. Everything, in fact,

has a certain darkness and sense of foreboding about it – a stark contrast to the stylised brightness of *Zelda* et al.

Visually, *Diablo* is shaping up to be one of the PC's most beautiful RPGs, with sharp prerendered scenery viewed from an isometric perspective and intricate, realistic-looking scenery. Village

Combat is, in fact, relatively straightforward, especially if you elect to use a character not naturally inclined to use magic, such as the Warrior

Format: PC
Publisher: Zablac
Developer: Blizzard
Release: December
Origin: US
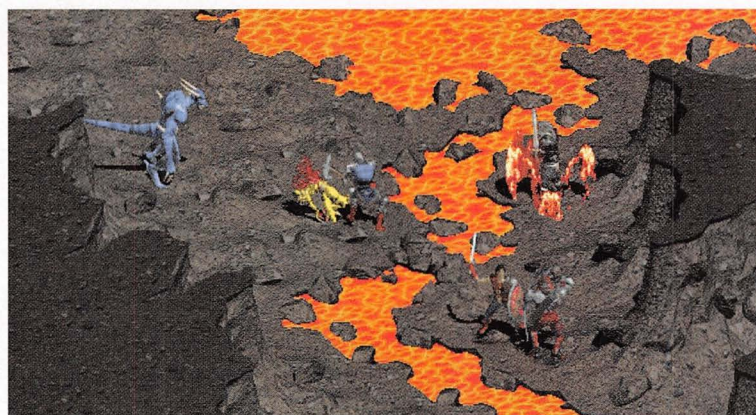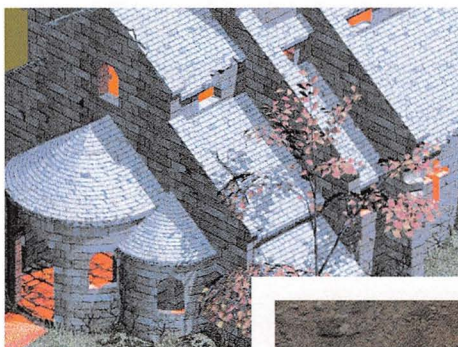
Every new game of *Diablo* spawns new level maps which should give it longevity unrivalled by other PC RPGs. Lava levels (right) look especially uninviting – it won't be easy. Incidentally, the game is also due to be released on the PlayStation and Saturn – under the EA label – and it will be interesting to see how its hi-res visuals will be compromised

buildings have thatched roofs and open fires which glow invitingly from within, intricate trees and shrubs line muddy paths, and the dungeons themselves are masses of cobbled passageways and gothic arches. There are also some effective lighting effects, especially in the dungeons where vision is limited.

Beyond startling graphics, *Diablo* offers a complex inventory screen and an even more complex list of character stats.

Swords take damage every time they're used, so they have to be repaired by blacksmiths at intervals

In the latter, the usual RPG attributes are present (strength, dexterity, vitality, etc), while, in an interesting development, many of the objects the player picks up have lifespans. A sword, for example, takes damage every time it's used, so it will have to be repaired by the blacksmith at intervals lest it be rendered as effective as a butter knife.

Magic also plays a big part in the game, controlled through a Mana energy system which must be monitored.

Despite the huge array of moves and options available, the whole game can be controlled with the mouse: the hero goes wherever the cursor is clicked, and a menu at the base of the screen accesses the inventory, character stats and an automap function.

If the excellent network mode of Blizzard's *Warcraft* is anything to go by, *Diablo*'s normal mode should be enhanced by a strong multiplayer element, giving it potential classic status as a computer RPG.

Detail runs right down to elaborate dungeon walls, which reinforce the game's Middle Earth-type influences

Spell effects vary from simple cures to magical attacks, such as this fire wall. Using magic depletes Mana energy, which can be recouped

Realms of the Haunting

Dark themes of apocalypse, RPG-tinged playability and a 3D engine created by programming legend Tony Crowther form the heady brew that is one of Gremlin's most ambitious games to date
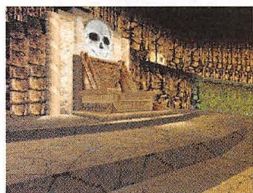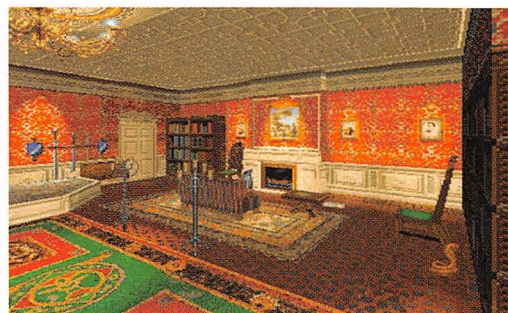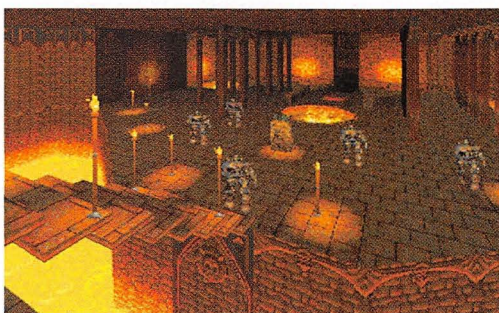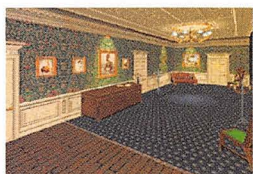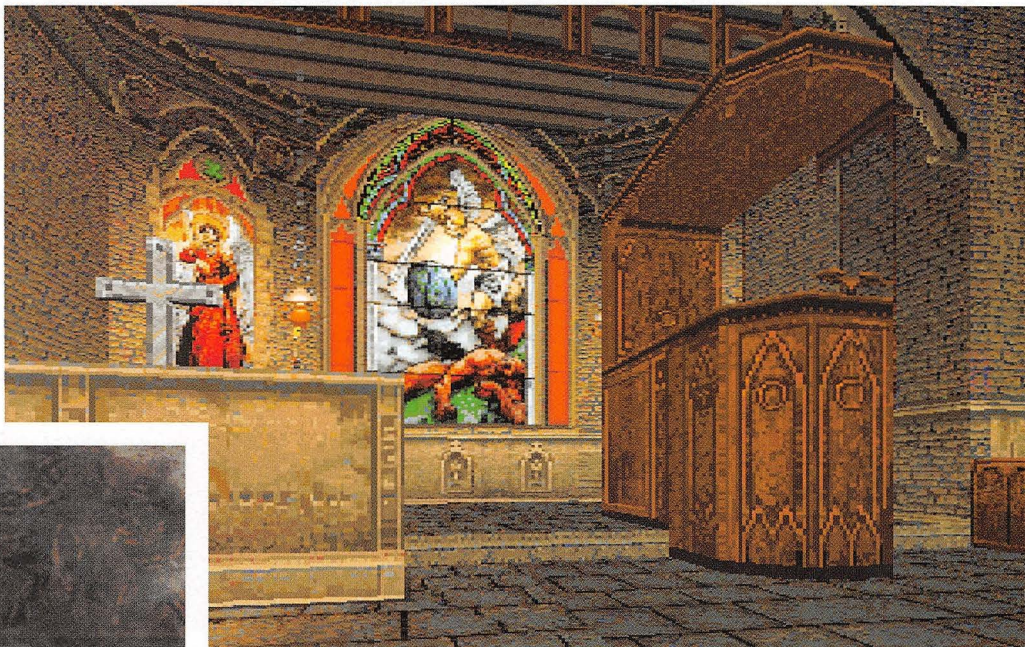
In hi-res, *ROTH*'s interiors are of *Quake* quality. The detail revealed in the mansion is nothing short of amazing but. regretably, the game uses sprites, and not polygons, in generating monsters. The puzzles will drive the game, though

T o that great mass of teenage PlayStation and Saturn owners whose videogaming lives began with 32bit consoles, the name Tony Crowther will not mean an awful lot. To those familiar with the computer-gaming scene from its boom period during the Eighties, however, it is has been synonymous with clever coding and addictive gameplay since games such as *Suicide Express* first appeared on the haggard old Commodore 64. With a 3D engine designed by that legend of 8bit

game coding, then, *Realms of the Haunting* already has a pedigree of sorts.

It also has a rather convoluted plot. A Canadian student and preacher's son, Adam Randall, visits Hellston in Cornwall to uncover the truth about his father's mysterious death. In a nod to pre-millennium angst and end-of-the-world prophesies, it turns out that the manor house where the old padre kicked the bucket is in fact some sort of portal gate

Format:	PC
Publisher:	Gremlin
Developer:	In-house
Release:	December
Origin:	UK

ROTH makes extensive use of FMV, created by Gremlin's dedicated in-house video unit

where forces of good and hellish evil are meeting for one final apocalyptic punch-up. Randall, of course, gets caught right in the middle of it.

Gameplay, like plot, is something of an amalgamation of themes. At first glance, *ROTH* looks like a standard firstperson-viewed shoot 'em up: the player wanders around each location picking up various weapons (of which there are 15 to discover, including shotguns, swords and magical crystals) and blowing away demons when they pop up uninvited. Gremlin claims that there are 20 different monsters in the game, each rendered in 3D Studio using motion-capture data.

On top of this, though, there is a significant RPG element to the game, with a wide array of puzzles to solve and a variety of objects to pick up and experiment with. Puzzles range from the standard 'how do you open the locked door?' variety to more lateral and perplexing affairs. For example, at one point in the game the player must move a series of switches to set a huge underground clock to a predetermined time before progression can be made. According to Gremlin, puzzles often require the player to analyse paintings, statues and objects closely – their inclusion is not purely resigned to

Each of the locations is a mass of detail, especially the haunted manor house where the action begins

decorative purposes.

Neither, for that matter, are *ROTH*'s FMV sections. Gremlin has made the wise decision to film all two hours of footage in front of a blue screen so that actors could be superimposed over in-game graphics. This means that when the player enters a new room and triggers a film scene, the game's extraordinary 3D visuals don't suddenly transform into a cheap South London film set. The scenes are also employed to give vital plot information – Gremlin promises that they haven't just been thrown in to fill up the CD.

And, predictably, the in-game graphics look very appealing. Each of the locations is a mass of detail, especially the haunted manor house where most of
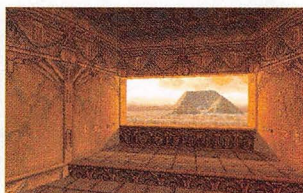
Much of the game's atmosphere comes from a superb use of realtime light-sourcing. The haunted mansion level is the game's centrepiece

Exterior sections are as detailed as interiors, and the puzzles promise to be especially well crafted, coming from the mind of Tony Crowther

the early action takes place. Furniture and paintings literally clutter each room, and every locale has a totally individual look, providing a convincing level of realism. Later stages, with names like Throne of Raysiel and Halls of Dopplegangis, are more fantastical and fictitious in design, but appear no less realistic in execution.

The engine itself – a souped-up version of the one that drove *Normality* – looks rather fast, and handles the level of graphical detail well – although there are, after all, no complex polygonal baddies for the engine to labour over, as every enemy is a scaleable sprite.

With a smattering of well-made FMV storytelling and an interesting storyline, *ROTH* aims to appeal to gamers looking for a cerebral challenge as well as visceral gratification. Although not as visually impressive as *Quake*, Gremlin's game moves swiftly and isn't trying to compete in the same area as id's contemporary classic.

Gremlin has high expectations for *ROTH*, and if all of the game's disparate elements can be brought together as effectively as they were in, say, *Resident Evil*, it may well turn out to make the impression hoped for. **E**
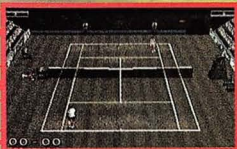
Extreme Assault

Blue Byte has kept this 3D combat sim quiet, and judging by appearances, its competition should be sweating.
But how will the PC cope with such apparently breathtaking graphics?
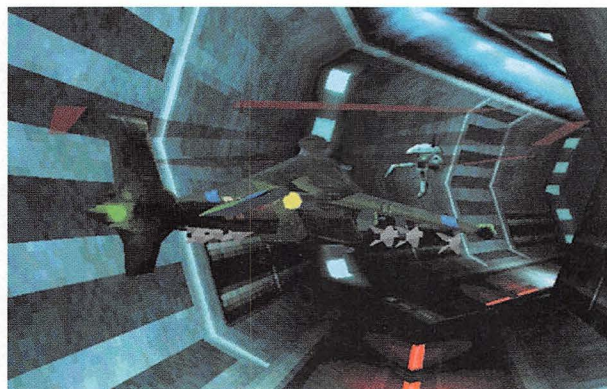
Action takes place in a variety of settings – the tunnel sections (above) being mindful of Neon's land-based shoot 'em up, *Tunnel B1*

B lue Byte first showed this air-combat title at ECTS in September, where it caused quite a stir. Then without a title (other than '3D Helicopter Shoot 'Em Up'), it stunned the PC fraternity with hi-res, hi-colour graphics and environments.

Exreme Assault, as it's now known, has developed into a game with much in common with other helicopter affairs, especially *Jungle* and *Urban Strike*, as you fly around rescuing scientists and destroying ground forces.

The 3D futuristic setting, however, allows for a more varied environment and all kinds of sci-fi weapons. Uniquely, the player won't be confined to the helicopter's cockpit, being able to venture out, *Quake*-style, into various buildings and complexes that litter the landscape. As with Bethesda's *Terminator: Future Shock*, there will also be a variety of ground-based vehicles, such as tanks, available to replace the helicopter.

The game will feature a variety of different battle zones, ranging from rolling hills, through industrial plants to cave systems and icy crevasses. The industrial plant levels look especially impressive, exhibiting the kind of visual flair more commonly associated with the likes of *Tunnel B1* on the PlayStation.

The evidence **Edge** has seen of *Extreme Assault* paints a very appealing picture, amd these these screenshots certainly reveal an amazingly high level of detail and special effects, such as transparencies, fogging and realtime lighting and shadows that can only be expected to run on a PC with the aid of a 3D accelerator card.

As one of the first titles to usher in the long-awaited revolution in PC graphics, *Extreme Assault* is poised to garner itself and its development team fervent attention. **E**
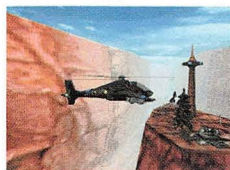
***Extreme*'s fogging effects, though perhaps predictable, are suitably impressive**

Format:	PC
Publisher:	Blue Byte
Developer:	In-house
Release:	May '97
Origin:	Germany
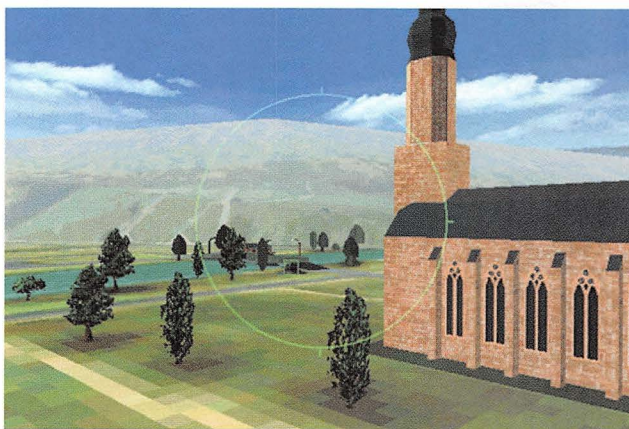
These graphics are some of the best Edge has seen in a PC title, but it will be a miracle if it runs smoothly on anything less than a P166

Interstate '76

Scorching 'muscle' cars, raging afros, **thrusting flares.** It can only be the '70s; it can only be Activision's new driving shoot 'em up, Interstate '76
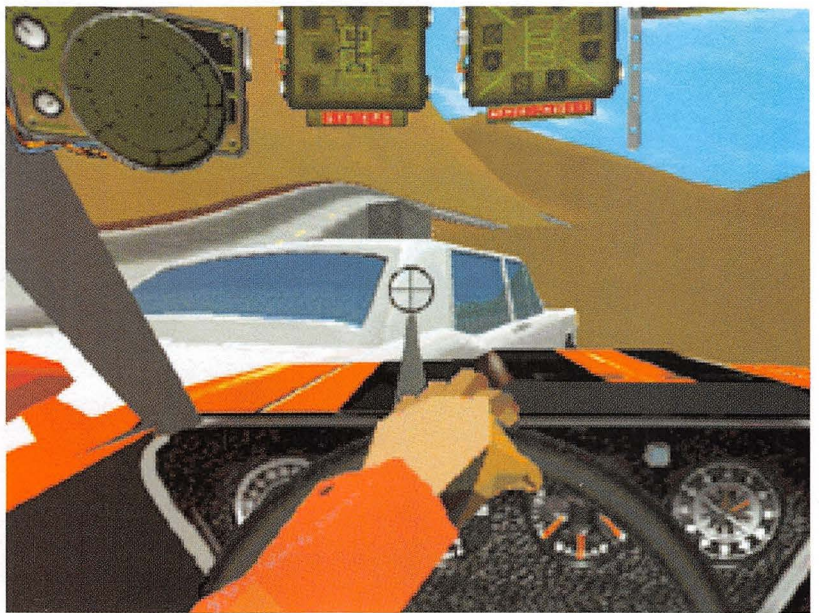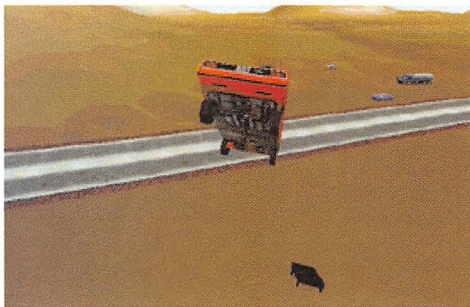
Interstate '76 is a driving shoot 'em up set in, yes, the '70s. Interestingly, the designers have gone for a retro look with the graphics – distinctive, flat-shaded polygons are out in force

Format:	PC CDROM
Publisher:	Activision
Developer:	In-house
Release:	TBA
Origin:	US
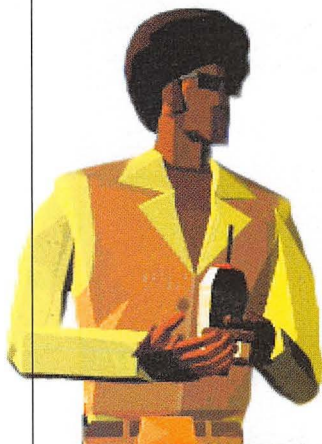
Given the videogame industry's obsession with progression, it is strange that Activision should develop a game with such intense '70s overtones. But Interstate '76 looks all the more interesting for its consciously tacky Starsky and Hutch styling.

The '70s presented here, though, is an alternative '70s where America has vast oil reserves beneath its southern badlands. When that oil is threatened by mercenaries, the player – taking on the role of a vigilante known only as, gulp, Groove Champion – drives into town to sort them out, Shaft style.

Beneath the afro, Interstate '76 is essentially a firstperson-viewed driving shoot 'em up. Instead of taking place on a circuit, each location is totally free – a move away from the linear nature of most car titles. Here, players have to go through a series of missions, chasing and destroying enemy vehicles. To that end, there is a selection of 20 weapons, including guns and flamethrowers.

The player can also choose from several customisable 'muscle' cars, each with realistic dynamics and independent suspension. The question, as always, is, how fast will the game actually run?

Hopefully, Interstate '76 can live up to its early promise. The gameplay looks interesting and the setting is novel (even if the retro look is out). As for 'Groove Champion', well, someone has obviously dug a little too deeply into their sad '70s comic collection…

E

The vehicles all look stylish and well drawn, as do the backgrounds. Players can drive anywhere on the map, and cars can jump and skid

The audio experience from our new Sound Blaster is so real that, when you find out what you've been missing, you'll certainly know what hit you.

With 3D Positional Audio, suddenly you can hear the metallic click of the shotgun's trigger over your left shoulder.

The Sound Blaster 32 also features Creative 3D Stereo Enhancement™, which makes your whole system sound fuller and more powerful so that sound hits you from every direction.

For still greater effect, adding memory to our SoundFont Technology lets you add new sounds. Or you can add up to 28 MB of memory to create your own sound library. And, of course, the Sound Blaster 32 is fully Plug-n-Play compatible and works with Microsoft® Windows®95, Windows 3.1 and MS-DOS®. Installation couldn't be quicker or easier.

To demonstrate Creative's leading involvement in the Internet, the Sound Blaster 32 comes with an exclusive range of INTERNETed™ software. Phone anywhere in the world over the Internet with WebPhone, surf the Web with Microsoft® Internet Explorer and play back high quality audio while you surf with the RealAudio Player.

To experience the ultimate reality in sound, the Sound Blaster 32 with the Blaster CD™ 8x and Sound Blaster Speakers™ is a killer of a combination - available at your nearest Creative Labs dealer at an SRP of £109 including VAT. But do it today because tomorrow may be too late.

Life is too short to be stuck with an ordinary sound card. Whether you're a serious gamer or a sound lover, the new Sound Blaster® 32™ PnP will knock you off your feet.

The Sound Blaster 32 is the affordable breakthrough that audio devotees like yourself have been waiting for. It delivers the realism of professional wave-table synthesis, which uses actual recordings of real sound effects and musical instruments. With 32-note polyphony, it can play up to 32 notes simultaneously, adding new detail and richness to your favourite games and software.

The Sound Blaster 32 is fully upgradeable to support 3D Positional Audio™ and SoundFont® Technology by adding standard SIMMS.

Visit our World Wide Web site 'Creative Zone' www.creativelabs.com or call our pre-sales hotline on 01245 265 265

Introducing Sound Blaster 32 PnP. Hear What You've Been Missing

	Play Audio CDs and Games	Record 16 bit audio	Wave-Table synthesis	32-Voice Synthesiser	128 Real Instrument Sounds	3D Positional Audio	3D Stereo Enhancement
Your Current Sound Card	●						
Sound Blaster 32 PnP	●	●	●	●	●	●	●

BLASTER 32 PnP
Enhance Your PC Audio with Next Generation Wave-Table Synthesis

CRE∧TIVE
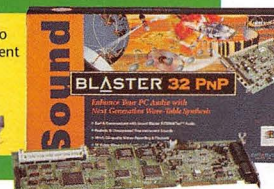
Powerboat (working title)

The recent surge in popularity for water-based racing games has **permeated the PC with *Powerboat*,** a promising title from burgeoning UK outfit, East Point Software

Powerboat is replete with special effects such as fog (above), many of which having only previously been seen on consoles. The big question, though, is how well will it run with them all turned on? With the water constructed out of polygons, you can bet you'll need a hefty PC to see them in SVGA

With the exception of *GP2*, PC racing games tend to suffer by comparison with titles such as *Ridge Racer Revolution*, with vehicles generally lacking the physics and realistic handling of their console cousins.

Powerboat could be a breath of fresh air. The chief concern in a racing game is that you forget the game concept and feel as if you're really racing, something achieved through the marriage of many factors: a convincing physics model, interesting track designs and a strong 3D engine. In choosing boats instead of cars, East Point has set itself a tall order; *Wave Race 64* impressed **Edge** with super-realistic water, and set the benchmark.

Powerboat appears to be going for the same effect – as you race through the scenic waterways of the world, you're at the mercy of the weather, your opponent's jet-wash and the ebb and flow of the river – which could so easily have been nothing more than a 'road' with a pallette change. Instead, the boats sit beneath the water line, pitching and rolling realistically as you corner to avoid other boats, barrels and logs.

With 16bit colour, a hi-res mode, multiple light sourcing, water distortion, shadows, transparent water and Gouraud shading, *Powerboat* could gain the PC much-needed credibility in the racing stakes next year.

E
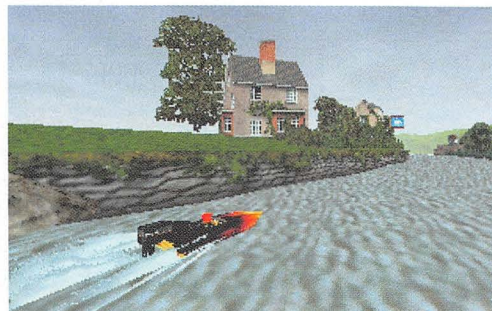
Though still in its early stages of development, *Powerboat* already features wakes running behind boats and a selection of courses with landscape straight out of rural England. Some race options will include marker buoys

Format:	PC
Publisher:	Interplay
Developer:	East Point
Release:	TBA
Origin:	UK

3Dfx

VS

FOR TOO LONG THE PC HAS BEEN SHACKLED BY ITS AGED ARCHITECTURE AND MULTIMEDIA SENSIBILITIES. SOMEWHERE IN THERE IS A GAMES MACHINE ITCHING TO GET OUT. DEDICATED 3D GRAPHICS CARDS MAY JUST SET IT FREE
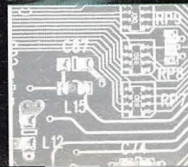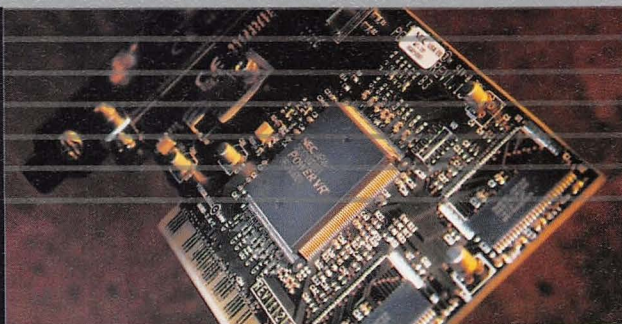
SPEARHEADING THE PC3D REVOLUTION

POWER**Vr**

Despite managing to dominate in almost every other area of modern society, the PC, as console owners take great pleasure in pointing out, is not particularly good at 3D graphics. Comparing *Sega Rally* with, say, *Screamer* provides enough evidence of this, and even the visually astounding *Quake* has to be run in Ceefax-esque 320x200 to get anywhere near a decent frame rate out of it. A poor state of affairs, indeed.

But those who are currently attacking the PC games market with a passion seem to be completely ignoring one key factor: history. When engineers designed the architecture for the IBM PC back in the late seventies, true 3D video games were more the preserve of science fiction writers than computer programmers. And yet, this is the same architecture that modern P200s are built around. Similarly, *Doom* couldn't have been further from Bill Gates' mind when he wrote his advanced BASIC language for the ancient Altair 'hobbyist' computer. Now, that language's distant relation, *Windows '95*, is the rulebook to which 3D games on the PC have to adhere. The simple fact is, the PC has a past in which, for a long time, polygon-per-second counts did not figure at all. The N64 – a console designed recently and exclusively with games in mind – doesn't. So how can games written for a machine rooted so stubbornly in the past hope to compete with those written for next generation consoles? The answer may just lie with 3D graphics accelerator cards.

Edge has been at the forefront of the technology behind these cards since the latter half of last year, when chipsets like S3's Virge, ATI's 3D Rage and Matrox's Mystique (perhaps the fastest and best of the 2D/3D cards) were announced. These are all essentially a small step up from the standard 2D video cards that have been available for the PC for a couple of years. They add a

Continued

few 3D effects like Alpha blending, fogging and transparency (see Glossary), but the amount of memory they have on offer for such effects is limited due to their facilities for extra 2D responsibilities.

Over the last 12 months an advanced generation of 3D accelerator technology has emerged. 3Dfx's Voodoo chipset and NEC/Video Logic's PowerVR PCX1 equivalent are designed to be attached to boards which simply slot in next to the user's current 2D card. In other words they are dedicated 3D solutions: while the video card does all the 2D chores, every byte of memory on these true 3D accelerators goes toward 3D effects, textures and throwing previously impossible amounts of polygons across the screen.

Two boards – Diamond's Monster3D and Orchid's Righteous3D – have already been built around the Voodoo chipset, and Video Logic has developed its own card – Apocalypse3D – to house PowerVR. In the next few months games written specifically to take advantage of the 3D card features will begin to filter into the shops. Offering better textures, smoother animation and 'arcade-style' graphics, they can't fail to capture the eye of the average game-obsessed consumer.

Or can they?

Success, no matter how deserved, is never guaranteed. Soundcards have now merged into a faceless sect of identical peripherals – will this happen

PlayStation *Wipeout 2097* looks good but the 3Dfx version is even more advanced

to 3D cards? And will the extra features offered in dedicated 3D solutions simply be ignored by consumers and developers? It may sound implausible, but it remains a very real possibility.

There are, of course, many good reasons to believe that graphics cards in general will become successful, probably even indispensable. Most obviously, the Pentium processor, working with just a decent 2D video card, is incapable of matching the 3D performance of consoles. This is partly down to the machine's ancient architecture, but the problem has been partially solved by the introduction of better motherboards which include PCI bus slots rather than the old ISA variety.

The main difficulty is that games players make up a small minority of PC users, so the hardware is still not being

geared specifically toward creating incredible 3D games. Yes, many PC users may well have *Doom* sitting on their hard drives but, in most cases, it will be sharing space with the things that are 'supposed' to be there: spreadsheets, databases, word processors, etc. Consequently, there is no geometry transfer engine, no twin video display processors, just a single Pentium chip and a video card doing all the work. All accelerator cards are an attempt to redress this balance and will no doubt collectively appeal to gamers alienated by the PC's lack of 3D power.

But that's not a good enough reason to believe that dedicated 3D cards are the future. The huge range of first-generation 2D/3D cards on sale at the moment may be enough to give undemanding consumers what they need. 2D capabilities, support for Direct3D features, why spend £200

more on yet another card to slot in beside it? Shiny Entertainment's Dave Perry has a rather unambiguous answer: 'Many PC gamers have been totally ripped off by some crappy video cards that are currently on sale. The surprising fact is that a really good machine can be crippled by a bad card. In our tests we've found some cards ten times slower than others, so you can effectively reduce a P166 to below a P90 if you run an intensely 3D game.'

This is exactly the sort of problem being addressed by high-end chipset developers. 3Dfx's Scott Sellers, for example, spent a lot of time trying to figure out what PC owners wanted: 'As we looked around at the entertainment market, studying the arcades, consoles and PCs, the first thing that really became apparent was that the frame rate of most PC games was terrible. While the arcade suppliers almost

> MANY GAMERS HAVE BEEN TOTALLY RIPPED OFF BY CRAPPY VIDEO CARD...
> A REALLY GOOD PC CAN BE TOTALLY CRIPPLED BY A BAD VIDEO CARD AND
> IN OUR TESTS WE'VE FOUND SOME CARDS TEN TIMES SLOWER THAN OTHERS

Dave Perry, Shiny Entertainment

F1, a big seller on the PlayStation, will be a valuable weapon for 3Dfx. Hopefully it will be bug-free, too...

A HISTORY OF PC GRAPHICS   CGA (1981-84)

For the past 15 years the PC has had a stormy relationship with videogame developers. Once upon a time it received nothing but text-based adventures and shoddy Amiga ports. Then, with the advent of VGA and later the CD-ROM drive, PC games began to find their own distinctive style.
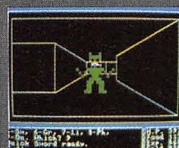
Ultima (Origin)
The first 3D game to grace the PC boasted coloured monsters and amazing vector graphics. Somehow, though, it managed to be impressive.

The Bard's Tale (EA)
Originally a great ST game, *The Bard's Tale* was the first full-colour RPG, complete with fake 3D (each screen was a bitmap).

Falcon (Microprose)
Falcon was first released as a CGA game, resplendent in only 320x200 pixels and just four gaudy colours – way behind the ST and Amiga.

Orchid's Righteous3D card uses 3Dfx Interactive's Voodoo chipset – a twin-chip set-up that uses a comfortable four megabytes of SDRAM. So far, 3Dfx has managed to gain the support of many developers and the results are spectacularly encouraging

always offer games at 60 frames per second, the best PC games were coming in at around 10 to 15. And, as any gamer knows, frame rate is arguably the most important aspect to an interactive, immersive gaming experience. We felt that by offering an incredibly fast rendering solution at an affordable price, we could bring PC gaming up to the arcade level.'

'Up to the arcade level' may sound like an empty promise – it has certainly proved an impossible target for many first-generation accelerator cards. But the Voodoo chipset used in PC cards is exactly the same one being employed in coin-ops manufactured by Williams and Interactive Light (although it will be used in parallel in some cases to give polygon rates of over one million per second). For 3Dfx at least, 'up to the arcade level' is a reality, not an ambition. It seems, along with

3Dfx's hardware was designed by a team comprising ex-SGI staff
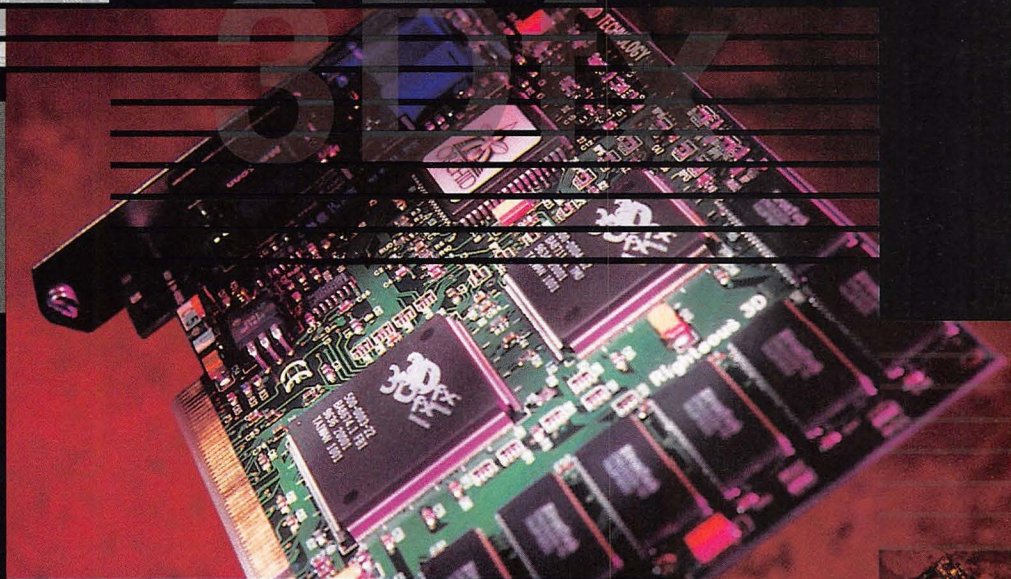
answering the primary concern of low frame rate, that the cream of the 3D cards are also seriously looking into ways of porting a full range of arcade visual effects to the PC. Ultimately, their success will depend on exactly what they can offer that Direct3D (see boxout) or the 2D/3D cards cannot.

The PowerVR
card from Videologic is perhaps most well known for the tie-up with Namco, and the PC version of *Rave Racer*. **Edge** played an early build back in February, and while the game is curiously no longer a launch title, the PowerVR card has finally shipped.

As with 3Dfx-based boards, Video Logic's Apocalypse is installed in addition to an existing SVGA card, and does not replace it – leaving all the 2D stuff to whatever SVGA card is present. In some ways this makes good financial sense: an add-on card is much easier for the user to stomach than a replacement, which somewhat implies that the user has shoddy hardware, and sales aren't won by insulting people's judgements. Videologic is very aware that gamers probably already have very good 2D cards, and the company is quite happy for users to keep them alongside its Power VR card.

Another very good sign is the simplicity of installing the card, which has no connections on its back-plate: all the user has to do is plug it into a spare PCI slot. Unlike previous cards there is no cable to connect to the existing 2D card either internally or externally – all

communication with the 2D card is handled across the PCI bus. It's a very neat solution and it's surprising no other company is using it, although to be fair it's only with the popularisation of Pentium PCs that a PCI bus has become standard. 3Dfx actually argues that it considered this approach but felt that shipping colour data over the PCI bus consumed too much bandwidth (around 18Mb/sec) and this was just to handle frame updates. PowerVR counter-argues by stating that the 2D controller deals with the frame rate, not the PCI Bus, so impact on PCI bandwidth remains constant. According to Trevor Wing at VideoLogic, PowerVR's impact on the PCI bandwidth is exactly the same as an AVI movie. It's an argument that is bound to rage until games utilising the cards are released, leaving users to decide what is best.

Whatever the case, the Apocalypse card is just as tidy as its installation method. The product has just one chip, the PCX1, containing the Image Synthesis Processor (ISP) and Texture Shading Processor (TSP), along with 4Mb of SDRAM. VideoLogic has avoided using a traditional z-buffer in favour of a system of hidden-surface removal calculated on-chip, giving the equivalent accuracy of a 32bit z-buffer. This system means that each pixel on the screen is textured once and once only, unlike normal 3D systems which draw objects in the distance first with closer ones being drawn later very likely to over-write previously textured pixels. Obviously visiting each pixel only once

saves time, something that has been previously demonstrated in software by *Doom's* engine, which worked on a similar principle, albeit not in true 3D.

This is great news for developers, meaning that the 4Mb of SDRAM is mainly for textures – none is wasted on a z-buffer, and because the card talks to the existing SVGA card over the PCI bus, no memory is used for a frame buffer. Even when upgraded to 4Mb, other cards still have to give some memory over to the z-buffer and invariably for multiple frame buffers too.

Windows '95 is now the PC format of choice, and Video Logic is not oblivious to this. A Direct3D driver is available, allowing the growing library of Direct3D games to run on the card – good news for both developers and consumers. Additionally the PowerSGL API is on hand, so programmers can use that at a high level to code games, or use PowerSGL Direct to throw polygons and textures from their existing 3D engine at the card.

To help consumer awareness, VideoLogic and NEC propose a three-tier certification programme to show just how PowerVR-compatible games are. At the lowest level there's Power VR Accelerated, which practically any Direct3D game qualifies as. Then there is Power VR Enhanced – which means the game uses all the Direct3D features.

EGA (1984–87)

Falcon (Microprose)
...but when rendered in EGA mode, which offered high resolutions (640x360) and 16 colours (from a range of 64) many monitors couldn't cope.

Driller (Incentive Software)
The EGA mode demonstrated its ability to fill polygons and create a solid gaming environment. It was, however, sluggish.

Monkey Island (LucasArts)
Monkey Island was one of the first games to take advantage of EGA's extended 16-colour capabilities to create a cartoon world.

Prince of Persia (Broderbund)
Although graphically simplistic, Jordan Mechner's masterly use of animation brought the PC into the action gaming realm.

CHECK
0:00.o

12

91 KPH THRUST 3D

LAP TIMES

Continued

Wipeout 2097 (left) benefits from the increased resolution of the 3Dfx card, but free-roaming 3D environments like the one seen in 3Dfx's Wizard's Tower demo (below) are even more impressive
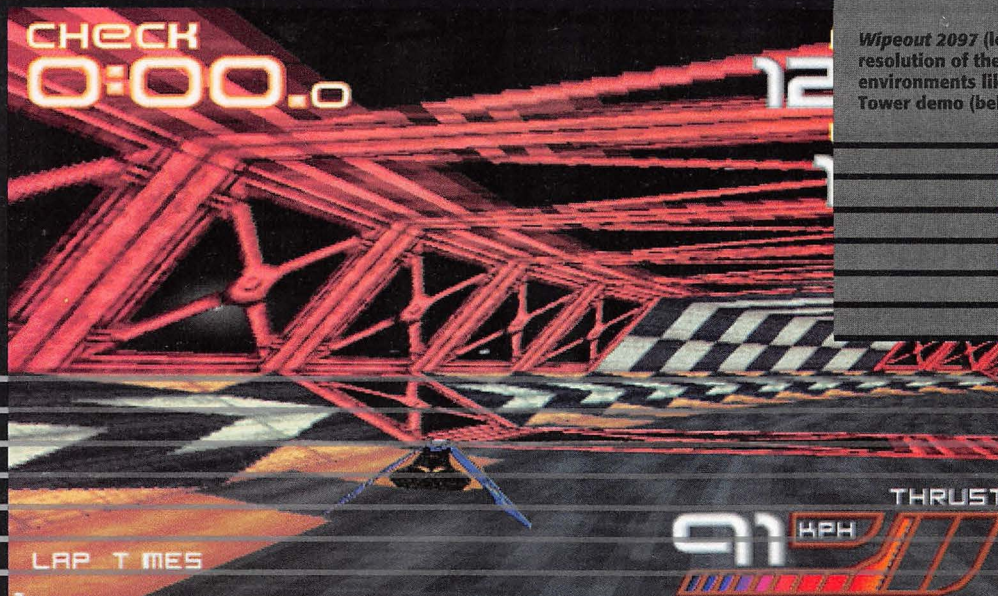
but also employs at least four advanced PowerVR features. Finally, PowerVR Extreme titles will be non-Direct3D and will use all the specialist credentials of PowerVR. **Edge** waits patiently to see which developers take the plunge.

Away from PowerVR's technical features, though, one advantage VideoLogic has over its competitors is its alliance with NEC — one of the ten largest companies in the world. While VideoLogic does all the R&D. NEC is producing and marketing PowerVR technology globally. Importantly, the mere involvement of NEC will give both the raw chipset and the Apocalypse3D card a huge boost in Japan. Tad Otsuki, general manager of research for Namco, has stated. 'We are confident

really impressive results. One area where it is already proving immensely popular is in its support for DOS games. While no-one will deny that, like it or not. *Win95* is the future of the PC, there are still a number of DOS games to wipe up before the transition is complete. 3Dfx seems happy to play with those developers who have not yet made the leap from DOS to *Win95*, and a quick visit to its website shows screenshots of a number of 3D-accelerated DOS games. Core's *Tomb Raider* being a prime example. 3Dfx claims that over 50% of PC games still in development are for DOS, and its attitude to supporting developers under

As one would expect from a card of this price, it offers perspective-correct texture mapping along with mip-mapping, anti-aliasing and a z-buffer. Additionally, fog, smoke and haze effects are included, completing a promising line-up of attributes. The boast is that the system provides arcade-level graphics.

The 'better than the PlayStation' claim, at least, seems to be more than mere hype. 'There are quite a few features we've been able to incorporate in the 3Dfx PC version of *F1* that we weren't able to put in the PlayStation original.' says Martin Chudley of Bizarre Creations. 'We've added more shading

Surprisingly, though, it's not technical merit that attracts so many game developers specifically to 3Dfx, it's ease of use. '3Dfx provides its developers with a low-level *Windows* API which is really easy to use and takes good advantage of the card.' points out Chudley. Andy Satterthwaite of Psygnosis. meanwhile, claims that his team had a 3Dfx demo of *Wipeout 2097* up and running in mere days.

This enthusiasm for simplicity is something the technology's designers

3DFX INTERACTIVE'S VOODOO GRAPHICS ACCELERATOR HAS BEEN WELCOMED BY A NUMBER OF DEVELOPERS, POSSIBLY BECAUSE IT HAS BEEN THE FIRST TRUE 3D ACCELERATOR THAT GIVES REALLY IMPRESSIVE RESULTS

the PowerVR technology provides the highest level of performance and functionality among 3D graphics chipsets currently available or under development. This performance, and the strength of NEC and VideoLogic, are the reasons Namco will be porting games to PowerVR' — a vital indication of Japanese acceptance.

3Dfx Interactive's Voodoo Graphics 3D graphics accelerator has been welcomed by a number of developers, possibly because it has been the first true 3D accelerator that gives

both DOS and *Win95* (Direct 3D) is laudable.

Like Videologic's PowerVR card, the 3Dfx-powered Orchid Righteous3D card doesn't replace the users' existing 2D card. Instead it is installed alongside it, and the monitor is plugged into the Orchid card, with another cable connecting the original SVGA card to the Orchid. It's a slightly messy affair, but at least the existing 2D card doesn't have to be consigned to the bin.

and lighting on the cars. for instance: the PlayStation wouldn't be able to produce highlights without superimposing more polygons. We've also got full Gouraud shading on the worlds, which would have dropped the frame rate on the PlayStation.' Other extras like a perspective skyplane have also been introduced, to give the game some collateral realism — all, apparently, without lowering that all-important framerate.
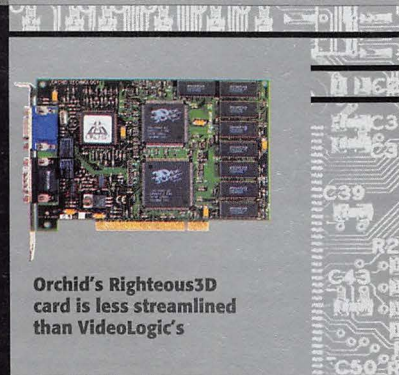
Orchid's Righteous3D card is less streamlined than VideoLogic's

VGA (1987 onwards)

Wolfenstein 3D (id)
A major leap for the PC was id's development of bitmap-scaling technology first seen in this 3D shoot 'em up. It was later re-engineered for *Doom*.

Wing Commander 2 (Origin)
Chris Roberts' space combat game was considered revolutionary at the time, with full 256-colour VGA.

Ultima Underworld 2 (Origin)
Beat *Doom* to the 3D crown, running in 256 colours, and allowing six degrees of freedom (the player could look up and down).
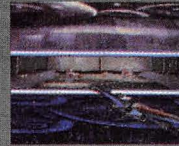
X-Wing (LucasArts)
One of the first games to require a 386 DX (a CPU with a maths co-processor). The DX chip revolutionised the PC's 3D and lasted for three years.
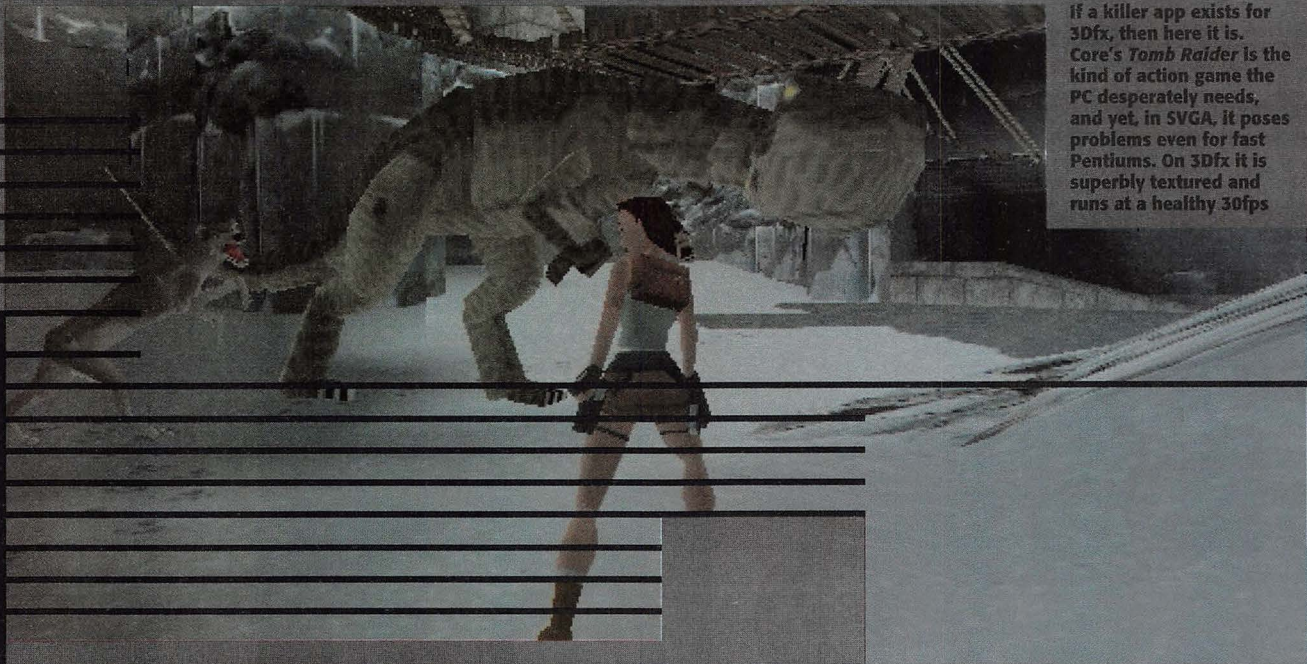
If a killer app exists for 3Dfx, then here it is. Core's *Tomb Raider* is the kind of action game the PC desperately needs, and yet, in SVGA, it poses problems even for fast Pentiums. On 3Dfx it is superbly textured and runs at a healthy 30fps

anticipated. 'We spent a lot of time before we put anything in silicon, talking to the game developers and asking what they wanted,' says Sellers. 'Developers like our chipset because we're not asking them to change the way they program 3D games. Other hardware vendors have opted to use rather esoteric technologies, like rendering quadratic patches or infinite planes. Unfortunately, the use of those technologies by the developers requires them to re-write and re-think the way they do games. Not a good thing!' So it's not only consumers that have to be won

over – 3D card sales will depend almost as much on developer enthusiasm.

But the flashy visual effects offered by various 3D accelerator technologies will count for nothing unless software companies release compatible titles. Fortunately, it seems industry support and enthusiasm for the chipsets is high. Core, for example, is currently working on a 3DFX version of *Tomb Raider* and Ken Lockley, one of the company's producers, is almost unguardedly positive: 'We decided to work with the card when Brian Bruning from 3Dfx visited us after Spring ECTS.

It was the first 3D accelerator we'd seen and was quite easy to get stuff running on – the card basically came with a C library of graphics functions, so it was just a case of replacing our software polygon routines with calls to the 3Dfx hardware. Now, the 3Dfx *Tomb Raider* looks totally cool and runs so fast that we've had to use a frame-rate limiter!'

Indeed, even when running on a relatively 'lowly' P100 fitted with Orchid's Righteous3D card. Core's *Tomb Raider* looks exceptionally good. In hi-res, characters are crisp and well defined, and the already impressive,

amazingly cavernous vaults are breathtaking. Most importantly, the demo **Edge** has seen was running at a pretty consistent 30fps, only grinding slightly when Lara ran into a huge room which required the hardware to build lots of complex geometry. It is evidence like this that will sell graphics cards, not the marketing hype that has surrounded accelerator technology from its questionable beginnings.

And the volume of such promising evidence is growing. Psygnosis has also announced its support for accelerator technology and

EVEN WHEN RUNNING A RELATIVELY LOWLY P100 FITTED WITH ORCHID'S RIGHTEOUS3D CARD, CORE'S TOMB RAIDER LOOKS EXCEPTIONALLY GOOD... THE ALREADY AMAZINGLY CAVERNOUS VAULTS ARE BREATHTAKING

Gremlin is also championing 3Dfx, first with its *Fatal Racing* port and now with *Hardcore 4x4* (left, above)

Alone In The Dark (Infogrames)
One of the first PC games to use polygons to construct its characters, which were mixed with pre-drawn backgrounds.

Doom (id Software)
Doom was, in some ways, a step back, as the in-game environment was not true 3D. But it started the hunger rumbling for faster 3D graphics.

Strike Commander (Origin)
One of the first 'wow' games to grace the PC, with fully textured planes and landscapes. But it still demanded too much from a 486DX2.

Ecstatica (Psygnosis)
Virtually unplayable in SVGA, Ecstatica changed the rules by using ellipsoids instead of polygons – a system that has never caught on in games since.

POWER VR

is converting several PlayStation titles to take advantage of leading graphics cards. *Wipeout 2097* producer Andy Satterwaite. like Lockley. is positive about the hardware his team has been working with: 'Apart from doubling the resolution from 320x240 on the PlayStation to 640x480. high-end 3D cards like 3Dfx allow the PC version of *2097* to have proper perspective-correct textures, so the texture warping visible on close inspection of the PlayStation version is a thing of the past. The amount of memory available on the cards means we can use fast z-buffering. bypassing many of the PlayStation's sorting problems. Basically. accelerator cards give us the opportunity to develop high-quality arcade titles on the PC. A title like *Wipeout 2097* pushes the PlayStation to the limits. so in order to better that version on the PC, you need a good accelerator card.' Like *Tomb Raider*. the 3Dfx-accelerated *Wipeout 2097* will run with effects like Gouraud Shading. z-buffering. perspective-correct texturing and bi-linear filtering on the PC with no noticeable slowdown. This will no doubt be pleasing to PC owners who have spent the last year regarding the PlayStation version with some envy.

Martin Chudley is similarly impressed with 3Dfx. claiming that the highly successful PlayStation title is now running at 640x480 resolution again without appreciable speed loss and with a textured-polygon-per-second count similar to the console version. Furthermore. chipset effects like filtered textures and perspective correction have also been exploited to increase realism and clarity. Given the fact that *F1* has already been touted as the most visually realistic racing sim. this is some claim.
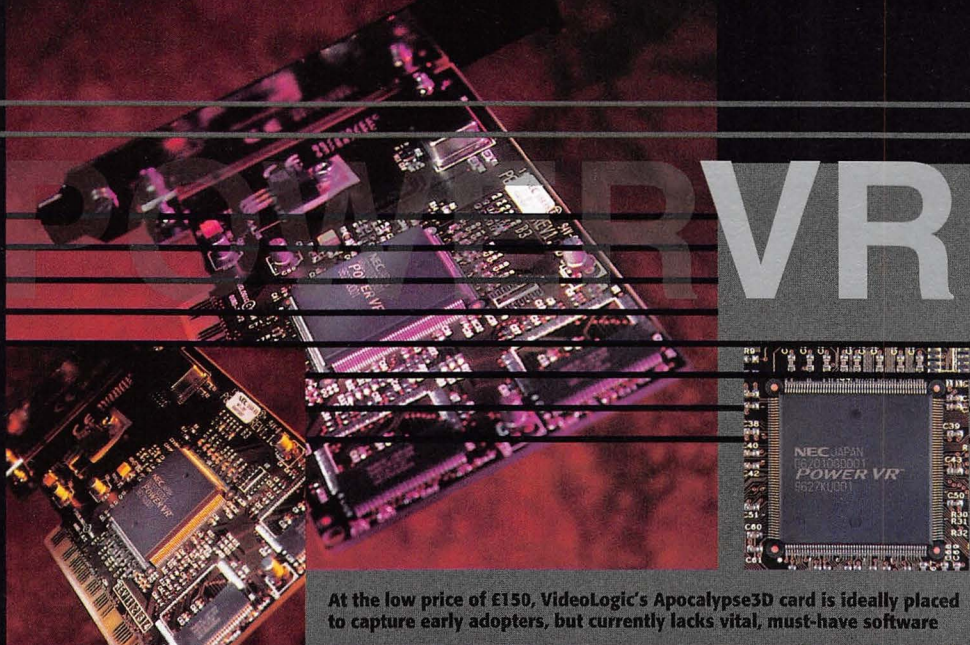
There is a risk. of course. that pandering to the whims of software companies may compromise the quality of the chipset. In this case. though. it doesn't seem to have happened. 3Dfx versions of *F1* and *Wipeout* are looking astounding. and. despite the fact that Psygnosis is actively supporting all the graphics initiatives. there is definitely a lot of enthusiasm for the Voodoo chipset. 'It's fair to say to say that 3Dfx's Voodoo is one of a select few chipsets at the moment that does anything near what we'd expect a 3D accelerator to do.' points out Satterthwaite. 'Unfortunately for the consumer. many of the 3D cards already on the market are very poor at any sort of useful 3D acceleration. but the benchmarks you see don't make this very clear. In terms of putting simple flat-shaded triangles on screen. there are other cards that

may be equivalent in speed. But once you start turning on all the real 3D features (Gouraud shading. perspective correction. z-buffering. bi-linear filtering). most start falling by the wayside.' Chudley also notes the distinct advantages of Voodoo: 'Fill rate is obviously the outstanding feature. In some instances. the card's nearest rivals traverse pixels at close to half the rate.'

But the dedicated
3D card market has not been entirely sewn up by 3Dfx. VideoLogic has also announced an impressive line-up of games due to be converted to the PC using the PowerVR technology. Capcom. for example. is currently working on an 'extreme' version of *Resident Evil* (i.e. a version which takes full advantage of most of the chipset's features). and Psygnosis is preparing a PowerVR-accelerated version of *Wipeout 2097*. Importantly. SegaSoft has also signed up to develop projects with the technology in mind and is currently working on a PC version of *Virtual-On*. With Namco already preparing titles like *Tekken* and *Rave Racer*. it would seem that it is VideoLogic. not 3Dfx. that has attracted the big arcade developers to the PC. 3Dfx. on the other

hand. has cemented its presence in the arcade with the Williams agreement. although PowerVR has yet to make it into a coin-op (despite rumours about Namco's next high-end board).

As for current PC developers. Mindscape. Virtuality and Looking Glass are all on board. Ken Wirt of Looking Glass is confident that PowerVR will (finally) give flight sims a decent frame rate: 'The PowerVR architecture addresses two of the real limiting factors in delivering high-performance 3D graphics for our products: texture bandwidth and memory costs associated with z-buffer hidden surface removal. We're looking forward to taking advantage of the chipset with *Flight Unlimited*.'

Along with console and coin-op conversions and brand-new titles. though. there are already many popular PC titles being 'reconditioned' so that they can be released again in an

At the low price of £150, VideoLogic's Apocalypse3D card is ideally placed to capture early adopters, but currently lacks vital, must-have software
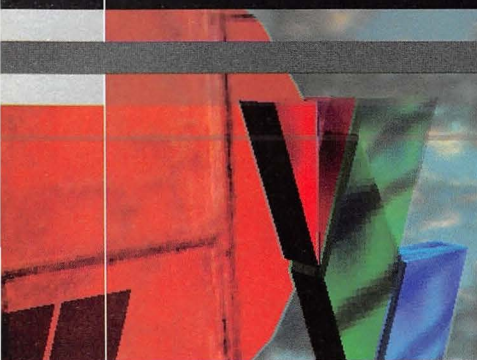
In terms of high-end modelling features (left), PowerVR is a potent piece of kit, although needs a *fast* PC

> THE POWERVR ARCHITECTURE ADDRESSES TWO OF THE REAL LIMITING FACTORS IN DELIVERING HIGH PERFORMANCE 3D GRAPHICS. WE'RE LOOKING FORWARD TO TAKING ADVANTAGE OF THE CHIPSET WITH FLIGHT UNLIMITED
>
> Ken Wirt,
> Looking Glass Technologies

SVGA/VGA (1992 onwards)

Car and Driver (EA)
One of the first games to use the SVGA graphics mode (offering 640x480 in 256 colours). and one of the fastest DX2 games released in 1993.

Magic Carpet (Bullfrog)
This game was just about playable in SVGA. but only with a DX4/100 chip. Its textured landscapes were unbelievable.

Dark Forces (LucasArts)
A sophisticated *Doom*-style engine that managed to include controllable degrees of pitch – a first for this type of game.

Tie Fighter (LucasArts)
Regarded by many as superior to X-Wing. Tie Fighter was quicker. though sluggish. It took the Pentium chip to change that.

THE VIDEO CARD

In the beginning, there was the MDA (Monochrome Display Adapter). This was a time when PCs were used for text-based applications like spreadsheets and word processing, when MS Windows didn't exist and when no-one foresaw the revolution that was to come.

The Color Graphics Adapter (CGA) card heralded the beginning of that revolution. It featured an alphanumeric mode (A/N) for text display, but wowed the world with its All Points Addressable (APA) mode — what would be called a bitmap today — with four-colour, 320x200 display and a monochrome hi-res mode of 640x200. The four-colour mode offered a choice of two palettes: Black, Cyan, Magenta, White or Black, Green, Red, Brown. It was truly ground-breaking at the time.

Often forgotten, the Hercules card was the next graphics adapter to enter the fray. A mono card, the Hercules offered a surprisingly high resolution of 720x348. Running digital monochrome monitors, the display was crystal clear, making it the choice for users of text-based apps. Hercules was an improvement over MDA, but, heading in a different direction from CGA, was just an aside in the PC graphics revolution.

In 1984, IBM introduced the Enhanced Graphics Array (EGA), featuring VLSI circuits and faster memory access than CGA. Again there was a leap in performance, although crucially the card offered backwards compatibility with CGA, ensuring its adoption by programmers and users alike. It offered the same resolutions as CGA (320x200 and 640x200), but added a new hi-res mode of 640x350. As if this weren't enough, all three modes ran in 16 colours. Once more, though, this was a fixed palette, with a dreary selection of colours.

The Multicolor Graphics Array (MCGA) and Video Graphics Array (VGA), revealed in '87, were designed for IBM's PS/2 PCs and performed almost the same job, although MCGA is an upgrade of CGA and VGA is an enhancement of EGA. Once more, backwards compatibility ensured success. New features included a user-definable palette (at last), and a stunning 320x200 mode with 256 colours. The palette was capable of storing six bits for R, G and B values giving a total colour spectrum of 256K colours. Combined with faster processors and more memory, this mode ranks as one of the

most important developments in PC gaming. While it's true that many games were produced for EGA, the 256-colour mode of MCGA/VGA appealed to developers and marked the PC's arrival in the world of games. Hardware quirks could be exploited to give smooth full-screen games with page-flipping, albeit at a cost to the programmer's sanity. (Wading through poor documentation on hardware registers was no fun at all.)

The Professional Graphics Adapter (PGA) was a step up from EGA. The card offered a 640x480 resolution with a user definable 12-bit palette, offering a choice of 256 colours from a possible 4096. It also offered an on-board processor capable of windowing, line drawing, and other graphics primitives.

Rather unfortunately, all hell broke loose after the MCGA/VGA cards became common. There were a great deal of manufacturers eager to produce cards, each wanting to improve on the standard. The result was a rather messy set of cards offering Extra-VGA features (E-VGA). With no regulation seven main 'standards' emerged, with cards and chipsets from ATI Technologies, Chips and Technologies, Genoa Systems, Paradise/Western Digital, Trident, Tseng and Video 7/Headland. The cards offered broadly the same features, but the programmer had to access each one in a slightly different way. Without doubt this debacle held up PC graphics progress considerably. The Video Electronics Standards Association (VESA) stepped in to try to establish a standard for Super-VGA, but it took some time for it to catch on.

And then SVGA arrived — compatible with CGA/ EGA/ VGA, but faster and cheaper. One of the huge advances made here was the introduction of 16bit cards. Until then, all cards had been slower performance 8bit efforts. Hardware cursors were also added to SVGA cards — very useful for the burgeoning MS *Windows*. The increased res of up to 1024x768 in 256 colours meant more memory on the card, typically 1Mb.

Despite 16bit ISA cards being faster than 8bit ones, the demands were getting too much for the architecture. Today's SVGA cards are PCI, which allows a much faster throughput of data for contemporary graphics apps. Increased memory of 2 to 4Mb allows current cards to display high resolutions in 16bit, 24bit and sometimes even 32bit colour. A far cry from CGA.

---

accelerated form. the most prominent and convincing example being *Quake*. Id is currently working on a 3Dfx version of its shoot 'em up which has the potential to be jaw-dropping considering the fluidity and sheen of 3Dfx's own Wizard Tower demo (a firstperson-perspective environment developed to show of the capabilities of its chipset).

Clearly this is going to be a profitable activity for both card manufacturers and game developers: the former gain kudos from popular games being optimised for their products and the latter reap the financial rewards of re-releasing their back-catalogue games to take advantage of card features.

With such profitability in mind. it's likely that game companies will be doing their utmost to promote accelerator technology to the masses. Indeed. not only are developers willing to support the new range of cards. but many also concede that these cards are absolutely necessary if a good performance is to be wrung from the PC. Nowhere is this more apparent than at Bizarre Creations — the company's forthcoming PC version of *F1* will only run in conjunction with supported cards. 'In our opinion. an unaccelerated mid-range PC couldn't handle the level of polygon detail seen in PlayStation *F1* to our satisfaction.' argues Chudley. 'We'd have to do extensive re-

Mindscape's PowerVR-native racing game, *Net Race*, features stunning textured landscapes and moves smoothly

modelling. which is time-intensive, and ultimately reduces the quality of the product.' Even if current 2D/3D cards can handle conversions of most 32bit console titles. the need for more powerful 3D solutions will no doubt increase with the growth of the N64.

But will this necessarily ensure the success of accelerator cards? Despite all the impressive features and industry support. there are factors which may work against the new 3D technology.

The simple possibility that consumers are going to get very bewildered must be considered, at the least. The fact that there are commonly around three different companies involved with each accelerator card is bound to confuse many PC owners. Take the Righteous3D board, for example: the product is built around 3Dfx's chipset. but the board itself is put together by a company called Micronics

and the end result is marketed by Orchid. It's interesting to consider how many people will realise that it is the 3Dfx Voodoo chipset which is actually the most important component...

These factors combined could easily be enough to turn ardent technophobes away from cards completely or. in an almost as bad scenario. make them wait until a standard emerges. The latter may well happen if software companies find that working on three or four different versions of every game (one for each card) is too time consuming. As Chudley points out. 'Developing games that fully exploit 3D cards which span three distinct generations of performance will be difficult. To get the most out of a card you need specific low-level coding and the balance of geometry with feature usage at the world design stage.' It will no doubt be easier. and commercially less risky. to just release one version with Direct3D drivers so that it is compatible with every 3D card. but only employs the features of each one supported by

Direct3D. In other words a lowest common denominator situation could arise. as it has done with sound cards. and the individual nuances of each high-end board may never be exploited.

Even if developer difficulties continue to be a problem. customer confusion over which card to go for may soon be partially abated by deals between chipset designers and PC manufacturers. In May of this year. NEC announced that Compaq would be using the PowerVR chip in its new range of Presario PCs. and similar agreements have been reached between ATI and IBM. and Matrox and Gateway. In this way. consumers won't have to choose a chipset. they'll simply be lumbered with whichever one is in the PC they buy.

But there may actually be a more insipid barrier to the success of 3D cards than PC owners not knowing which one to buy. When **Edge** talked to Gremlin about accelerator technology in E34. the company's software manager. Tim Heaton. pointed out that many of the earlier cards did not have enough memory to take advantage of their own
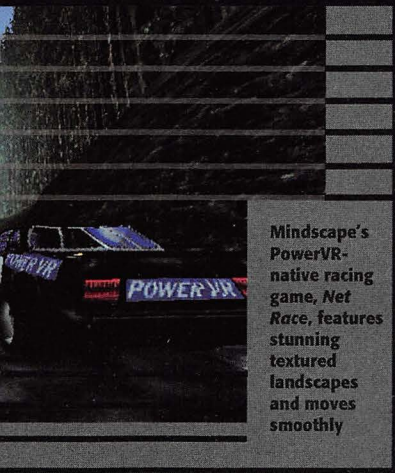
---

TFX: EF2000 (DiD)
The ground detail in this game was the most realistic anyone had ever seen, but you needed every micron of your Pentium to play it in SVGA.

Terra Nova (Looking Glass)
The makers of *Flight Unlimited* created a stunning game which looked shoddy in VGA but absolutely jaw-dropping in 640x480.

Flight Unlimited (Looking Glass)
Stole the march on Microsoft's Flight Simulator by containing hyper-realistic detailed textured scenery. A high-end PC required.

Screamer (Graffiti)
Hailed as 'Ridge Racer for the PC', *Screamer* had problems running in SVGA with any kind of fluidity. The detailed cars and scenery were an advance, though.

Continued

DIRECT3D: DEFINED

The casual user of *Windows 95* is unlikely to know (or care) what Direct X is but Microsoft's group of APIs (application programmer interfaces) have been providing a helping hand to developers over the last year, freeing them from the nightmare of learning all the tricks and interface foibles of each new graphics/sound/network card.

Direct Sound, for example, provides an interface for developers to add sound to games, regardless of which of the myriad soundcards happens to be in the PC. Similarly Direct Draw handles the graphics side of things, talking happily to whatever SVGA card happens to be in place. Direct Play provides network gaming, and Direct Input handles all those quirky joystick/steering wheel/pedal combos that American gamers are so fond of. But it is of course Direct3D that is currently the most exciting of the APIs.

Direct3D is essentially a set of software routines designed to help developers get the best 3D performance from the PC. Any Direct3D game placed in a CDROM drive first downloads Direct3D and then uses it to form a line of communication between the software and the hardware, ensuring maximum memory support for Direct3D features. According to Microsoft, these features include flat- and Gouraud-shading models, texture mapping in any shading model, depth cueing with atmospheric effects, and bilinear/trilinear/mip-map texture filtering.

Direct3D will function relatively happily in software alone, with no hardware acceleration, although performance will be nothing to write home about. The real bonus is that a Direct3D application will automatically take advantage of any 3D accelerator card installed, assuming that the user has an appropriate driver installed as well. D3D simply communicates with your chosen 3D card via the Hardware Abstraction Layer (HAL) and asks the card's Direct3D driver what capabilities the card has, and what features it supports. These features are then given the benefit of acceleration.

So, any game written for D3D should work on virtually any *Win95* PC, with or without a 3D card. With Direct3D and accelerator card improvements arriving, the user should keep getting increased performance on existing Direct3D games.

'Plug and play' is an over-used phrase, but it should apply to Direct3D: run your D3D game on your unaccelerated PC, then put in your Direct3D card, run the same game and instantly see the difference. It's optimistic, but that's the goal.

Direct3D is a boon both for developers and gamers in one important respect — low risk. Developers are reluctant to put all their support behind one 3D card, because, despite some cards being very much better than others, there's no way of forseeing which will actually succeed. Historically it's not always the best technology that sells, indeed the oft-cited case of Betamax's technical superiority to VHS must send shivers down the spines of all 3D card manufacturers. So by using Direct3D developers can support a wide range of cards instantly, effectively spreading their investment, and their risk. The onus is then on the 3D card manufacturers to supply decent Direct3D drivers — pro-celebrity buck-passing at its best. Similarly, gamers can buy a D3D-compatible 3D card safe in the knowledge that they'll be able to get games for it for a long time yet. It's much safer to do this than buy a proprietary system simply because no thirdparty manufacturer can guarantee a level of support to match Microsoft's.

It sounds too easy to be true and in some respects it is. The cards all offer different features and levels of performance, despite being D3D compatible. Some cards will have more memory available for textures than others, and yet D3D must try to get comparable results from each (for cards with less memory the textures may be scaled in order to fit in the available space). Another issue is resolution. While any card worth considering will certainly support 640x480 in 256 colours, and quite likely at 16bit colour as well, will it support 800x600? Does the card offer perspective-correct texturing?

It's clear that the Direct3D HAL will have a lot to do to get the best out of each 3D card. It's a jungle out there…

Mechwarrior 2 (above, right) runs exceptionally well with PowerVR

system for a very low price (around £140). But remember that these marvellous 3D accelerators need to be placed in a PC costing over £1000 – quite a different proposition from shelling out £200 for a PlayStation.

Another hurdle that the PC may never leap is simply display quality. Ironically it is the high standard of PC graphics that has been its downfall. SVGA monitors have to be sharp and clear because PCs are used for so many business and productivity tasks where it's essential. A console connected to a TV, even by a SCART cable, benefits from the relatively low resolution of TV screens and the 'free' anti-aliasing that this provides. PC owners now expect games in 640x480 (twice the resolution of their PlayStation counterparts), and yet regular VGA games (320x200) are derided for their 'low-quality' graphics. For this and other reasons the pitch is certainly tilted in the console's favour, although the new batch of 3D cards can only help redress the balance.

As with most
new technologies, predicting which, if any, will be successful is almost impossible. 3Dfx's chipset is certainly very popular with developers at the moment, but that could be because it was the first dedicated 3D accelerator presented to them, and it is easy to use. Inevitably,

---

hardware facilities: 'We can't do things like z-buffering or MIP mapping,' Heaton claimed, 'because we don't have enough room to store all the different textures.' Could such technical deficiencies be hiding beneath the marketing hype of the latest products?

It would seem that the answer is a cautious maybe. Satterwaite is generally optimistic about the technology, but does recognise some flaws: 'The biggest difficulty with some of the 3D cards is lack of support for texture space optimisation. On a PlayStation, you would typically set up many 4bit textures in a texture page, each with their own 16-colour CLUT. This allows you to fit in lots of differently coloured textures in a very small space. No 3D card we've seen so far supports this to any useful extent. Instead we've had to use 16bit textures in video memory, requiring some deft coding to fit in as many textures as we need.'

In the past, PC developers have been used to having a great deal of texture memory — in fact, almost as much RAM as they wanted. Now, with

3D accelerator technology, textures must be stored in RAM on the card, so regardless of the fact that the developer's target machine might be a Pentium with 16Mb, the 3D card will invariably have 2Mb, of which some may have to be sacrificed for z-buffer and display buffers. Rather like the PlayStation, the 3D cards will make developers use textures less haphazardly as memory is once more tight — it's not encouraging to see that the PlayStation conversion of *Doom* had to use a reduced set/size of textures whereas a 486 DX2/66 had no such problems.

Even the two latest dedicated 3D chipsets, PowerVR and Voodoo, have their downsides. While both are very powerful (PowerVR has more texture RAM available than any of the current consoles), it remains to be seen what use will be made of them by developers. With Microsoft calling the shots in the PC world, it is perhaps inevitable that more and more games will go the route of Direct3D. While this will use both the VideoLogic and 3Dfx systems, it won't push them to

their respective limits. Indeed, at present the two chipsets have some features that Direct3D has no concept of — Power VR's lens-flare and shadowing effects and Voodoo's multi-pass texturing for advanced lighting being particularly impressive examples. The good news is that the specification of Direct3D 4.0 has been drafted and is likely to include more features in keeping with the plans of VideoLogic and 3Dfx.

Other problems remain, however. The PowerVR and 3Dfx systems both undoubtedly represent a great step forward for the PC, yet neither makes it a 'sexy' format like the current crop of consoles. VideoLogic told **Edge** that it considers its chipset to be around twice as powerful as the N64, and it is undoubtedly a wonderful slice of technology. If the company's performance claims are true then they have delivered a truly revolutionary

Videologic's PowerVR board includes just one PCX1 chip and two 2Mb SDRAM chips

---

SVGA (1992 onwards)

Little Big Adventure (Adeline) One of the first intelligently designed SVGA games that used the PC's power solely for rendering characters and not backgrounds

Duke Nukem 3D (3D Realms) Took the *Doom* genre forward, allowing full six degrees of freedom within a true 3D environment. Still used sprites for characters

GP2 (Microprose) To play this game in SVGA requires at least a P133, and a decent frame rate would take a minimum of a P166. Hopefully a 3D card version will appear

Quake (id Software) Everything in *Quake* is made of polygons, so again, without an extremely fast PC, SVGA is out of bounds. A 3Dfx *Quake* is already on the way
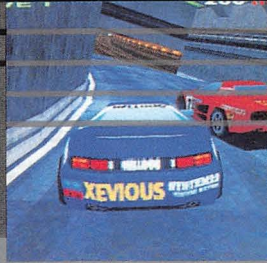
Games that are native to PowerVR, such as *Net Race* (above) and *Rave Racer* (left), are vital for showing off the chip's power – so far only revealed by its demos (centre left)

3DFX HAS BASED ITS VOODOO CHIPSET VERY MUCH ON WHAT DESIGNERS WANT NOW (DECENT FRAME RATE, DOS COMPATIBILITY, EASE OF CONVERSION), WHEREAS VIDEOLOGIC HAS ITS EYES SET ON THE FUTURE

the system does have its drawbacks. Because of its pass-through cable arrangement, RAM on the card has to be used for both texture memory and a frame buffer, rather like the earlier generation of 2D/3D cards. While developers aren't complaining about this now, it could become a problem in the future as games use more textures and move into higher resolutions. More of a niggle than a heinous crime is 3Dfx's slightly less than perfect relationship with *Win95* – though the card comes equipped with Direct3D drivers, it doesn't support anything but full-screen display. It's not a huge drawback, though, and 3Dfx will doubtless address the issue with future issues of the chipset.

PowerVR is by no means perfect either. Some developers have pointed out that VideoLogic's chipset doesn't manage bi-linear filtering (a method of blurring textures so that they don't pixellate as you approach them). Tim Heaton has pointed that this is one of the most useful features graphics cards have to offer, providing an immediately noticeable improvement in graphical quality. Daniel Jackson of Virtual Studios goes as far as to say that.

'Filtering, in some ways, is just as important as pixel filling in that it dramatically improves the visual quality of backgrounds because you don't get those chunky texels. It could be said that filtering is a crucial factor in differentiating the 3D-accelerated PC from its earlier incarnations.' Again, however, this is not necessarily a significant drawback as PowerVR does offer smooth texturing, just not in a universally recognised format.

Away from technical pros and cons, perhaps the main difference between the two technologies is that 3Dfx has based Voodoo very much on what designers want now (decent frame rate, DOS compatibility, ease of conversion), whereas VideoLogic has its eyes firmly set on the future. For example, PowerVR is being touted as far more compatible with Microsoft's latest graphics initiative, Talisman (an unknown factor at the moment, but likely to become as important as Direct3D). Also, PowerVR's on-board

hidden-surface removal means that the performance of the chip is determined by clock speed of the PC CPU: if the CPU gets more powerful, so the performance of the chip gets more impressive. Other cards, which do use a z-buffer, may reach their highest possible performance with the P200, giving them a shorter lifespan. 3Dfx, however, is claiming similar longevity for Voodoo and has a one-million-triangles-per-second demo – more than adequate performance to sate the needs of forthcoming Pentium Pro PCs – to prove it.

Ultimately, though,
two factors will dictate the success of any 3D innovation: developer support and consumer interest. The fact is, developers have consistently named 3Dfx as their favourite card and having id on board will no doubt attract a good number of PC owners to the voodoo chipset. VideoLogic, a company

working against contemporary technical trends, will have to prove to wary programmers and designers that infinite planes and on-board hidden surface removal are the way ahead. If the company succeeds, the future is just as likely to include PowerVR as it is Voodoo graphics.

But this is no longer a two-horse race. Rendition's Verite chip, for example, is being employed in a card by Creative Labs – a name familiar to anyone with a Sound Blaster soundcard. Not only is this a cheap 3D solution, with specs comparable to the two current dedicated systems, but it will also be marketed as the visual equivalent of the Blaster (i.e. as an industry standard). With other contenders surely in development, the market will no doubt become more crowded before it settles down.

Financial risk will probably prove to be the deciding factor in gaining developer support. No software house will want to spend months developing a game specific to one card, only for that card to bomb without a trace. Until the market pans out, then, Direct3D compatibility is the only concession many companies are making toward accelerator technology – it means that the game can be accelerated by almost any 3D card, but isn't hindered by loyalty to just one contender. Even if a true leader does eventually become clear, it will always be safer for game developers to go with Microsoft and support the majority. The 'lowest common denominator' scenario is still a real possibility. As always, the future is far from certain.
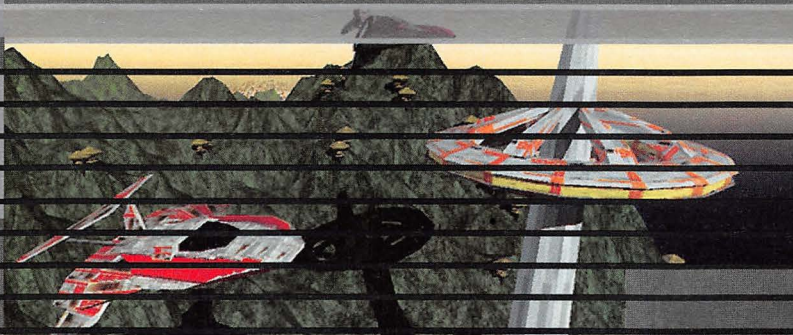
VideoLogic's internal demos are by far the most jaw-dropping. This scene (left) is incredibly well textured

E

(In development)

Unreal (Epic)
Another all-polygon game, *Unreal* features some of the finest texturing and realtime lighting effects yet. It will also take advantage of the 3Dfx card.

TFX-F22 (DID)
The sequel to EF2000 looks stunning, and with the help of a 3D card, the ground detail and frame rates should rival those of Nintendo's 64bit hardware.

Jedi Knight (LucasArts)
Shown recently at EGTS, *Jedi Knight* will have built-in special effects for those with a 3Dfx card. SVGA mode will be totally playable

LBA 2 (Adeline)
The ambitious sequel to LBA moves away from the former's isometric view, in favour of hi-res, hi-colour 3D landscapes all rendered in real time.

Subscribe
and receive a free gift

Don't fool yourself. Buying your copy of Edge every month from the newsagent is no substitute for subscribing. Check out the following advantages available exclusively to subscribers

- Free gift - choose between an **Edge** shoulder bag or a joypad for the PlayStation or PC

- Your copy of **Edge** is delivered free to your door if you live in the UK

- There's no risk of missing an issue because your copy is guaranteed every month

- No-risk guarantee. You can cancel your subscription at any time and get a full refund for all the copies you haven't received
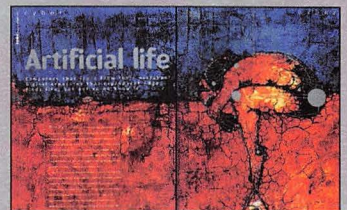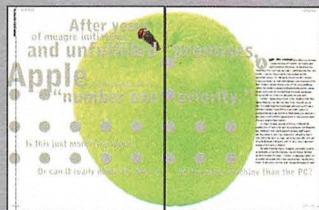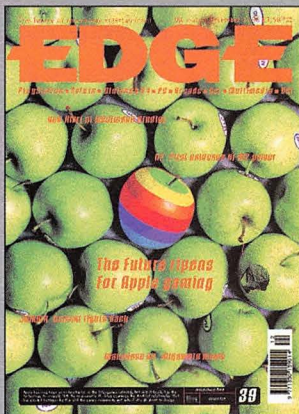
Edge's unique approach to interactive entertainment means that you get in-depth reporting on the most crucial areas of interactive entertainment. Exhaustive features, revealing interviews, games that you won't see in other magazines for months, all delivered with some of the highest production values of any consumer magazine. **Edge** has always been the world's most respected videogame magazine. Subscribe and stay well and truly on the edge.

save £5

If you want to pay the lowest possible price for your copy of **Edge**, the only option is Direct Debit. You save £5 more than any other method of payment and, of course, you can cancel your subscription at any time and receive a full refund for all un-mailed copies. So what are you waiting for?
Complete and return the form opposite and start your subscription today.

when you subscribe by Direct Debit

◀ Subscribe with this special offer and an exclusive **Edge** shoulder bag could be yours free of charge. Selected for its quality and, of course, featuring the **Edge** logo, this offer is exclusive to **Edge** subscribers.

◀ **Edge** subscribers get a choice of alternative gifts, too. Choose between a joypad for the PC (left) or Sony PlayStation (right) ▶

Current subscribers
You can also extend your subscription with this offer. Complete the form at the bottom of this page making it clear you want to extend your subscription and return it to us today.

subscribe to Edge:

● By Direct Debit, saving £5 Complete and return the form below by Freepost to:

Edge Subscriptions, Future Publishing Ltd, Freepost BS4900, Somerton, Somerset. TA11 6BR
(Direct Debit is only available to UK subscribers with a UK bank account)
● By cheque or credit card:

Telephone the Subscriber Hotline on 01225 822511, fax us on 01225 822523, email: subs@futurenet.co.uk, or via the World Wide Web: http://www.futurenet.co.uk/edge/html

Please quote ref. no. EDGP601131211 when telephoning or emailing your order

---

☐ Please start my subscription at the discount rate ticked below
☐ Please extend my subscription at the rate ticked below
If you are extending your subscription by Direct Debit the full amount will be debited at the time of renewal

Mr/Ms Initials:_____ Surname:_____

Address:_____

_____

_____ Postcode:_____

Daytime telephone no.:_____

European subscribers quote your EC VAT reg no.:......................

Please start my subscription with issue no.:........................

Subscription prices

Direct debit 12 Issues (saving £5) (Available only to UK subscribers with a sterling bank account)

☐ **£37.00** UK 12 Issues

12 Issues issues by Cheque or credit card

☐ **£42.00** UK ☐ **£71.00** Europe (incl. Eire)* ☐ **£100.00** Rest of the world*

*Overseas prices quoted are for airmail

Choose your FREE gift:

☐ **Edge** shoulder bag ☐ **PlayStation** joypad ☐ **PC** joypad

UK readers return this coupon by Freepost to:
Edge Subscriptions, Future Publishing Ltd, Freepost BS4900, Somerton, Somerset. TA11 6BR

Overseas readers return this coupon (postage payable) to:
Edge, Subscriptions, Future Publishing Ltd, Cary Court, Somerton, Somerset, UK TA11 6TB

☐ Please tick this box if you would prefer not to receive information on other offers.

EDGP601131211

Please choose your method of payment:

1. ☐ **Direct Debit** Paying by Direct Debit is the easy way to pay. The full amount of your subscription will be deducted in advance, in one lump sum. (Note: Direct Debit instructions cannot be sent via email or fax.)

2. ☐ **Cheque** (payable to Future Publishing Ltd. Sterling cheques drawn on a UK account.)

3. ☐ **Visa** ☐ **Access** Expires:_____

Card no.:_____

Signature:_____ Date:_____

⦿ **DIRECT Debit** | Instruction to your Bank or Building Society to pay Direct Debits | **Originator's Identification No.** 9 3 0 7 6 3

1. Name and full postal address of your Bank or Building Society branch

To: The Manager (Bank name) _____
Address: _____
_____ Postcode

2. Name(s) of account holder(s):_____
Future Publishing Co ref. no. (For office use only) ☐☐☐☐☐☐☐☐

3. Branch sort code ☐☐ ☐☐ ☐☐

4. Bank or Building Society account number ☐☐☐☐☐☐☐☐

5. Instruction to your Bank or Building Society:

Please pay Future Publishing Direct Debits from the account detailed on this Instruction subject to the safeguards assured by the Direct Debit Guarantee

Signature(s):_____ Date:_____
NB: Banks and Building Societies may not accept Direct Debit instructions for some types of account

Tomb Raider

Nintendo set the standard in 3D thirdperson-viewed platform
gaming with *Super Mario 64*. Now it's time for Brit coders to have a stab,
via Core Design's most ambitious project to date

What impresses most about *Tomb Raider* is the sheer versatility of the game engine and the complexity of the huge number of environments. Here, Lara surveys a large, high room complete with numerous platforms and a pool of water below. Even with pistols drawn, she can still run and jump

Gorgeously crafted prerendered plot scenes abound – but not the sort that induces yawns and frantic skipping, for the story behind *Tomb Raider* is, refreshingly, a pretty good yarn

I t is perhaps unfortunate that *Tomb Raider* has appeared now, several months after *Super Mario 64*. Even though the two games were created thousands of miles apart, Core Design has managed to create an experience more than slightly akin to – and featuring many features of – what many see as the best game of all time. If *SM64* was still six months away, *Tomb Raider* would be justifiably hailed as one of the finest videogame experiences ever. But, while it may not be seen as redefining the videogame per se, it will certainly be seen to be pushing the 3D platformer towards a new level of excellence.

One of the reasons for its impact is the engrossing scenario and ambitious environments that appear in

Enemy attacks are relatively rare, but they are spread evenly throughout the game. Lions and gorillas are some of the less fantastical varieties

The camera pans around intuitively revealing the correct path for Lara to take (above). Taking a shot (left)

the game. The story centres around the adventures of Lara Croft, an upper-class lass whose plane crashes during her return from a skiing trip, forcing her to survive in the wilderness for several weeks. Upon returning to civilisation she has great trouble re-integrating with society so, making use of her newly acquired survival abilities, she embarks upon a life dedicated to uncovering ancient civilisations and writing travel guides based on her adventures.

As she travels through the 15 chapters of the game, the story is filled in using entirely appropriate prerendered scenes which are not only magnificently cinematic, but also serve to build the atmosphere considerably. Instead of casually flipping through each cut-scene, as is so commonly the case, each sequence will have the player watching avidly.

Surprisingly, the most impressive version of *Tomb Raider* actually runs on the PC – that is, one equipped with the new 3Dfx card (see page 59). This version includes runs in glorious SVGA at a constant 30fps.

Looking at the finished PlayStation version by comparison now, the difference is certainly a marked one, but it's difficult not to appreciate what a stunning job Core has done with the graphics on Sony's machine. What the console version lacks in definition it makes up for in technical sophistication – movement is smooth, speed is more than adequate, animation is spectacular, and, most importantly, in certain areas – when Lara swims being the best example – some very intelligent use of colour and lighting effects make the experience visually startling.

Lara has loads of moves. Even neat little hops like this are included

It's difficult not to appreciate what a stunning job Core has done with the graphics on Sony's machine. What the PlayStation version lacks in definition it makes up for in technical sophistication – movement is smooth, speed is satisfactory and animation is spectacular

Tomb Raider's presentation is as impressive as the in-game graphics, with an easy-to-use inventory

The T-Rex in the lost valley level is incredible – not only does it look good, it also moves just like the one from the *Jurassic Park* movie – bloody scary, frankly. The 'raptors, conversely, present no real threat

Continued
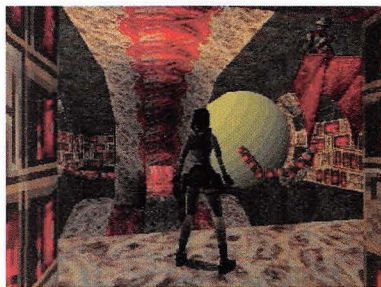
In terms of frame rate and use of custom lighting effects, PlayStation *Tomb Raider* beats the Saturn and unenhanced PC version hands down

PlayStation vs PC vs Saturn
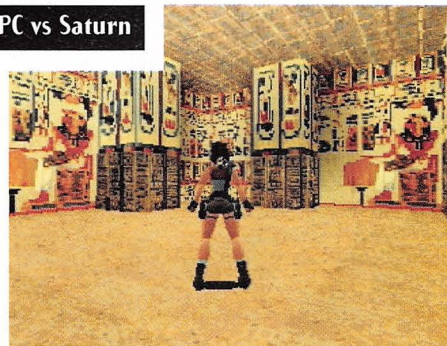
In SVGA (top, above left) *TR* struggles but with a 3Dfx card (above right) it positively flies...

The Saturn version (above) isn't markedly inferior to the PlayStation although looks chunky in places

Blue crystals allow the game to be saved to memory card. Note Lara's multiple reflections in the crystal

Tomb Raider's structure is fairly simplistic but this is by no means a criticism. As in many of the finest games, a limited number of clearly defined elements are repeatedly used to create a number of diverse environments and challenges which are at once surprising and consistently playable. Ignoring the specific layout of a level, each one is made up of a location, a number of simple puzzles (the cracking of which often being anything but simple) and a selection of enemy encounters.

The game's locations are incredibly well modelled, with internal areas being particularly impressive, with vast structures of hallways, stairwells, claustrophobic chambers and massive, dramatic halls. The layout of

these is expansive but never confusing; however large a building, it's always logically mapped out with rooms having only a limited number of exits. The feeling is that each part of a level has a very logical relationship with its surroundings, and as you play through it you learn how each room and passageway interconnects.

Within these highly realistic levels are the puzzles. Again they are very intelligently placed and well thought out: stimulating, certainly, but rarely frustrating. Typically, a puzzle will present an obvious exit which appears inaccessible. A number of elements will come into play such as switches and moving platforms and it is then up to the player to observe changes and tinker with level elements until it's clear
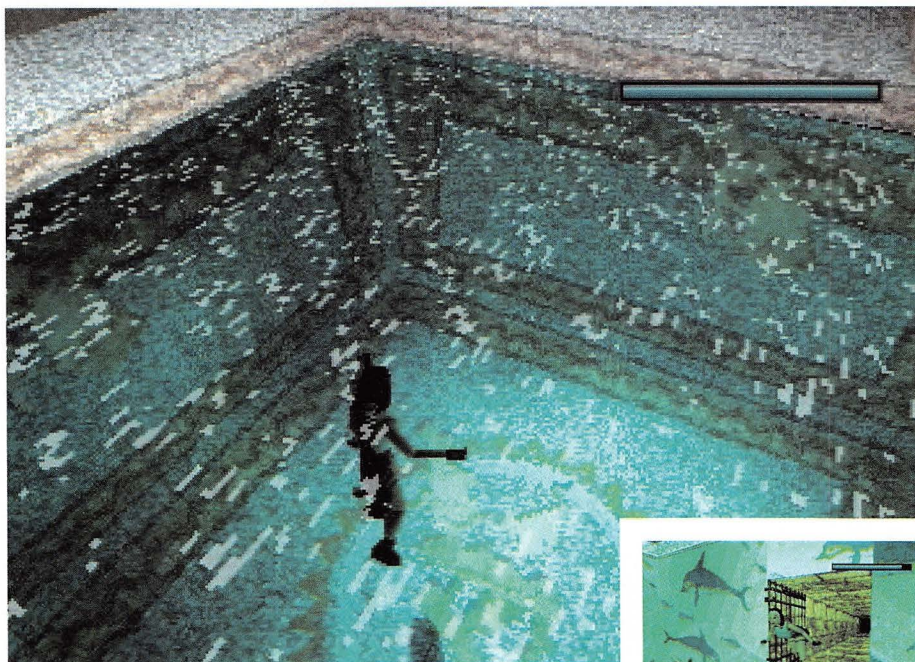
Core's team has managed to produce some startlingly effective graphics, notably with the hugely atmospheric water-based sections
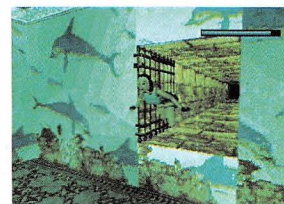
Format:	PlayStation
Publisher:	Core Design
Developer:	In house
Price:	£45
Release:	Out now
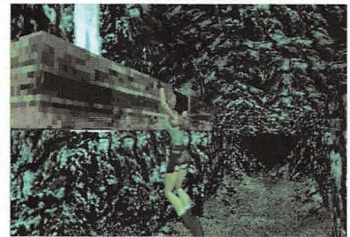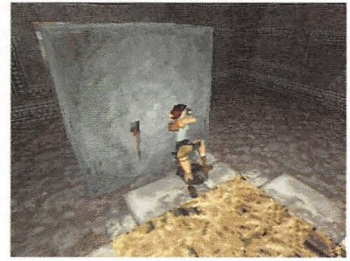
Core Design has gone to great lengths to carve Lara out as a gutsy female capable of matching the exploits of any of her established male counterparts. In this cut-scene she negotiates an ascending lift

exactly how they need to be manipulated.

Then there are the enemy encounters, which always crop up when least expected, adding excitement to sections which would otherwise be plain, and heightening the feeling of tension and urgency.

With all this so slickly implemented it would've been no surprise if a flawed control system spoiled the party, yet even this aspect of the game is soundly designed. Lara is the perfect heroine. Her acrobatic moves – jumps, long jumps, side steps, flips and wall-crawling abilities – are excellently animated and easily implemented using straightforward joypad combinations. They're also very accurately integrated into the game's environment so everything seems very realistic: you can tell when you'll be able to grab something or jump somewhere instinctively rather than just randomly trying things and hoping that they're what the game's designers intended you to do.

Tomb Raider's aural content enhances the experience, too. Silence governs for the most part with only the sound of Lara's footfalls and faint panting to be heard, but enter a new area or approach a hazard and one of many eerily beautiful pieces of music begin to issue forth. When the danger is over, or you re-enter familiar territory, the music fades back out and the player can once again ease back into the chair.

Criticisms of *Tomb Raider* are few yet worth

noting. Graphically, it isn't without problems. Because of the clever camera system, which follows Lara at all times and attempts to always provide the optimum view, there are bound to be times when, like *Mario 64*, its performance falters. This most often occurs when Lara is in a confined space and the camera simply can't get a grip on where to look. Also, you often have to attempt a run-up to a jump with the camera facing Lara from the side because it can't get behind her to look ahead. It's slightly annoying when it happens, but it's fairly swiftly accepted as a necessary evil. And, had the levels been simplified to iron out this sort of thing, the overall experience might have been bland indeed.

Analogue control would have benefitted the game immensely, too, as Lara's slightly sluggish, motion-captured movements lack immediacy and subtlety of Mario in his 64 bit incarnation.

And the final gripe is pace. Those who only get off on fast, action-packed thrills may be disappointed that the game doesn't continually throw hordes of enemies at you, and that the puzzles are fairly sprawling in nature. This leads to a lot of wandering around and the covering of old ground as Lara tramps back and forth collecting keys and so on. Initially this aspect feels as though it could grate as the game progresses, yet it never does – generous allowance of save points alleviates it to some extent, but more importantly, the individual game sections are never so dull for it to be a major problem. An injection of more enemy encounters would have been welcome, but even so, there are only really minor lulls in the gameplay – it never actually drops into the doldrums.

Given its 15 gigantic levels and sheer richness and variety of gameplay, *Tomb Raider* is an exceptional game, and one that is better than anything Core has ever released by a large margin. Take out a few graphical glitches and add a touch more action and it would be a nigh-on perfect creation, but as an epic-scale adventure in its own right it is never anything less than totally captivating. **E**

Whether pushing slabs, heaving herself up or jumping, Lara performs every movement with grace
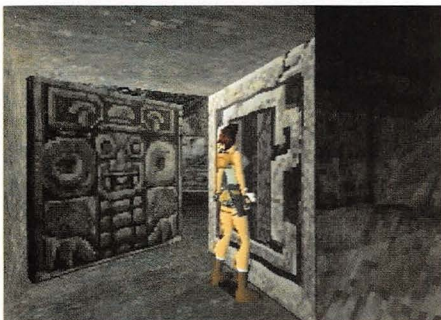
Much of the gameplay involves switches and pressure pads (this one is a simple pull-the-lever affair) but things get far more complex later on

Edge rating:

nine out of ten

The hazards facing Lara are many and varied, including static (top) and very much alive (above) types

testscreen

Command & Conquer: Red Alert

Man's oldest pastime is popularised once more

as Westwood Studios exhumes its much-lauded wargame engine

to simulate the fantastical collisions of conflicting factions

Set off barrels by shooting them (top). The yellow flecks are the game's currency. Destroying a base (right)

The game is played over a map of Europe, offering a choice of routes

Format:	PC-CD-ROM
Publisher:	Virgin
Developer:	Westwood Studios
Price:	£45
Release:	Out now

Despite the apparent dominance of *Quake* and its ilk in the PC gaming world, strategy games actually represent the favoured game style in the sector. Of these, the 2D top-down real-time variety is among the most popular.

Expanding vastly on the kind of gameplay seen in Sensible's smash-hit title *Cannon Fodder*, games such as *Command & Conquer* meld the underlying appeals of destructive warfare and careful planning, played out against a backdrop of a constantly ticking clock which ensures immediacy and urgency in playability (traditionally the antithesis of a wargamer's lot).

Of all the examples in this most specific of game genres, they don't come any better than Westwood's *Command & Conquer: Red Alert*, which is one the finest the PC has to offer on game balance. From the early introductory missions that take just ten minutes, to the final, all-out assaults that require massively co-

ordinated efforts over an entire day, everything has been put in place perfectly. The feeling that you are competing with an opponent who is playing fairly is always present – unlike the vast majority of computer-controlled strategy opponents in strategy games, who clearly cheat in some fashion.

Westwood has made a huge effort to vary *Red Alert* wherever possible. Even in the comparably excellent *Warcraft II*, most missions assume a very similar series of events with the same troops. The tools available in *Red Alert* to complete each task have been expanded greatly with the addition of new land units and, more significantly, both planes and ships now come under your direct control. The frequent addition of airfields and naval bases increases the variety of unit combinations and therefore the depth, challenge and complexity of the game.

Complementing this unit expansion are further

Ship bombardments (top) now come under the direct control of the player, as do aerial strikes. Destroying bridges while your men negotiate them is highly inadvisable (above)

The prerendered storyline complements the game perfectly, with an excellent narrative

underlying concepts, prolonged play reveals that deep down it features many noticeable advances over the first game. In addition to the new units, some of the existing ones operate more fairly and therefore enjoyably. Engineers have been altered so as to be less powerful individually; massed groups of infantry reduced in strength; and confusion swarm tactics made less effective. In conjunction with the change in the fog of war (which is still far from perfect) the underlying game is harder, even before the new difficulty levels are introduced to the equation.

The successful implementation of all the above stems from vastly improved artificial intelligence. Throughout the game the speed and guile of the computer's attacks is higher than *C&C*'s and, more

> While the establishing and development of a base is of secondary importance compared to that which it assumes in *Warcraft II*, it still ensures that every mission is more than merely a simple scrap

importantly considering it is normally you who is attacking, its reactions to your own thrusts, feints and full-on assaults is considerably developed. Hardly any of the decoys or unsubtlities of *C&C* fool this new model and those that still can are often minimised by clever resource placement/restriction or level design.

And, of course, backing up the entire wargame is the resource-management section. It meshes perfectly with the combat and, while the establishing and development of a base is of secondary importance compared to that which it assumes in *Warcraft II*, it still ensures that every mission is more than merely a simple scrap.

Given that the original *C&C* was by far the biggest selling PC game of last year, the success of this inevitable sequel was virtually assured. To its credit, though, the design team at Westwood has taken a very close look at the few weak points within *C&C* and striven to improve them.

The result is a game that feels and plays among the best ever seen on the PC.

developments in level design. While the majority of missions still revolve around collecting the single 'valuable minerals' resource, constructing armies and assaulting the enemy base, almost all offer a new angle on the problem. Commandos, nuclear power reactors, spies and hostages each feature from time to time and while the scenarios may seem quite fantastical they also happen to be extremely enjoyable to play. Being in this most visually restricting of genres, the need for innovative approaches to the gameplay itself is vital, and Westwood has delivered fully.

When **Edge** reviewed the original *Command & Conquer* in issue 18 one of its main concerns was that it was essentially the same game as *Dune II*, the father of these wargames. *Red Alert* is set prior to *C&C* and, while it has taken no risks with its presentation or

Edge rating:

nine out of ten

Units can be grouped (top left). Paratroopers mounting an attack (left). A mobile army moving in (above)

Swiv 3D

While game designers struggle to come up with new ideas, some
software companies are merely looking to their roots for inspiration.
SCi's *SWIV* update is just one of many 3D versions of 'old favourites'
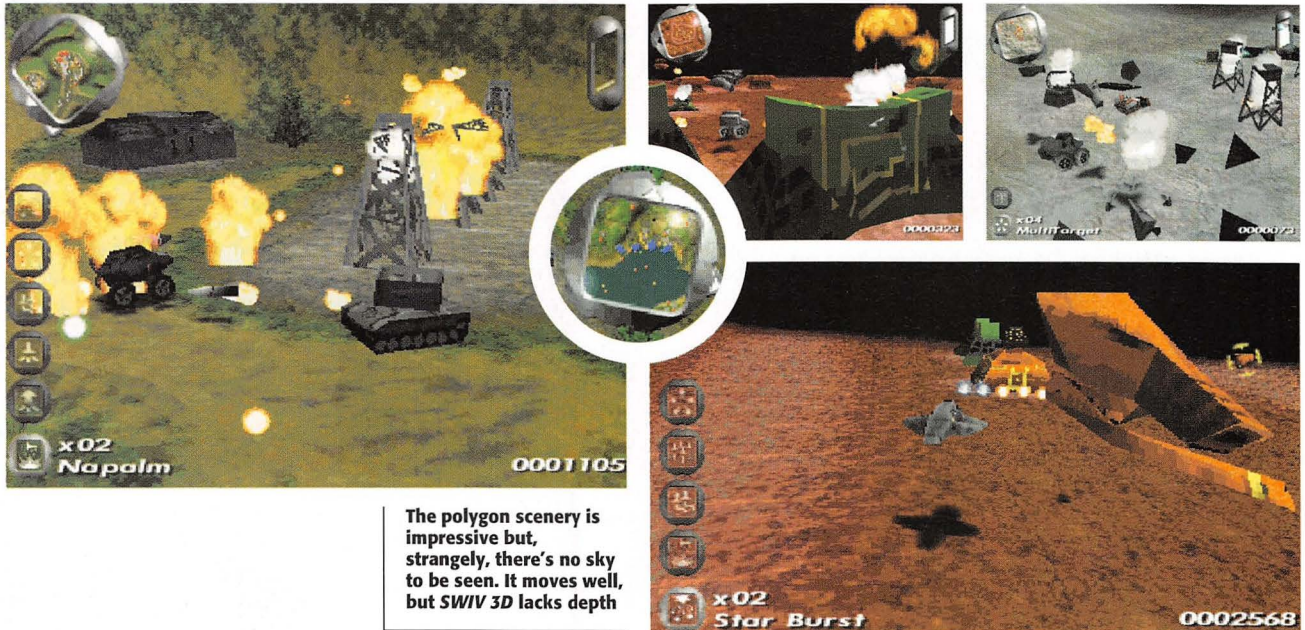
The polygon scenery is
impressive but,
strangely, there's no sky
to be seen. It moves well,
but *SWIV 3D* lacks depth

Each of the four worlds feature their
own vehicles and unique weapons

With Activision currently working on *Pitfall 3D*,
Namco a 3D version of *Pac-Man* and Sega on
Sonic 3D, polygonising old games is all the
rage. Sales Curve has shrewdly followed suit with an
update of *SWIV*, a shoot 'em up with a long and fairly
illustrious history.

So what's new? Apart from the obvious graphical
overhaul, not much. The familiar vehicles (jeep and
helicopter) remain, and it's possible to alternate
between the two as episodes progress. (The last
version, on the SNES, forced you to use the same
mode of attack throughout the entire game.)

As in previous versions, sadly, the jeep is awful – it
can't strafe left or right, so it's an easy target for
missiles, and has problems with steep terrain, making

the helicopter the only sane choice. Driving into one of
the game's hangars allows you to switch between
modes, but it does beg the question, why have the
jeep in the game at all?

As soon as a game takes the 3D route, deeper,
more varied gameplay is to be expected, yet *SWIV 3D*
remains a very literal translation, with play elements
precisely as they would be for a top-down shooter:
each level is characterised by a series of power-ups
and fiddly dodging manoeuvres which eventually
begin to grate. Ironically, the game's designers could
have added a whole new dimension by sticking more
closely to the SNES game, and having a huge,
continuous level with save-points dotted around the
landscape. This would have given the impression of a
'living battlefield' and given some much-needed depth.

On the bright side, the 3D engine is not entirely
unimpressive and the steep learning curve gives the
game a longevity sadly lacking in many of the PC's less
cerebral games; the music is a toss-up between
classical war themes and, uncharacteristically,
thumping Goa-style trance; and, as the levels progress,
the enemies get bigger and better (on the Mars level,
huge pyramids take off and glide towards you).

SWIV 3D is a strange mix of innovation and cliché,
and if expectations can be stifled, a week of lunch-
breaks could easily be lost to what is a
diversionary and not unsuccessful update.

In common with its predecessors, *SWIV 3D* gives
gamers more than enough enemies to encounter

Format:	PC
Publisher:	SCi
Developer:	In-house
Price:	£35
Release:	Out now

Edge rating:

Six out of ten

E-On ad

40 60 80 100 120 140 160 180 200

Multi-play Games
Top Ten Titles
Hit Games
Downloadable
(Not Shareware)

Chat Line
Digital Shop
Education
Edutainment

Online Magazine
News
Reviews
Competitions
Great Prizes
Gossip
Interviews
Sport

Log On

Y PLAY WITH YOUR SELF?
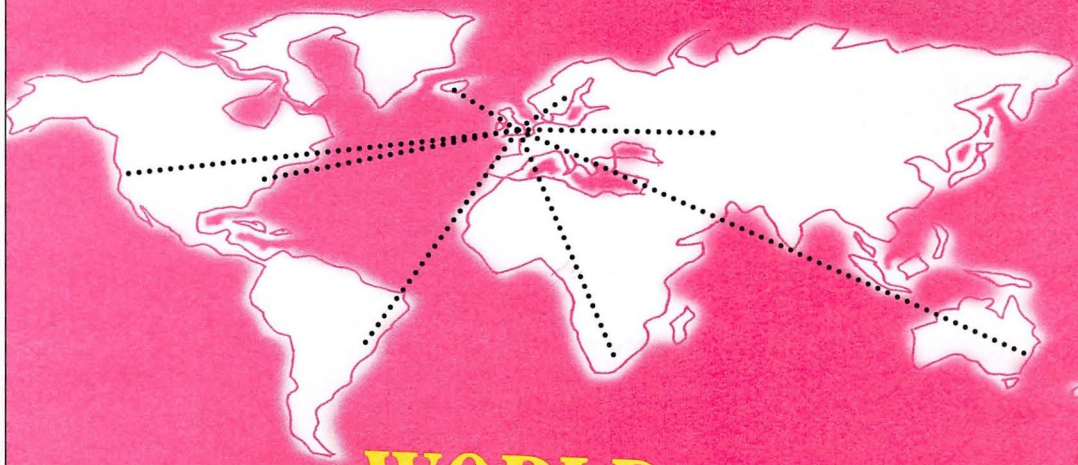
When the whole WORLD can PLAY with YOU

NOW

What are you waiting for? Subscribe FREE today

http://www.e-on.com

Absolutely the best game site in the world

http://www.e-on.com or ☎ 0990 133 007

e-on
ENTERTAINMENT ONLINE

Privateer 2: The Darkening

Mention FMV to the average gamer and the general response will be one of derision. But EA has kept the faith and, by splicing it with solid core gameplay, has turned out an *Elite* for the Nineties

Not only do battles involve the player versus pirates but also pirates against other pirates

When Origin revived the pseudo-simulation space combat gameplay of *Elite* in the first *Wing Commander* it resulted in a landmark PC title, one which paved the way for the then-expensive 386 processor-based machines. But it's arguable that *Wing Commander* was actually an inferior, far simplified cousin of the classic Eighties title. *Elite* offered a much greater degree of freedom, and a highly rewarding trading element. Instead *Wing Commander* opted to focus purely on the action, further hemming itself in with a largely linear narrative. *Privateer* was an attempt to get back to those *Elite* roots, but by this point the game technology already seemed tired. Another couple of years down the line finds Origin once again attempting to reconcile its clever 3D combat with expansive trading and a freeform game environment. And the surprise is that, despite the inclusion of a central plot told using some three-and-a-half million dollars' worth of movie footage, *The Darkening* more than succeeds in its aims. This is, in fact, the near-

perfect Nineties *Elite* that many have been waiting for.

While the use of movie footage, even of the calibre featured here – with performances from such notable acting talent as John Hurt, Jurgen Prochnow, Christopher Walken, David Warner and Clive Owen – suggests an interactive movie with minimal gameplay, the reality is very different. The game is designed in a way that the player is free to ignore the central plot, thus cutting out many of the movie sequences. And those that remain to depict approaches to planets and so on are both unobtrusive and skippable. Even by following the central story, the game avoids the clumsy feel of recent *Wing Commander* titles, only resorting to FMV sequences to genuinely push the story forward and emotionally engage the player.

The emphasis has actually been placed on the fine balance between trading and deep space battles, however. By transporting goods – legal or otherwise – between a couple of dozen planets and space stations, novices can gain enough credit to trade in larger amounts, improve their firepower, or trade in their craft for a better model. Skirmishes with pirate clans are inevitable, particularly if carrying valuable cargo, while black market dabbling will often incur the wrath of the military. And then there are the numerous missions that players can elect to

Even the actual movie script possesses a surprising amount of wit and style, with gritty scenes and impressive special effects. It's easy to see where the money has been spent, particularly when Brian Blessed and Christopher Walken get to chew over their lines

The lens flaring and planet detail may well be thoroughly modern touches, but that scanner betrays the *Elite* influence (above). It's all very well blowing credits on a spacecraft that turns on a dime, but accurate missiles and powerful guns are what keeps a pilot alive (right)
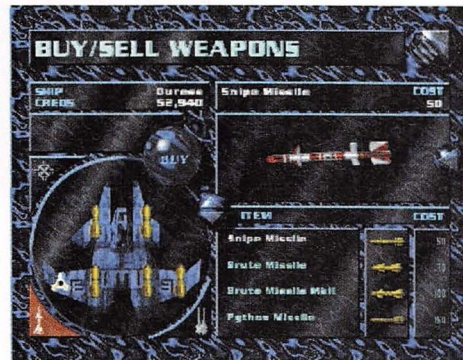
Format:	PC CD-ROM
Publisher:	Origin/Electronic Arts
Developer:	Origin/EA Mcr
Price:	£40
Release:	Out now
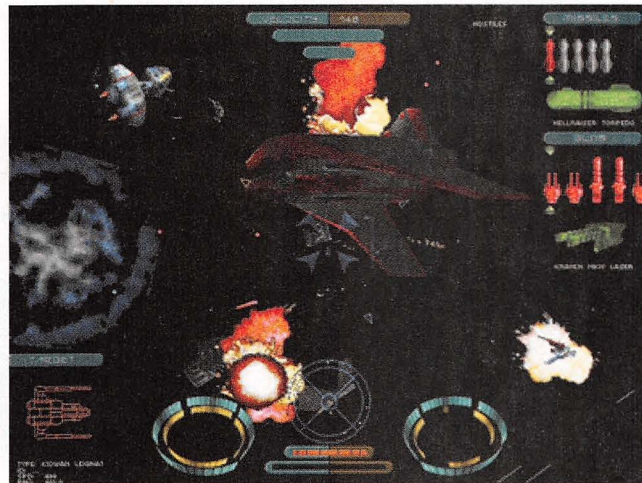
The radio chatter is well handled, providing much ambience without ever slowing down the action. The on-screen cameos, visible at the top left of the playing area, aren't animated, however (left). Laser fire is effectively done, while explosions affect the light sourcing on the 3D spacecraft (right)

undertake, ranging from simple cargo recoveries to escort jobs, to more convoluted mini-stories with double and triple crosses in wait. The way the challenges rise with the player's bank balance and firepower is wonderfully judged.

But the real revelation lies in space. While the fast blast action of the original *Wing Commander* served well in 1990, the recent additions to the series have seen little improvement in enemy strategy, and a serious trade off between fluid gameplay and chugging SVGA visuals. *The Darkening* rights all the wrongs of these titles, ditching Origin's cumbersome 3D system for a re-engineered version of Argonaut's BRender system and imbuing the computer-controlled pilots with the restrictions and flying styles of their human counterparts. Which means that combat possesses amazing grace, even when the screen is alive with a number of the exquisitely detailed craft – careful texturing, light sourcing and all. And thanks to the more complex handling styles of both the player's craft and the enemies', the battles can range from fast and vicious kills to epic, drawn-out, half-hour struggles. Much like *Elite*, in fact.

By underpinning the player's freedom within the mini-universe with that central story, *The Darkening* actually gains cohesion. This is, in part, due to the time that's been invested in presentation aspects, from the

minimal CD and hard drive access times to the clever menu systems and numerous spot effects (such as lens flaring and HUD overlays which fizzle away when not needed). Even the actual movie script possesses a surprising amount of wit and style. The footage suffers at the hands of the playback system, but the gritty scenes and impressive special effects remain visible. It's easy to see where the money has been spent. Particularly when Brian Blessed and Christopher Walken get to chew over their lines.

With something this ambitious there are inevitably some minor disappointments. The actual number of planets featured is rather small, and, as impressive as those space battles are, even a mid-range Pentium struggles to keep the frame rate at an acceptable level when another craft fills most of the cockpit view. In practically every other area, however, *The Darkening* bears the hallmarks of a classic, pointing the way forward for the integration of FMV and interactive gaming. It possesses the subtlety and balanced learning curve so few modern games capture, and it manages to further refine presentation value on a format normally associated with the most appalling hostility toward gamers.

Edge rating:

nine out of ten

From top: the game's bulletin board; almost 20 craft are available; more super-slick front-end details
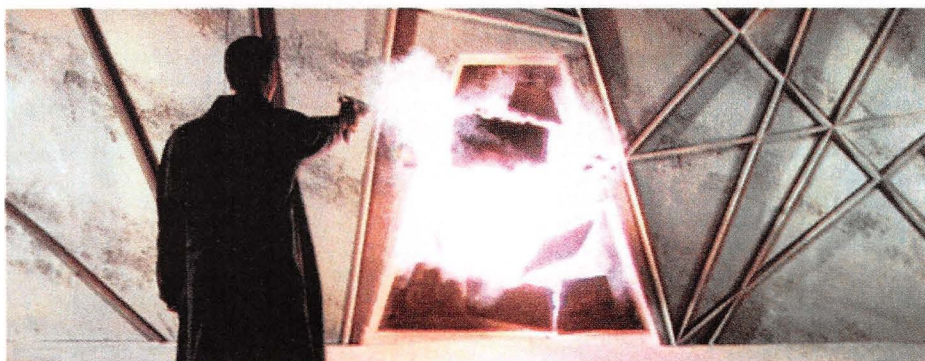
Clive Owen, in the role of the player's character, Lev Arris, tests the mettle of the Hollywood-quality sets and special effects. Seventeen weeks were spent filming at Pinewood to obtain the game's FMV footage

testscreen

Star Gladiator

Capcom, the king of 2D fighting games, is now under pressure to defend its title against a host of 3D-touting challengers. Can it make the transition and yet maintain its reputation without a hint of Ryu or Chun Li?

Winged warlord Zelkin deals a final blow to teutonic fencing type Gerelt. Had the tournament lasted longer, you might have seen the sun set over the clouds (above). Vader and Skywalker clones proliferate (top right)

If it weren't so late, a dinosaur character might have provoked whispers of 'bandwagon'...

Format:	PlayStation
Publisher:	Capcom
Developer:	In-house
Price:	¥5,800 (£40)
Release:	Out now (Japan)
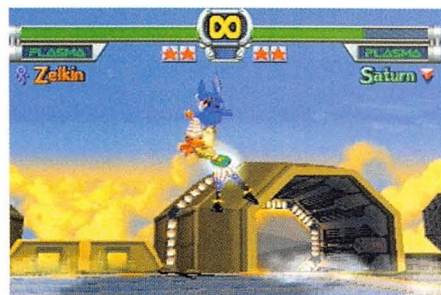
That Capcom's first 3D take on the beat-'em-up (excluding the *Gaiden* version of That Game) should be both derivative and near-average is not, necessarily, cause for concern. There's little doubt that *Star Gladiator* represents something of an experiment in 3D, and perhaps that's why the developers have felt able to borrow so freely and shamelessly from their rivals. Look closely and you'll see variations on *Tekken*'s tenstrings and reversals. *Toshinden*'s side rolls and weaponry, *Virtua Fighter*'s ring-outs and button blocking – everything established by other 3D affairs – being explored and sometimes exploited. Even the scenario doesn't bother to strive for originality, echoing Star Wars just a little bit too brazenly for its own good.

Nevertheless, the experiment has at least resulted in a technical victory: this is arguably the most attractive beat' em up on the PlayStation, defying accepted wisdom regarding speed and polygon counts. From Gerelt's foppish armour to Gore's exposed cranium, the character detail is exquisite and seems to retain its clarity regardless of camera distance and scaling. And as if the fighters weren't gaze-stealing enough, each stage is stunningly portrayed and animated with a host of 2D and 3D

effects. Neon-defined cityscapes patrolled by hovercars, the mist-swept wings of a vast airship caught above the clouds, even an orbital platform from which small battle craft can be seen chasing and dogfighting, all serve to complement the arenas. The final stage, a rotating illuminated podium caught in the midst of a storm, is a minor cinematic triumph.

In addition, that trademark Capcom depth has occasionally found its way into the features appropriated from other games. Simultaneous attacks may cause weapons to clash, cancelling both strikes with a clang. The additional freedom of 3D movement allows sidesteps, rolls, lunges, pirouettes and somersaults, creating the interesting possibility of ring-out fakes and opening up a whole set of tactics for fighting your opponent close to an edge.

If Capcom's arcade reputation has survived for too long on the integrity and fluidity of a single game engine, however, then *Star Gladiator* may well be the title that finally disappoints its casual fans. Though a delight to behold, the characters aren't exactly what you'd call responsive: far too often you find yourself facing the wrong direction, and even blocking takes a vital moment of stance-shifting and weapon-raising to come into effect. And by incorporating these long,

Training Mode reveals the rhizomatic chain structure leading to daunting 'Plasma' attacks

Effects

Drawing on custom as well as stock library effects for its contacts, *Gladiator* creates a unique mood entirely suited to lightsabre combat. However, it's the pre-determined camera-work on attacks like reversals (top right) that makes for truly cinematic action

heavily animated moves in chains of attacks. *Gladiator*'s combat system requires you to commit yourself for slightly longer than is comfortable. Triple tap a button in panicked retaliation and you'll find all three inputs registered and buffered for seconds, so that you can do nothing but watch while your gladiator trudges through a set of unwanted moves. Few bouts seem able to capture the mad exchanges of Ken vs Ryu at full turbo speed, and until you've played a character for several hours you can't claim to feel much control over the proceedings.

To succeed, therefore, you need to adopt a style of slow, thoughtful, restrained play with cautious blocking and planned precision attacks. Just keeping your face towards the opponent requires constant attention and adjustment. On a side note, the contacts are also slightly peculiar. Though rewardingly pyrotechnic, the eruption of sparkles, flashes and light rays from a successful swipe with a lightsabre simply doesn't convey as much impact as the simple but wince-inducing smack of *VF*'s body blows or *Tekken*'s bone-crunching wrestling holds. The introduction of weaponry has paradoxically made it less visceral.

Although there's nothing especially wrong with it –

and much that is very right with it – *Star Gladiator* simply hasn't got the flair or excitement that separates *Tekken* from *Toshinden*. The demands of the system also make it a rather exhausting game to play. Doubtless hardcore enthusiasts will defend its qualities but, like Sega's *Fighting Vipers*, it's hard to imagine anybody still celebrating this in a year's time.

Not that Capcom expects as much, judging by the "Episode: I" subtitle on the intro screen...

E

Edge rating:

Seven out of ten

Original character designs are at least distinctive, if not always endearing, and reflected in the style of fighting

Sadly, the most impressive attacks in the game are correspondingly easier to anticipate and avoid: you almost never see the finest moves brought to completion in a match between two competent players

testscreen

Toonstruck

Ever since Bob Hoskins shared the silver screen with an animated rabbit,
the prospect of mixing live action and animated characters has remained a fascinating one.
Virgin's latest graphic adventure takes up the gauntlet…

Things can get pretty weird in Toonstruck. The humour is most definitely dark, verging on the sick
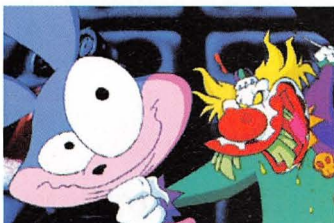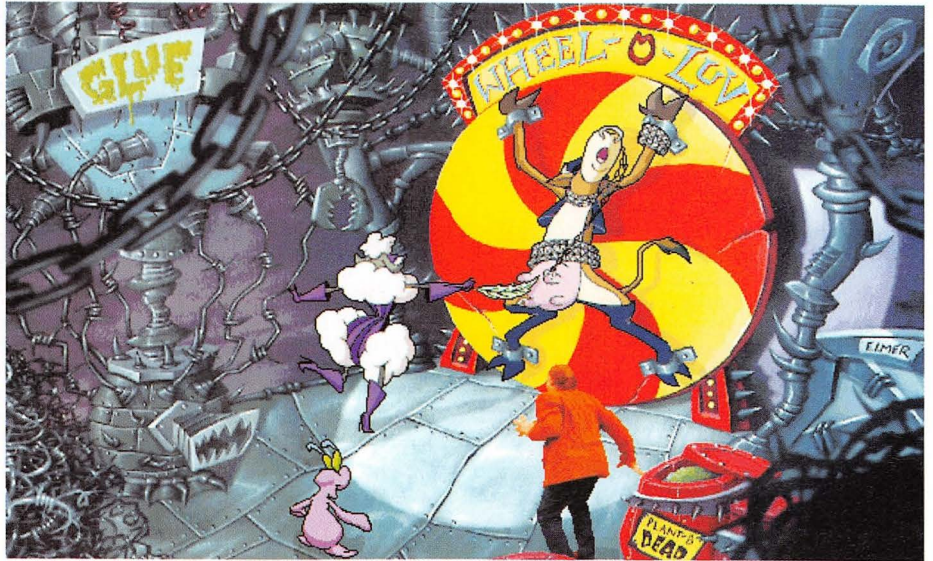
It's not Lloyd's best performance ever, but he does at least appear to be trying to get 'into' the part

Format:	PC
Publisher:	VIE
Developer:	In-house (Burst)
Price:	£45
Release:	Out now

When LucasArts unleashed *Monkey Island* it couldn't possibly have known how it would stand the test of time. It set a standard that has only rarely been equalled and never been bettered – and not for want of trying. Just about every major publisher has tried and failed to find the right combination of puzzles, humour and depth required to propel their game from tedious PC mediocrity to the dizzying heights of a number one hit.

Consequently, the LucasArts technique has become something of a secret recipe – the Coca Cola of adventure games, if you like. Virgin is understandably nervy about its latest big-budget game (rumoured to have cost in excess of $8 million) but it needn't be, because its in-house development team, Burst, has created a game that deserves to be a resounding success. *Toonstruck* is the closest any post-*Monkey Island* effort, with the possible exception of *Broken Sword*, has come to getting the ingredients right.

The concept is not particularly amazing, owing much to the movie *Cool World*, mixing a digitised Christopher Lloyd with the cartoon world of Zanydu. Lloyd plays a cartoonist sucked into the world of his own making, populated by some bizarre, weird, and occasionally wonderful creations. The player must guide Lloyd and his sidekick, Flux Wildly, through a number of cartoon lands in an attempt to find all the pieces needed to build the 'Cutefier', a machine that will counteract the 'Malevolator' wielded by the evil Count Nefarious. And so, the puzzles begin.

This is where things usually go awry. Here, though, there are no pointless tricks to keep you occupied and none of the puzzles are of the variety that have gamers calling the Virgin tips hotline in frustration.

Instead, they are incredibly subtle, complex, sometimes charming and almost always hilarious. For example, at one point you must build up your strength by working out at the gym – 'Jim's Gym', in fact. Jim, a bulldog with the voice of an Arnold Schwartzenegger impersonator, can't resist showing off while at the same time having a few jokes at your own, puny
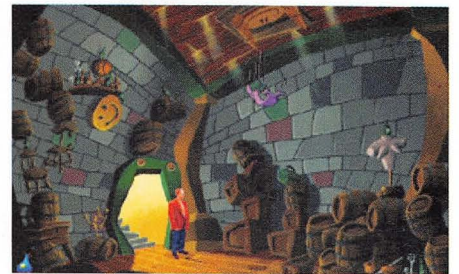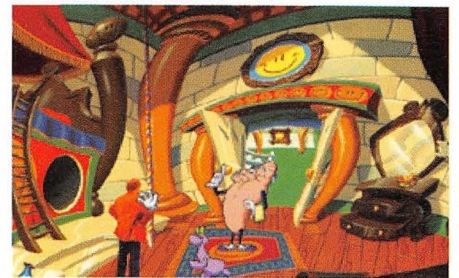
Many puzzles are structured so that Flux, your sidekick, is forced to work in cooperation
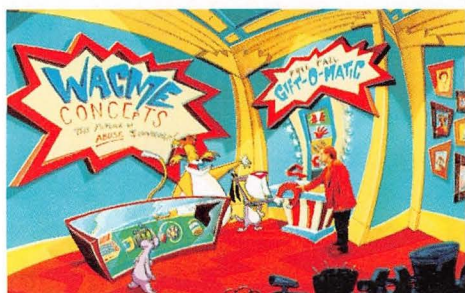
The mix of digitised video and traditional animation doesn't always work – Lloyd's character, Drew Blanc, varies in appearance on-screen from frozen stiff, to robotic... and even dead

expense. Pride, as they say, comes before a fall, and you manage to sabotage his gym equipment, sending him off bars, through hoops and, eventually, the wall.

Flux, the sidekick, is refreshingly useful. As the game progresses you build up a relationship that's reminiscent (though not quite as effortlessly amusing) as *Sam and Max*. Puzzles have been designed to require a co-operative approach – you may have to send him to places you cannot go, or use his particular brand of cartoon wit to gain answers to increasingly weird questions, but you don't ever feel that Flux was an afterthought, as sidekicks tend to be in so many LucasArts wannabes.

Toonstruck also surprises with its structure, which eschews the usual, episodic format in favour of a non-linear approach. In practical terms, this creates a feeling that the game really is a convincing world that appears to be 'living' rather than a series of set-piece animation sets. Not all the puzzles can be solved by finding local objects, and there's a good deal of exploration required before some of the very earliest (and seemingly simplest) challenges can be met.

Each of the three lands has a different feel, and although they're all obviously penned by the same

artist, a lot of care has been taken to ensure a wide variety of visual stimuli - playing through, you never find yourself pacing about a dull screen or spending valuable time traipsing through pointless connecting scenes. Everything is there for a reason, if only to throw you off the scent.

Inevitably, *Toonstruck* is such an ambitious project that it does suffer minor problems. The first is a rather obvious one: whenever a digitised character is thrown into the mix with cartoons, it just looks uncomfortable. Lloyd's character walks about like a robot, pixellates horribly in places and very often adopts the appearance of a corpse while listening to the markedly animated responses of the lead protagonists. The unfortunate effect is that you're constantly made aware of the artificiality of the world - the cartoons seem, ironically, more human than Lloyd...

The second is one of humour. Toonstruck is very amusing, but there are a number of moments where the voices are so over the top, so desperate to be funny that you'll just groan. (And there's a profusion of unfunny toilet humour that probably regards itself as 'adult', but comes across as nothing more than lazy.)

Toonstruck is a fine adventure, and although not quite worthy of snatching the LucasArts crown, it's a sure sign that Virgin's internal development team is beginning to get into its stride.

Edge rating:

Eight out of ten

The detailed cel animations are first-rate, and give the game a polish that has only previously been seen from the undisputed kings of the genre, LucasArts. The humour, too, is reminiscent of *Day of the Tentacle*
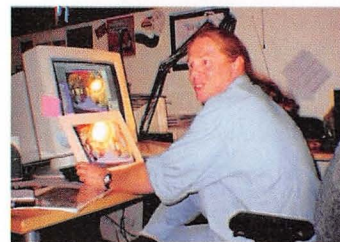
Green-screen technology was used to throw Christopher Lloyd into the cartoon mix. It sort of worked...

Destruction Derby 2

If ever a game demanded a sequel then *Destruction Derby* was it.
Psygnosis partner Reflections returns for another
lap of the hazard-packed circuit that is the driving game
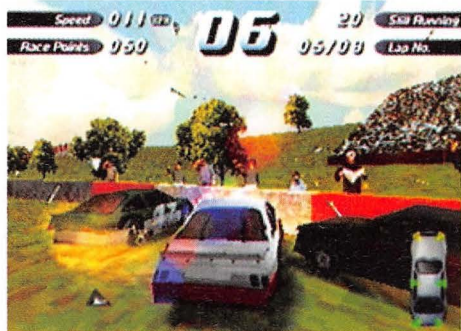
A helpful opponent seems more than happy to demonstrate the game's new crash routines while the player's car merely succumbs to a mild wall scrape (above). The new rolling pit stop (above left) is a welcome addition to the game, and is action-packed in itself
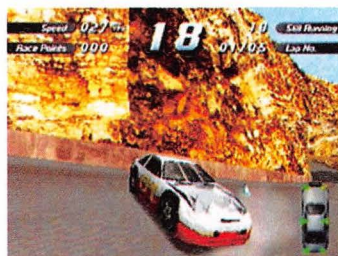
Smoke spot effects are as impressively realistic-looking as they were in the original game

Format:	PlayStation
Publisher:	Psygnosis
Developer:	Reflections
Price:	£45
Release:	Out now

Destuction Derby 2 is the game the original should have been – with the luxury of more advanced development tools and more generous deadlines, its programmers have finally realised the full potential of the concept. *DD2* is excellent for a number of reasons, the vast majority of which stemming from the radically improved mechanics of its cars – specifically the addition of proper z-axis manipulation.

If, or rather when, your car goes out of control it now flips, rolls, spins and tumbles to the real-time dictates of Reflection's shiny new physical modelling routines. Apart from the fact that each and every crash is different, the action, particularly when viewed from the driver's seat, is far more intense than before.

Naturally, there would be very little point to all this effort if the the new air-happy cars were confined to the bizarrely myopic picket-fenced gutters that went a long way to undermining the original's long-term appeal. There are now seven courses (compared to the original's six), and not only are they far wider – banishing frustrating memories of being washed along on a tide of metal in the original – but they buck and twist wildly. Banked corners, hills, dips, bumpy sections, underpasses and bridges all enhance the experience greatly, but the undoubted stars of the game are the jumps. Reflections claims that it has actually had to crank up the force of gravity to keep

the cars from flying off of the circuits, but the claim is difficult to believe when sailing through the air, surrounded by a pack of competitors. On Chalk Canyon, probably the most thrill-packed circuit in the game, there's even a Bond-style banked jump where it's possible to twist your car through 360 degrees and land back on your wheels.

The increased complexity of the cars' modelling also affects the structure of the game. Once again the cars feature six damage zones, but now they also boast four-wheel independent suspension. This not

A brief camera fly-by over the pack sets the scene at the start of each and every race
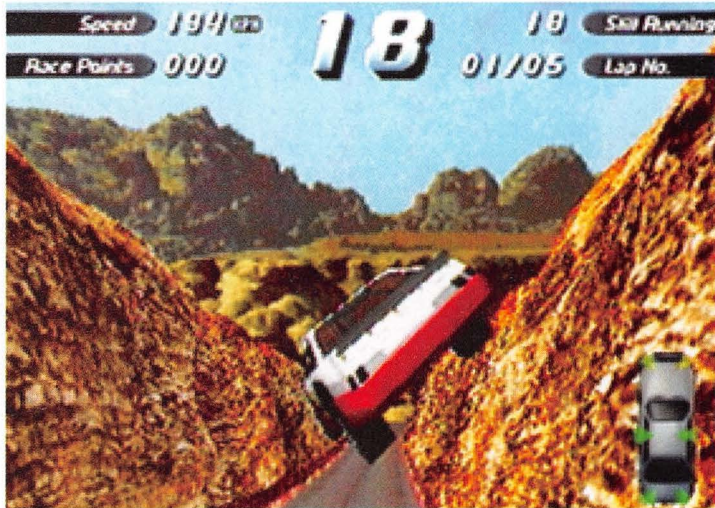
Your car begins to turn over after take off at the Bond-style twisting jump in Chalk Canyon (left). Pine Hills Raceway (above) shouldn't present too many problems... in theory

only gives the game a great driving feel but also allows you to lose one or both of your back wheels, crippling your car in the process. And now that the damage system's been refined, so has its flipside: the new pit-lane allows you one repair session per race – a tight five seconds of panel selection and button hammering.

There's plenty of graphical trickery to season the game's new feel too. As well as plenty of debris there are spot effects for friction sparks, smoke and fire, and a new lighting routine, which can be best appreciated on Liberty City, the game's night-time event.

As far as criticisms go, there is no link-up mode – a significant blow in light of *Wipeout 2097*'s excellent showing in this area – and the bowl event section

again proves to be a weak spot – despite providing four all-new bowls, including the Death Bowl, one side of which is a huge drop into a car-crushing machine, each still fails to pull its weight, especially now that it's only possible to compete against CPU opponents.

But, on the whole, this sequel delivers a balance of action and feel that few other examples can hope to match. Reflections should be applauded for producing a highly impressive 3D racing engine, while never losing sight of the knockabout potential of the concept.

Edge rating:

Eight out of ten

The replays are some of the most entertaining yet seen, thanks to well-placed cameras and plenty of action

The game features four bowls, distinguished from each other by hills, dips and, in Death Bowl's case, a car-crushing machine that lines one whole side of the arena. Red Pike Arena (above) makes do with a hillock
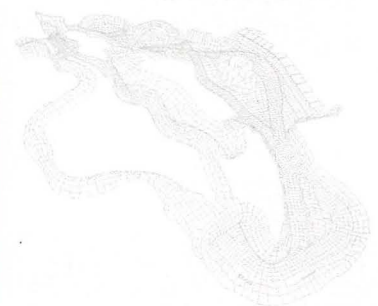
...and this is where <u>you</u> score!

Win a Sony PlayStation!
0839 408001* **Instant Win!**

Win a Sega Saturn
0839 408002* **Instant Win!**

Win an Ultra 64!
0839 408003* **Instant Win!**

Win a MultiMedia PC!
With CD-ROM, Sound card, speakers and Windows 95!
0839 408004

the BIG FIVE-0!

50 points or more wins you a prize. Win Quartz Watches, Personal Stereos, CD players, cameras and cash prizes all the way up to £5000 -
INSTANTLY!
0839 408005*

Win a Remote Control Watch!

Controls most TVs, satellite & Videos!
0839 408006*
Instant Win!
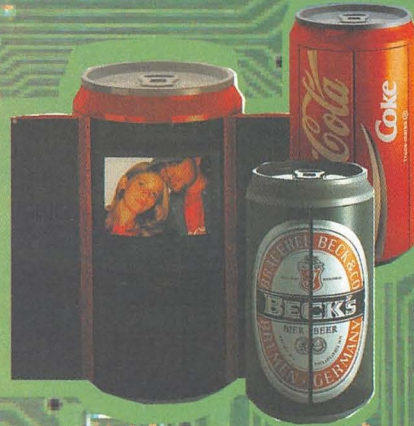
Win Canned Music or Canned TV!
A complete CD system or remote colour TV in a giant can! 0839 408007*

Instant Win!

Win Autographed WONDERWALL!
an autographed 7" vinyl of the smash hit from OASIS!
0839 408008
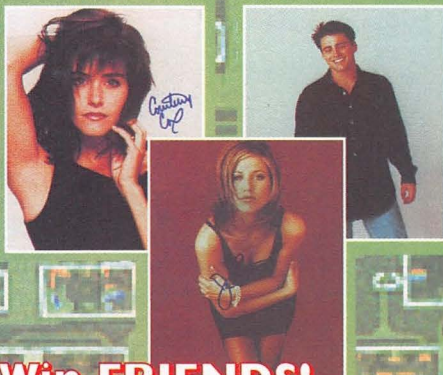
Win FRIENDS!
Win an autographed set of pics of the stars! Actual pics may vary!
0839 408009*

cashHI-LO!
THE QUIZ SHOW ON THE PHONE!
WIN £5000 INSTANTLY!
0839 408010*

SHOOT-OUT!
The more goals you get the more you win!

6 £100 cash OR CD player or pocket TV! *

5 35mm camera, personal stereo or databank! *

4 Casio Lottery watch or Zippo lighter !*

3 Credit card calculator or stopwatch or penknife! *

* Or choose any other prize offered on this line!

0839 408011 **Instant Win!**

Spot The Player!
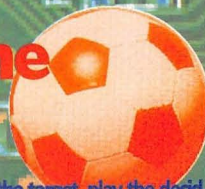
Spot enough players to hit the target, play the deciding game and you get a chance to win INSTANTLY! There's a host of prizes to choose from... a 14" Colour TV or a Video Recorder or a Mountain Bike, or a Casio Keyboard, or a Sega Saturn, or a Stereo System!

0839 408012*

Alien Attack!
Answer questions the zap Aliens to win a galaxy of prizes!
0839 408013
Instant Win!

Disruptor

After the immersive delights of *Doom* and *Alien Trilogy*,
Interplay enters the darkened corridor with its own brand
of firstperson-perspective blasting

Disruptor is visually the least 'blocky' of the PlayStation's firstperson shoot 'em ups. Essentially, though, the action is much the same – shuffle back and forth from behind the walls and fire

There can be few PlayStation owners who have yet to sample the delights of the 3D, firstperson-perspective shoot 'em up. The original *Doom* has around for the best part of a year and Acclaim's licenced *Alien Trilogy* is one of the year's more high-profile releases. And yet it seems that softcos cannot slake the gamer's thirst for this most immersive of sub-genres: the darkened corridor wandering, the gory festival of monster splattering and the sheer exhilaration that comes from the fear of not knowing what is lurking around the next corner.

Interplay is the latest to enter the fray with *Disruptor*, a handsome 12-mission blaster set in the near future. Its controls are immediately familiar – shoulder buttons to sidestep, D-pad to snake the passageways. Essentially, it isn't anything dissimilar to what's been seen before. The player explores the terrain destroying every fiend in sight, collecting as many power-ups as possible and then repairs to the exit. A map assists negotiation of the labyrinthine levels which are, despite their size and complexity, scrupulously fair if a mite on the tough side.

Disruptor works simply because it's beautifully structured, its weapons are satisfyingly meaty, there is very little aimless wandering and in many places it's genuinely frightening. And those that rose to the challenge of *Doom* and *Alien Trilogy* will be pleased to learn that it's rather difficult – three skill levels, passwords and memory cards being a useful addition to the proceedings.

Visually, *Disruptor* is splendidly smooth with clean textures and high quality (if somewhat laborious) FMV sequences. Unfortunately, and despite the design and visual quality, the game itself is not significantly different to anything that's gone before to warrant it an essential purchase. Although the levels are graphically far more varied than the likes of *Doom*, the action remains one-dimensional – blast, shift sideways, collect the pick-up, check the map, off to the exit. More imagination would be necessary for it to claim an 'indispensable' tag. **E**

Edge rating:

Seven out of ten
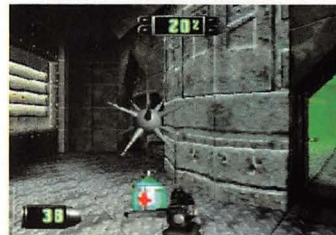
These are two of the earlier and easier enemies to tackle – after level three it's a real challenge

As you progress, so the need to collect more powerful weaponry intensifies. The Blaster (above) takes out most foe with but one, satisfyingly meaty shot.
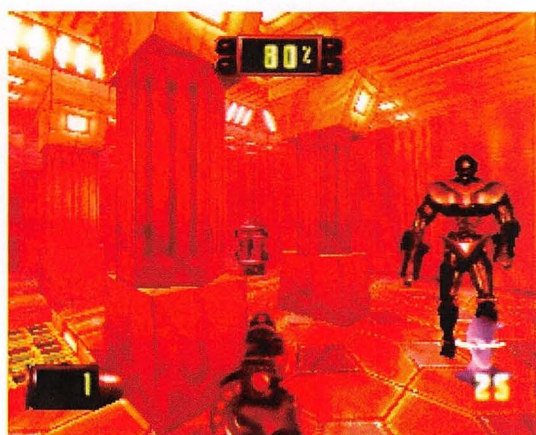
Format:	PlayStation
Publisher:	Interplay
Developer:	Universal/Insomniac
Price:	£45
Release:	Out now

Daytona USA CCE

After a lukewarm reception first time around,
Daytona USA has re-emerged in a newly polished *Championship Circuit Edition*.
Is a pretender to *Sega Rally*'s throne about to emerge?

The Balance vehicle is competent enough, but the more experienced player will prefer the faster Phoenix

The tracks vary greatly in terms of difficulty, with Dinosaur Valley being a particularly tricky proposition.

Graphics

The visual improvement over the previous conversion is significant, but the awful clipping problems that plagued the original Saturn *Daytona* are still in evidence at times

W hereas, in recent months, the PlayStation has streamlined the contours of the racing genre with a heady mix of the super-fast (*Wipeout 2097*) and super-slick (*F1*), the Saturn has rather floundered, with only *Sega Rally* offering any respite.

In *Daytona CCE*, however, Sega hopes to have addressed the problem. *CCE* provides a number of necessary additions: two new tracks, a selection of new vehicles, a considerable graphical overhaul and the much-anticipated twoplayer option. The game has also been developed for use with Sega's new analogue pad as well as the more traditional controller.

On playing *CCE* the player quickly comes to realise that all the much-yearned-for elements are well in place. It's a beautifully smooth and, more importantly, inescapably fast racing game that will delight and frustrate in equal measures. All the extra tracks provide notable scenery changes and the vehicles are varied enough to beg experimentation.

Nevertheless, at no point does *CCE* totally convince. Just as in the first game, the handling is sometimes left wanton. With the analogue pad it's a little less noticeable but, when using the ordinary controller, a tap in either direction can often result in a drastic change of direction. On the simpler courses it doesn't prove a big problem but on the later tracks it's a rather serious fault. Practice certainly helps, obviously, but, primarily, it will undoubtedly infuriate.

Tracks are also too few in number. There are only

five and, although each one initially appears entertaining, they begin to dull after a while.

The twoplayer option goes some way in balancing this fault out – its inclusion takes *CCE* a stage further than its predecessor and adds another dimension to the oft-seen tracks. Much of the time the game will be played for this reason alone.

Daytona USA CCE isn't wholly persuasive. Even though the changes are obvious, the faults from the first game seem to have, somehow, made it into this sequel. And at no time does it come up to the standard of torch bearers such as *Ridge Racer* and *Sega Rally*. But, despite that, it remains an enjoyable slice of racing hokum that will entertain in oneplayer mode and prove especially compelling when there are two participants.

Edge rating:

seven out of ten

Format:	Saturn
Publisher:	Sega
Developer:	In-house
Price:	£50
Release:	December

testscreen

Pandemonium

Since leading the 32bit revolution with *Crash 'n' Burn* on the 3DO,

Crystal Dynamics' portfolio has developed apace.

The latest addition is a platform game not hugely dissimilar to *Crash Bandicoot*
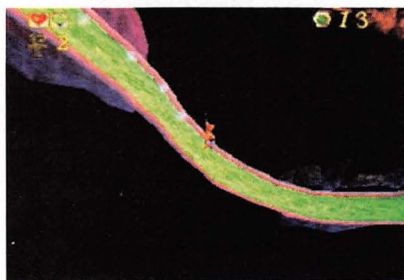
There's a huge selection of colour-drenched backdrops, but although the game tasks become harder as the game evolves, they fail to incorporate many new features along the way. There are several sections allowing you to transform, but it's really no more involved than *Donkey Kong Country*

Fargus struggles against the first end-of-level boss because he lacks his companion's double-jump move

Format:	PlayStation
Publisher:	BMG Interactive
Developer:	Crystal Dynamics
Price:	£45
Release:	Out now

It wasn't even mildly shocking that another 3D-styled platform game would follow so swiftly in the footsteps of *Crash Bandicoot* – the praise heaped upon Naughty Dog's colourful PlayStation debut proved that searing graphics are still enough to impress most observers of the videogaming scene.

Edge, however, isn't quite so easily taken in – both *Crash* and *Pandemonium* fail to deliver the goods to match their unarguably exuberant gloss.

Developer Crystal Dynamics has stuck fairly rigidly to the 2D platform-game brief: offer jewels for collection, allow baddies to be killed by a stomp on the head (or shot when the player collects a special weapon) and don't allow the player to fall off the platforms unless you want them to.

Controlling the lead character (a choice of boy or girl) is simplicity itself, with only left, right, jump and fire to test manual dexterity.

There is a huge variety of graphics to see in *Pandemonium*, and its levels are well designed and paced, with little chance of the player getting lost,

despite the fact that the stages are large. There are also opportunities to deviate from the expected path and go searching for bonus treasure items and power-ups to bolster the characters' abilities.

Pandemonium is a sound enough attempt at a 32bit platform game. It looks and sounds the part and it's simple to pick up and play with most of the dreadfully frustrating features which used to dog the genre – pixel-perfect jumps, sparse re-start points, deliberate leaps into unknown dangers – taken out, but it's difficult to stave off imaginings of the development team saying, 'Hey, let's take a platform game... and put it in three dimensions!' while playing.

And, although they've certainly made it look fantastic – there are pretty effects galore, with gorgeous scenery and some wonderfully convincing 3D parallax effects – someone should have pointed out that taking a creaky game idea and skewing it to become pseudo-3D isn't quite enough. **E**

***Edge** rating:*

Seven out of ten

Batsugun

The flow of vertical-scrolling shoot 'em ups onto the 32bit consoles remains steady, with Banpresto having acquired a license to convert Toaplan's revered catalogue. But raw hardware power doesn't always improve playability...

A s 16bit technology infiltrated arcades in the Eighties, vertical shoot 'em ups transformed from weedy exercises in bullet-dodging to state-of-the-art 2D sprite shunters. In recent years, however, as games have got faster and effects more copious, gameplay has often been left languishing as a secondary consideration to many designers.

Toaplan, one of key trailblazers of this style of game, usually managed to endow its games with enough playability long after game screens had reached sprite saturation point. *Batsugun* is one of the company's more recent releases (at just three years old) and is an example of how technology *can* ultimately overpower a game. Unlike its older, more restrained vertical shoot 'em ups, such as *Flying Shark* and *Truxton*, *Batsugun* takes the power-up to its illogical conclusion, shielding the player's skills behind an ludicrously huge arsenal of firepower.

Despite this, *Batsugun* will thoroughly impress anyone with an appreciation of 2D coin-ops, and while it may look dated, the amazing explosions and over-the-top action are yet more evidence of the Saturn's exemplary 2D handling. Not a classic in designs terms, perhaps, but one that won't disappoint those yearning a show-off 2D title. **E**
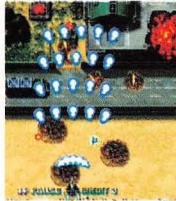
Some levels look like Toaplan's more military-based shooters

Edge rating:

Seven out of ten
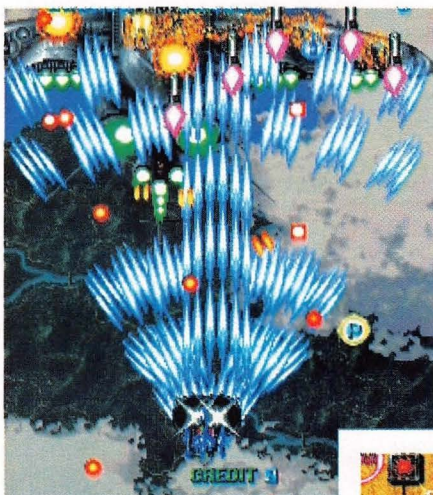
There's no shortage of firepower in *Batsugun*. And that's the problem...
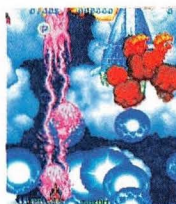
Format:	Saturn
Publisher:	Banpresto
Developer:	In-house
Price:	¥5.800 (£40)
Release:	Out now (Japan)

Back issues

Edge is not a magazine that lingers on the newsagents' shelves for long. If you missed a few issues, here's the perfect chance to complete the set…

Back issues cost £5 each, or £4 each for two or more (including postage & packing).

The **Edge** slipcase (left) is the ideal way to protect your copies. Each one holds a year's worth of **Edge** and costs just £6.
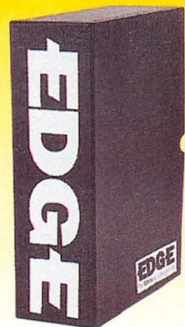
To order, send the coupon below, with a cheque/PO made payable to Future Publishing, to: **Edge Back Issues**, Future Publishing, FREEPOST BS4900, Somerton, Somerset TA11 6BR

NB: Issues one to eight, eleven, twelve, thirteen and fifteen are sold out.

Back issues hotline number: 01225 822511

Order coupon

EDG/BO/06

Please send me the following **Edge** back issue(s)/**Edge** slipcase(s)

- [ ] Issue **nine**
- [ ] Issue **ten**
- [ ] Issue **fourteen**
- [ ] Issue **sixteen**
- [ ] Issue **seventeen**
- [ ] Issue **eighteen**
- [ ] Issue **nineteen**
- [ ] Issue **twenty**
- [ ] Issue **twenty-one**
- [ ] Issue **twenty-two**
- [ ] Issue **twenty-three**
- [ ] Issue **twenty-four**
- [ ] Issue **twenty-five**
- [ ] Issue **twenty-six**
- [ ] Issue **twenty-seven**
- [ ] Issue **twenty-eight**
- [ ] Issue **twenty-nine**
- [ ] Issue **thirty**
- [ ] Issue **thirty-one**
- [ ] Issue **thirty-two**
- [ ] Issue **thirty-three**
- [ ] Issue **thirty-four**
- [ ] Issue **thirty-five**
- [ ] Issue **thirty-six**
- [ ] Issue **thirty-seven**
- [ ] Issue **thirty-eight**
- [ ] Issue **thirty-nine**
- [ ] **Special Edition**
- [ ] **Edge** slipcase(s)

(Tick box or write in number required) [ ]

I enclose a **cheque/postal** order (delete as applicable) for

£ _____

Title _____ **Initials** _____

Surname

Address

Postcode

Tel:

Tick this box if you do not wish to receive any information from companies associated with **Edge** [ ]

nuview

nuMedia

A meeting point for media capitalising on the digital entertainment revolution

R ecently. The Times ran a embarassing TV advert attempting to show how clued up the broadsheet is about computer technology. 'To our children.' the narrator informed us earnestly. 'virtual reality is a reality'. Exactly whose children were they basing this assumption on? Nicolas Negroponte's? William Gibson's? Slightly more accurate was the phrase that ended the ad: 'The world of information technology is changing so fast.' If only they knew the half of it.

This month **Edge** looks at *Creatures*. Millennium's CD-ROM about artifical life that's so realistic it's almost worrying – it may look cute. but it's a sign that true computer intelligence is slowly shifting from paranoid fiction to fascinating reality. Also, The State of the Cyber Nation is a book about people who have withdrawn from society and are practically living online. FSOL's hauntingly progressive new album. Dead Cities, would be a suitable aural accompaniment for such a grim futuristic outcome...

On a less cutting-edge note. Microsoft digs into film history with *Cinemania '97*. and columnist Robert Cringely delves brilliantly into the history of the PC in his book. Accidental Empires. If that wasn't enough. Million Dollar Clothing presents some 'ultra-hip' Pac-Man T-Shirts and Edge tests Sharp's latest MiniDisc personal stereo. (£379 and. by the looks of it. worth every penny.)

Cinemania '97

W ell. the figures on the box are impressive: 20.000 movie reviews. 10.000 actor biogs. 4.500 crew biogs – all of them cross-referenced so. if you need to find the name of that thriller starring Dennis Quaid and Ellen Barkin. you merely type the actors' names in and *Cinemania '97* finds the film title. Eminently useful.

Despite a brave attempt at omniscience, though. Cinemania '97 disappoints in a few areas. The selection of movie clips is rather sparse, and many films are simply given short reviews and no pics. A few academic essays and some original ad posters would have made interesting additions.

Nevertheless. *Cinemania '97* is a good resource for those with a general interest in movies who occasionally delve into darker areas (there are loads of zombie flicks. for example). Biogs can be illuminating. if a little short, and the extensive network of film reviews will be of great use if you want to rent a film. but can't remember if it was critically acclaimed or not.

Ultimately. even if you're not looking for something definite. it's easy to spend hours trawling though the package – you could waste the same trawling the Interneet and not find half as much information.
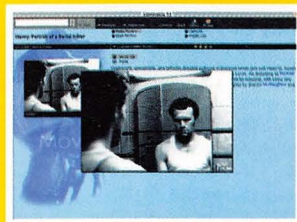
Cinemania '97 Contact Microsoft Connection, Tel 0345 002000

Creatures

W hile most people could enjoy James Cameron's seminal hit. The Terminator, without worrying about the science involved. many scoffed at the whole idea that a computer could become self-aware and destroy the human race. 'How could a collection of inanimate objects. semi-conductors. microchips and whatnot suddenly gain that indefinable essence we know as life,' they laughed. forgetting the fact that carbon and water. the two essential building blocks of life are. of course. totally inanimate.

Recent innovations in the area of artificial life. including Millennium's remarkable *Creatures*, will go some way toward silencing the sceptics. *Creatures* is actually based around a very simple idea (so simple in fact. that Activision released a primitive version of it 1985 as *Little Computer People*). You get a prerendered 2D landscape called Albia which includes lots of rooms. lifts. carts and objects. and you get a disc containing six Norn eggs – Norns being the eponymous creatures. The idea is to hatch a few eggs and then look after the emergent Norns – feeding them. making sure they don't get ill. teaching

them how to talk. helping them to explore their environment and essentially watching what they get up to.

The difference between *Creatures* and *LCP*. though. is that. in the latter. the computer told the inhabitant what to do (with coaxing from the 'player'). but in the former the inhabitants actually learn it all for themselves. If a certain Norn eats a piece of cheese. for example. its hunger is sated so it learns

to associate cheese with nourishment. Similarly. if a Norn does what you don't want it to. position the cursor over its rear and click – this administers a quick slap and. chances are the chastened Norn won't do it again.

The cerebral construction of Norns is frighteningly complex. Each one essentially has a unique program which acts as its brain. and this brain is divided into several different lobes.

Gadgets

- Sharp MD-MS100E
- Personal MiniDisc Player
- Available now
- £379

Personal MiniDisc Player

While many people are still happily listening to CDs, the global demand for MiniDisc technology is quietly growing. Sharp claims that 3.5 million MD units will be sold in 1996, and that figure is set to double next year. Just the right time, then, to release a new range of MD products including this sleek number.

The MD-MS100E, as the ad men like to say, combines portability with a full range of cool features. It measures just 11cm×3cm×1cm and weighs a sylph-like 275g, making it small enough to fit in the tightest of trouser pockets. It's also recordable, so you can make up your own discs with tracks recorded from other audio sources. And, this being digital technology, there is no loss in sound quality, even if you re-record on the same disc a million times.

Other features include a six-second shock-resistant memory, 100 word title generator and a lithium-ion battery which allows 4.5 hours playback on a single charge. The price is high, but this is a truly exciting technology which, by all rights, should render everything else obsolete. Then again, that's what they said about the eight-track cartridge.
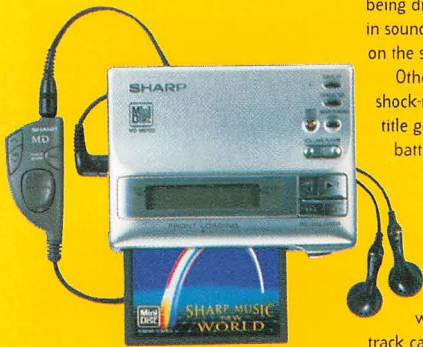
Sharp MD-MS100E Contact Sharp customer helpline, tel 0800 262958

Gear

- Million Dollar Clothing
- T-Shirts S,M or L £6.50
- Fitted 'Ringer' T-Shirts £7
- Bobble hat (not shown) £17

Pac-Man clothing

Back in issue 31, Edge looked at a great selection of Wipeout T-shirts produced by Chelsea design house, Million Dollar Clothing.

Now the same company has received an official license from Namco to release a range of T-shirts and accessories based around that classic arcade character, Pac-Man.

Among the collection are several shirt designs for both male and female retrogaming fans and a great bobble hat for Pac-Man addicts who don't mind looking a little silly.

Million Dollar has no plans to develop more game-related clothing, yet certain gamers would surely hanker after a pair of Super Mario dungerees...

Pac-Man clothing Contact Million Dollar, tel 0171 376 7688

---

each one dealing with a different area of perception. On top of that, the Norns also have accurate organic systems – they breathe, they eat, they get injured. Nothing seems to have been left out.

To make things more complex, though, the piece of code behind every Norn is slightly different, rather like human genes. This means that no two Norns have the same genetic make-up: they respond to things differently, and make entirely disparate assumptions from the same stimuli. For example, one Norn may get slapped by another and assume that all Norns are violent, therefore leading the rest of its life in social exclusion. Another less drastically inclined Norn may simply learn to avoid the one specific Norn that hit it.

The most fascinating element is that Norn biology works similarly to real animal biology. When two Norns mate (very tastefully done – they merely indulge in a very long kiss with a popping sound at the end – much like real life) their progeny is born with code taken from the programs of both parents. In this way, Norns actually mutate and evolve over generations, with certain characteristics dying out and others blossoming, in a kind of simulated version of natural selection.

To make things more interesting Millennium has thrown in things like alcohol, contagious viruses and even narcotics. There is also a small group of hostile creatures called Grendels which bumble around Albia randomly attacking Norns and giving them nasty diseases. Unfortunately, some Norns seem to be completely obsessed with the Grendels and happily follow them around, regardless of the odd slap in the face.

Creatures is way, way too complex to adequately sum up here and for that reason alone is commendable. Every tiny aspect of Norn behaviour and/or physiology can be monitored by the player (mainly through a selection of pull-down menus), and it is fascinating to watch them develop as totally individual entities. However, Creatures is not a game: trying to teach the Norns to talk or respond to your demands can take hours and they'll often just ignore you and wander about aimlessly. Much of the time you won't have a lot to do but watch them go about their business.

Nevertheless, if you're at all interested in cutting-edge cyber-technology, artificial life, evolution, learning patterns, social interaction, sexual politics, genetic mutation or cute little animals, Creatures will have something for you. It is an intriguing glimpse into what can be achieved by cunning programmers, and, for anyone who has seen The Terminator, a rather unsettling preview of what computers may be able to achieve in the coming years. Incidentally, Creatures producer Toby Simpson told Edge that, taking into consideration some of the basic scientific definitions of what life is, the Norns are genuinely alive. Eye-opening and, if you're patient, fascinating.

Correction...

the multi media yearbook
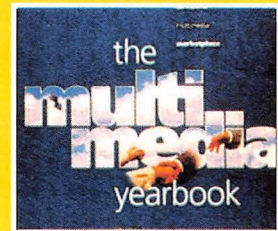
- The Multimedia Yearbook
- Published by TFPL Multimedia (an imprint of Macmillan)
- £135
- ISBN 0-333-662-56-3
- Contact 0171 881 8027

In E37 Edge incorrectly stated that the price of Macmillan's Multimedia Yearbook was £8.99. At £135, it is, in fact, considerably more.

Edge apologises to Macmillan publishing, and to readers interested in the product, for the confusion.

Continued

Music E

Richard D. James / Aphex Twin — Warp

Having spent years tinkering with home-made electrical gadgets, then setting them to work on countless tracks of ghostly ambience or ear-scraping noise, Richard James (Aphex Twin) has now settled in to a normal work pattern. Hence his second album in little more than year. Minimal production, gloopy effects and crazed beats are favoured, as are jarring drum 'n' bass rhythms beneath playful melody lines. Genius or mad bloke from Cornwall? It's hard to tell. At least he's not dull.

Fluoro / Various — Perfecto
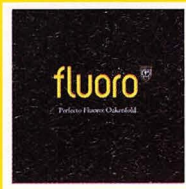
Paul Oakenfold's follow-up to his award-winning Radio One 'Goa mix' compilation takes a similar line, splicing melodic trance vibes such as Red Sun's 'This Love' and Man with No Name's thundering 'Teleport' with classical film scores such as Samuel Barber's beautifully sombre 'Adagio for Strings' (Platoon). Despite the occasional whiff of Perfecto cheese, Fluoro is a welcome reminder that Oakenfold is to trance what LTJ Bukem is to drum'n'bass – a true master.

Lamb / Lamb — DeConstruction/Cream

Minimal, atmospheric, ambient. Drum 'n' bass would make perfect game music. Lamb, however, will probably not sit so well on the soundtrack to the next Wipeout game. Although essentially a D&B act, the melancholic lyrics and dreamy, swirling interludes present on the group's debut album are hardly the stuff of adrenaline-soaked PlayStation racing titles. This is, in fact, genre-defying material: a little trip hop, a smattering of Everything But the Girl, a pop at Alex Reece. Cool.

Reactivate 11 / Various — React

Compilation series which make it into double figures are either stuck on a treadmill or reliable at delivering the goods. Happily the Reactivate series falls in the latter camp, whacking out nu-NRG with infectious gusto, and volume 11 mixes lesser known hardbag with high-profile cuts like Baby Doc's 'Yum Yum' and 'Evolver' from De Niro. The two-CD version even includes a tribute to Rainbow Islands by Seb (thankfully, an entirely different affair to the game's soundtrack).

Dead Cities / F.S.O.L. — Virgin

Life forms was a scary album about computers turning into simple, living organisms. Dead Cities is a scary album about millennial angst, pan-global loneliness and social deterioration. Hence song titles like 'Everyone in the world is doing something without me'. Noises float and whine, beats start up then disintegrate, voices wail inconsolably. This is what your nightmares would sound like if you hooked your subconscious up to a MiniDisc recorder. Brilliant, unsettling stuff.

The Haunted Science / Omni Trio — Moving Shadow

Following their revered remix of EBTG's 'Wrong' The Haunted Science reveals Omni Trio's own talents for dazzling drum 'n' bass. They're at their best when layering synths, saxes and strings over slick percussion (as in 'Rhythm Methods'), or when gliding over vocal tinged, piano-led grooves such as those in 'Tripping on Broken Beats'. D&B purists may snub this kind of jazz-fused beat trickery but to the open-minded it's a relaxed and accessible ramble through new musical pastures.

Book E

Accidental Empires

Reissued with two new chapters to coincide with the Channel 4 series, The Triumph of the Nerds, shown earlier this year. Gringely's account of the genesis of the computer industry is different from all other accounts in one important area: it is a thoroughly entertaining read.

Using information culled from his gossip column in Info World, Cringely has written a witty account which focuses on the personalities of the industry instead of just the technology. The bizarre truth is, the PC industry did not evolve in an orderly way, prodded along by be-suited accountants, it was invented by a group of nerds and misfits who often had no idea their respective electronic hobbies would make them billions of pounds. And Cringely doesn't shy away from saying what he thinks of the industry's heavy weights. He considers Steve Jobs, for instance, to be a sociopath. Who's going to argue with him there?

Accidental Empires is a refreshingly new slant on a great story, and if you buy just one account of PC history, then this should be it. **Edge** awaits the next edition of the book with anticipation, as the story here stops at the end of 1995. What Cringely has to say about W95 should make for interesting reading.
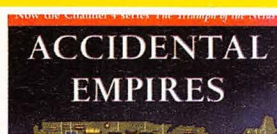
State of the Cybernation

The Cybernation of the title refers to those individuals who have taken citizenship in the new information society of the Internet. At the moment this new nation is in a state of flux, but it is already taking its first tentative steps toward 'virtual' independence.

Up until this point, books about 'cyberculture' have been very similar to books about modern art: slung together by gullible and pretentious hordes of psuedo-intellectuals. Thankfully, Barrett is different. He takes into consideration clearly, and without undue jargon, all the areas that the Net citizen will encounter over the next few years as the Internet grows and invades more and more of our daily life. Internet commerce, politics and the future of legislation are looked at in depth and from a refreshingly UK-oriented perspective. For once, there's only the occasional nod to the US.

Overall, the book is a useful snapshot of the state of electronic commerce and communication technology today, as it is being applied to the new frontier of the Internet. If you need a guide to this strange new world, or information about how this new 'state' will affect you in the coming years, look no further. The State of the Cybernation will prepare you for your possible dual nationality.

Two very different coin-ops fall under the glare of Arcade View this
month – one, an apparently very welcome rejig of a true classic, the
other, a typically attractive Namco effort harking back to *Cybersled*

Solar Assault

Solar Assault's subterranean sections
are set to be its most visually alluring.
The player is under attack even while
negotiating natural structures (right)

K onami's *Gradius* (aka *Nemesis*)
series will always be fondly
remembered by shoot 'em up
devotees as a pioneering one: its power-
up system was truly revolutionary and its
boss characters especially memorable.

Now Konami has done the decent
thing and followed the likes of Taito into
polygon territory with a Nineties update fit
to stand alongside titles such as *Ray
Storm* and *Xevious 3D/G*.

Though *Solar Assault*'s appearance
represents an extravagant overhaul, its
nuts and bolts remain largely untouched,
the range of power-ups in particular
bringing back old-school items such as the
speed-up, missile, double-fire and the
option (the extra pod which surrounds the
player's ship, mimicking its actions).

Below the classical power-up indicator
now lie two new guages for speed and
shield level, thankfully revealing the
information that remained hidden to
players of the 2D *Gradius* games.

The most major advancement in *Solar
Assault*, though, lies in the capacity
Konami has introduced for play with its
infamous *Speed King* cabinet, where
players sit in an enclosed pod and get
violently lurched and jilted in
correspondence with the on-screen action.
A low-cost, bog-standard cabinet option
will also be introduced, but the nature of
the game lends itself so perfectly to

**This full 3D version of
Gradius will be
welcomed by those fed
up of *Parodius* sequels**

**The more prevalent
space-based sections are
almost as striking, with
dauntingly beefy alien
craft lunging at your ship
(above). This tunnel (left)
will have an especially
hypnotic effect when
seen from the inside of
the *Speed King* cabinet**

Konami's hydraulic technology that
anyone playing the stripped-down version
will surely feel left out in the cold.

With a true 3D environment (there is
scenery all around your craft, not just
below) putting the icing on the
cake, *Solar Assault*'s future is rosy. **E**

Developer	Konami
Release	TBA
Origin	Japan

SOLAR ASSAULT
—GRADIUS

Tokyo Wars

The central Tokyo area ensures that there's plenty of innocent scenery to maul with your hulking machine of war. Note the proximity radar

The player chooses one of two teams at start-up: white or green, with 20 tanks in each. A 'cracked' screen (right) indicates a knackered tank

T hough hardly a new game to keen Japanese gamers' eyes (it was initially unveiled at the JAMMA show before last), Namco's *Tokyo Wars* has only recently been put on general release.

The tank combat coin-op, powered by a System 22 board, bears similarities with its futuristic predecessor, *Cyber Sled*, adopting a similar control system.

Faced with a choice of two playing environments, Tokyo itself and Tokyo Bay, the player conducts battle with a rival army – both factions comprising 20 individual tanks – until either an entire team is wiped out or the timer expires, whereupon the CPU will award the game to the team with most kills and endow a rank depending on performance.

In an effort to keep the game flowing, Namco has designed *Tokyo Wars* so that taking a fatal hit in a tank will not end the game; instead the unit is merely shut down and player control is transferred to another in the vicinity.

Graphically the System 22 board struts its stuff as fluidly as would be expected, and the sharp textures used are evocative of those seen in in military simulators, making the seat-of-the-pants tank-driving feel even more effective – despite the general violence content being lower than, say, Sega's *Gunblade* coin-op.

But its selling point is likely to be its link-up facility: two cabinets can be used simultaneously to allow four human participants to battle together – always a very tasty touch.
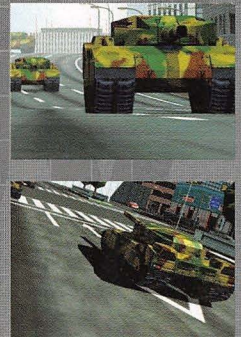
Prerendered scenes set the game's atmosphere

Battles in underground car parks (right) are made possible by *Tokyo Wars'* full 3D environments

Developer:	Namco
Release:	Out now (Japan)
Origin:	Japan

ORIGINAL GAMES - GREAT PEOPLE
ALL TRADES - ALL PROFESSIONS

THE CAREER SCREAM

Our Design, Your Destination....................
.........................Windsor, Berkshire.

Programmers, Artists, Designers, Testers
£Competitive + Bonus

Destination Design is a highly creative team of experienced industry professionals currently producing Queen – The EYE, a unique action adventure game.

Our plans for expansion require a number of talented individuals who can share our artistic vision and who wish to further develop their creative and technical skills in a dynamic, small team environment. Quality is paramount.

LEAD PROGRAMMERS / PROGRAMMERS:

Ideally with experience of running a team with a precise awareness of current technologies and a desire to lead a first class development team. Programmers should display a high desire to be part of a cutting edge team working on ground breaking products. Must have knowledge of C, C ++.

ARTISTS:

3D and 2D skills are needed in conjunction with animation, modelling, design and multimedia.

TESTERS:

A desire to see the best products produced an absolute necessity. Good sense of humour required.

DESIGNERS:

Know what it takes to make a good game?. Proven experience and abundance of innovative ideas a must.

For Additional information contact Stephen Lloyd Davies on (01709) 571441.

Alternatively, send your CV to Aardvark Swift Consulting Limited, 75-77 Station Street, Swinton, South Yorkshire, S64 8PZ.
Email SLD@ARDSWIFT.Demon.Co.UK.
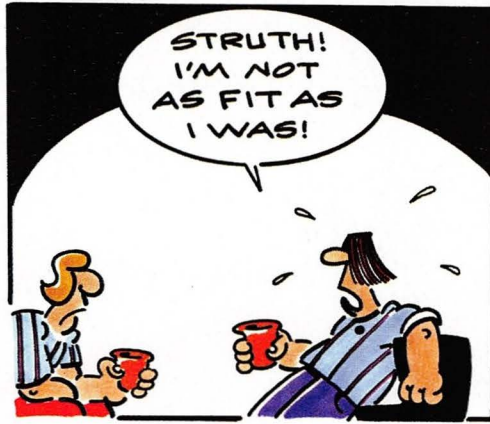
Psygnosis is seeking experienced development staff to join our rapidly expanding team. We need the people who can help us repeat our triumph as 'Developer of the Year' next year and every year. In other words we need the best.

On offer is the chance to work with the highest spec. equipment, on leading PC and PlayStation titles, in an expanding and secure organisation. There are vacancies for

Producers, Artists and Programmers

at all our studios (Liverpool, Stroud, Chester, Leeds, London and Paris) where you'll find an excellent working environment and all the professional back up you need to create great games.

To join us you'll need industry experience and a commitment to excellence in all that you do. Salary will obviously depend upon track record, but is unlikely to prove an obstacle for the right candidates, as the packages we offer are second to none in the industry.

So if your ideas and skills are out of the ordinary, get in touch. We're sure you'll fit in round here.

LIVERPOOL · STROUD · CHESTER · LEEDS · LONDON · PARIS

PSYGNOSIS™

★ STUDIOS ★

Initially send a full CV, with samples of work if possible, to:
Janet Webb, Psygnosis Ltd., Napier Court, Wavertree Technology Park, Liverpool, L13 1EH.

Hey! Hot Stuff!

It's another big moment in the evolution of videogames. Can you afford to be hanging around on the sidelines?

Rare, an integral part of the N64 Dream Team, is still looking for fresh talent and enthusiasm to join its exciting new projects. It's not an opportunity you'll see every day, so don't just sit there. Got something to give? Get in touch.

Software Engineers: Required to code cutting edge software using SG work-stations. Applicants must be fluent in C or Assembler

3D Artists: With good all-round abilities in modelling, animating and designing characters & environments. Successful applicants will use Alias and/or GameGen software on SG workstations. Experience with other 3D packages an advantage.

NINTENDO 64

RAREWARE
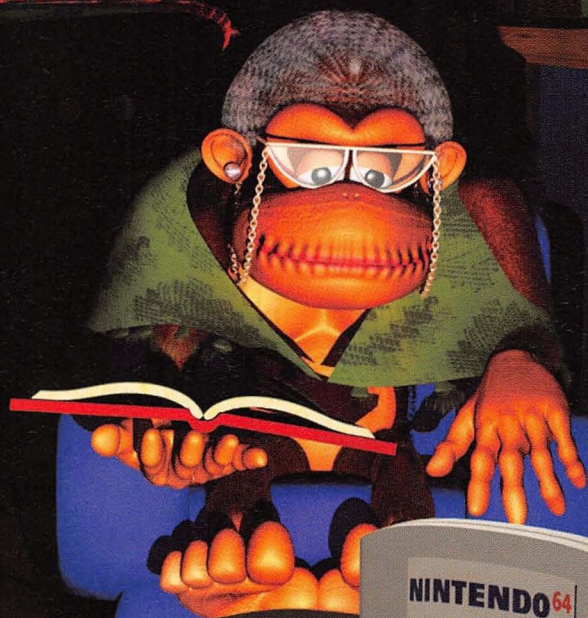
Please submit C.V's and work examples to:

Personnel Dept, Rare Ltd.
Manor Farmhouse, Church Street
Twycross, Warks. CV9 3PJ

Rare does not use employment agencies.
If sending disks pleease ensure they are auto-booting.

can you afford to wait?
move now!

programmers and artists required

c\c++	dpaint
3d	3dstudio
win.3.11\95\nt	photoshop
assembler	alias/wavefront
directx	lightwave
direct 3d	3d studio max

cv's to

probe™
ENTERTAINMENT

1st floor knollys house 17 addiscombe road

croydon CR0 6SR

e-mail terryh@probe.co.uk tel:0181 680 4142

get more from your Playstation™ & Saturn™

jump higher   faster   BIGGER   punch harder   live forever   skip levels   better   more

action replay™

puts the power in your hands

- live longer, punch harder, run faster, jump higher
- hundreds of built-in cheats for the latest blockbusters (and the best of the rest)
- memory manager packs more game save storage power into your system
- optional PC link-up for the ultimate hacker
- enter new cheats as games are released

Playstation & Saturn versions £54.99

LETTERS

Nintendo once again treats us with contempt be delaying the release of Nintendo 64 until March 1, 1997. What happened to the worldwide release, then? They come up with some rubbish about chip shortages and yet the yanks are getting it before us. They lost out to Sega with the Mega Drive in Europe and it will probably be the same with the European release of the N64.

Sony and Sega will have Christmas all to themselves – again. Is Nintendo mad or just plain stupid?

Why didn't you ask Howard Lincoln why Nintendo treats European consumers with contempt? By releasing the N64 in the spring of 1997 Sega and Sony will have sewn up the market. Next time give Howard a globe and he might see that there is really a place called Europe.

**Peter O'Dowd,
via e-mail**

This is one of countless similarly themed letters **Edge** has received since Nintendo's European plans were made clear, and it looks like the Japanese videogames behemoth has infuriated thousands of potential N64 owners in this country.

It's possible that you're underestimating the draw of the N64 here, though – many industry observers thought that the machine's US launch would prove too late, yet it's proved a resounding success there, and many UK gamers will be patient enough to wait for the best, too. **E**

I don't care how powerful the N64 is technically, because without more software

to support it, Nintendo's last-saloon-drink will be doomed.

I've been considering buying an N64 for a long time now, but with only three decent games available so far (*SM64, PW64* and *WR64*), and two dull games (*Shogi* and *Cu-On-Pa*), I can't see the system offering the same lasting interest as the PlayStation, which I've now decided to buy.

Nintendo just has not got the resources to produce games with the variation I need. If I want to play RPGs on the N64 I'll have to wait until late 1997, whereas I'll be able to get some excellent examples on the PS by early next year. And as for arcade conversions, Nintendo has not got

a hope with simply *Cruis'n USA* and *Killer Instinct Gold* on offer.

I find the price of N64 games offensive, too. Doesn't Nintendo realise that people are fed up with paying £45 for a game, let alone £60?

**Paul Hartry,
Sunderland**

Looking back over the years, one can see how the various gaming genres have evolved. With the advent of powerful consoles like the Saturn, PlayStation and Nintendo 64, developers are now virtually free of the limiting constraints associated with 16bit machines.

Although I am pleased with

the progress made over the past few years, and admit to being impressed by the likes of *Sega Rally* and *Tekken*, I find these classics are few and far between and show very little variety (driving games and beat 'em ups, respectively).

I can remember a time in the golden age of the Amiga when several classic games were released in the space of a few months. *Speedball 2* was a fabulous futuristic sports game, which, in my opinion, has not been bettered. There there was *Lemmings 2* - a benchmark in puzzle games, and superbly crafted to boot. *SWIV* was a classic shoot 'em up, which was
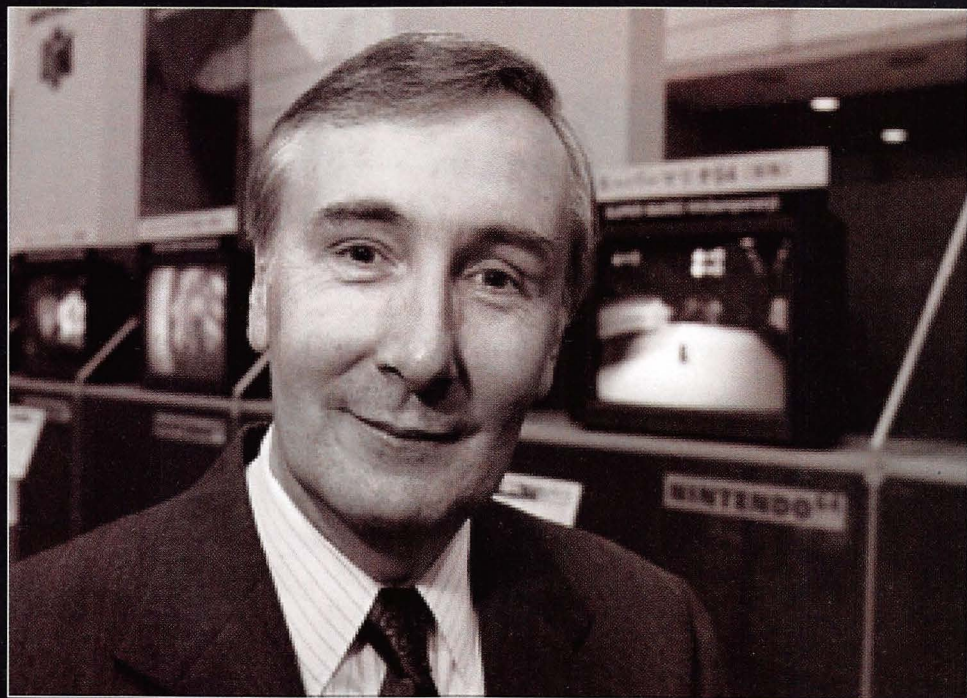
Is Nintendo 'treating Europe with contempt,' and does its chairman, Howard Lincoln, need to given a guided tour around a globe? Peter O'Dowd thinks so. Paul Hartry, meanwhile, grumbles at the N64's software range

William Matrix Dark is fed up with the inconsistencies in size and shape of consoles and hi-fi units. Did Philips have it right with CD-i?

challenging (something sadly lacking in most modern titles). And let's not forget *Pang* ('un-put-downable' and a perfect replica of the coin-op) and *Turrican 2* (very slick platformer featuring soundtracks which outclass 99 per cent of today's game music). Despite not containing thousands of texture-mapped polygons, these games would still hold their own if released today.

Going back further, I can remember putting hundreds of ten-pence pieces into coin-ops, masterpieces like *Pac-Land*, *Bubble Bobble*, *R-Type* and particularly *Wonder Boy* (very popular in its time but seemingly unheard of today). The magical element which connects these games is that they were all FUN. For 10p you got several minutes of fast-paced, action-packed gameplay. Now compare that to today, where you spend anything up to ten pounds a time just trying to work out the controls of *Virtua Fighter 2*.

I find the growth of the PC market distressing. It appears that the only thing the owners of this wretched machine desire a 166Mhz Pentium processor so they can play *Quake* at its highest resolution. I cannot think of one game I would find enjoyable on a PC – particularly considering each title weighs in at £50-plus (what's happened to the time when Commodore 64 games came out at £2.99 and offered over a week's enjoyment?).

With the arrival of the

Nintendo 64 and *Mario 64*, things started to look up, and although, sadly, we may never see the return of the low-cost, high-quality titles that adorned the C64 and Amiga regularly, at least we can look forward to a slow but steady release of enjoyable software.

**Nathan White,
Kingsbury, London**

By dismissing the PC you are ignoring a staggeringly rich vein of software, but, judging by the examples you cite (all of which **Edge** holds in high regard, incidentally) the console is more your native stomping ground. A shame, really, because the PC is the only platform capable of offering you games at the budget pricepoint you hanker after (albeit at around the £10 mark rather than £3).

E

For too long now designers have been making the same glaring mistakes. **Edge** appears to attract more readers from within the industry so below are a few design aspects that I think they ought to consider:
1. Consoles should be designed in the style of hi-fi separates with front-loader CD mechanisms/cartridge slots so that they can be stacked into a hi-fi unit the normal way. This saves space and would make connecting your console to your hi-fi a lot simpler. This also makes sense in respect of the age group who the next-gen stuff is currently aimed at. It's surprising how impractical console designs have always been.

2. Consoles should have a slot for each control pad into which the cable can be recoiled and the controller slotted into. There's nothing worse than a tangle of controller wires strewn all over the place when the console is not in use. This is going to become more apparent when four controllers are connected to the Nintendo 64.
3. Instead of requiring two copies of the same game to play link-up games, companies should sell a special, cheaper, second disk that cannot be used on its own but only in conjunction with an original copy of the game.
4. With the more powerful consoles on the horizon, such as the N64, it should be completely feasible for one console to output two separate playing images. In this way, you could connect two TVs/monitors to the one console and have each displaying a different image.
5. *All* games should now feature automatic score save/load facilities. It's downright maddening in this age of memory cards that many titles still don't save scores. Once a game has been completely mastered the only incentive to return is to beat existing best scores (whether they be yours, the programmer's or your friend's), but this aspect is lost if the game does not save them. I know I'd play *Tetris* on the Game Boy a lot more if it saved the various high scores for each skill setting. Even in cartridges it's unforgiveable, where the inclusion of battery back-up is minimal in cost terms. Why is it always reserved for RPGs and *Mario* games? I'm still bitter that *Killer Instinct* on the SNES does not save all the various highest combos/scores as in the coin-op version.

This is just the tip of the iceberg. Hopefully other readers will see fit that the industry hears their ideas too.

**William Matrix Dark,
address witheld**

Addressing your points individually:
1. The top-loading nature of most CD-based consoles is chiefly connected with cost (tray systems are significantly more expensive by comparison) and durability

(would you risk your front-loading CD player in the charge of a nine-year-old?). But the construction of machines such as the PlayStation is also an aesthetic issue: a significant amount of Sony's early credibility on the videogaming scene was gained from the skill with which it designed its premier gamebox, and it's difficult to imagine it making quite the same impact with an innocuous rectangular box. The change may come if integrated home-entertainment machines – not videogame consoles, but units which combine gaming, Internet access and movie-playing, in whatever form – ever penetrate the mainstream. Some industry pundits foresee a time when several key Japanese electronics giants agree on a standard – much as they did with MSX in the Eighties – and produce hi-fi separate-style units under their own individual branding. You may have some wait, though.
2. Or perhaps infra-red controllers? **Edge** would certainly welcome any improvements in this area – the floor of its gaming room is Spaghetti Central.
3. Japanese publishers are certainly picking up on this point (witness *Motor Toon GP2*, which comes bundled with a second disc specifically for use by a second player in link-up mode), but **Edge** has yet to hear of any UK companies following suit.
4. Completely feasible, maybe, but would most gamers be willing to live with the polygon-count compromise that having two outputs would necessitate?
5. PlayStation games which fail to maximise the potential of its memory card system certainly appear tawdry in their appreciation for the player's needs. But cartridge software is unlikely ever to include battery-backed RAM purely for recording high-scores in a game such as *Tetris*. And the true cost of including such an aspect is obscured, too – the raw cost of cartridges with BB RAM compared to those without is not in the same ratio as the price you see them when they reach the shelves – a situation which makes BB RAM carts a less favourable

VIEWPOINT

proposition in profit terms than the standard variety.

After reading your interview with Trip Hawkins in E38 it occurred to me that the solution to Matsushita's CD-ROM-or-DVD problem with the M2 is to release an affordable M2 in mid-'97 with a universal hardware slot which would initially house a CD-ROM drive, but which, when the time comes, could easily be filled by a DVD player, and maybe a few replacement chips. This set-up would be of great benefit for Matsushita, software developers and us punters.

Early release with a CD drive would allow for a head start against other 64bit machines, with more time for building up a reputation for M2 as an affordable next-generation console, acquiring developers, owners and a sizeable software library. When the new DVD market comes along M2 would be poised to take it by storm, with developers, having already found their way around the machine, going into their third generation of software: a very large library of existing games; and a large market from owners who could easily and cheaply upgrade their existing hardware just by replacing the CD unit, instead of being alienated at the prospect of forking out another £300-plus for a replacement console after two years, just for the DVD player. By re-marketing the M2 with a DVD player instead of a CD an even larger user base would then be acquired, attracted by its already large user base, cutting-edge DVD 64bit hardware, amount of software already available and the quality of the machine's DVD-enhanced third-generation titles.

**Andrew Walker,
Reading**

Ideally, console manufacturers would release a base unit that would never need updating with add-ons – the Jaguar's CD drive and the Mega Drive's 32X are classic examples of failed console peripherals, and Nintendo's 64DD strategy is currently seen by many as a hazard-laden one. Backward compatibility is perhaps the biggest concern facing manufacturers of modular gaming technology, and, though your suggestion sounds very logical, it's doubtful that Matsushita will adopt a similar policy.

I read four of Future's games-related magazines and a pair of other computer-related mags and I think they are all very good, so I've thought of a new mag you could consider. We can all read in the back pages of **Edge** all sorts of ads from companies wanting programmers, artists and managers and so on, and, well, it could be a good idea to make a game-programming mag. It could have sections for interviews with programmers of the moment, forums of discussion about game topics and a section in which you could suggest a problem for readers to solve. You could then select the best implementation, and have, say, Andrew Braybrook

Andrew Walker suggests that M2 should be CD-based as standard, but with the allowance for an upgrade to DVD capacity at a later date

solving it in the mag too. Other sections could cover the Internet, works in progress, theory, algorithms and lots of other things. Well that's my idea, what do you think about it?

**Jose M. Rey Castello,
via e-mail**

Your idea will certainly get certain **Edge** readers' mouths watering, but the harsh truth is that the market for such a title is perhaps a trifle too limited to make its creation and production financially viable.

I was disappointed that in your music within the games industry feature (**Edge** 38) Square Soft did not even get a mention.

It's true, pumping bass and techno, and Michael Nyman compositions, etc, do sound awesome played through a great stereo. And these contributors should be commended for intergrating modern-day music with the 'nuGame culture'.

However, Square Soft has been around for a long, long time, crossing all boundaries, and creating new ones for other software companies to score.

Square Soft realises that it is down to factors like tension, harmony and innovation which create an original gaming atmosphere for the games player to enjoy.

One only has to have played *Final Fantasy III*, *Chrono Trigger* and the *Mana* series (on a meagre Super NES!) to realise that carefully crafted music, high in originality, feeling and depth, can bring a whole new dimension to any game.

Square Soft should be applauded for its experimental and adventurous approach – not ignored.

Incidentally, I played *Secret Of Mana 2* in its Japanese-only form and I didn't understand a word of it. But I didn't mind. The music told its own story.

It's true. I suppose I am a bit of a Square head. But I'm proud of it.

**Jonathan Heeraman,
Altrincham, Cheshire**

Were the feature merely an examination of the development of the game music scene in general then Square Soft would have figured significantly – **Edge** is fully aware of the company's remarkable contribution to the field. But, as you yourself note, the focus was the influence and incorporation of modern-day 'real' music in games.

In Hong Kong (where I have lived for the past eight years), software piracy is out of control. Pirated games are readily available in most of the shops near me and they really have become an accepted part of life here. It's not as if all the dealing in these illegal copies takes place behind closed doors either – everything is highly visible and the police usually turn a blind eye to it. Occasionally there will be a token raid on the Golden Arcade (in case you're the one person that hasn't heard of it, it's a whole building filled with pirated software) but the shops are usually open again before the end of the day. Disk systems for the SNES – which have the ability to copy software onto floppy disk – have been available here for years, and have even been advertised on TV. This state of affairs is hardly a recent development either – pirated Mega Drive games were available two months after its release. Even the Hong Kong Government is not immune from criticism – they have been accused several times of using pirated software on their machines. The only console that has escaped falling into this hole is the Saturn – because it has no 'safe' disk-swapping technique and the existing one always breaks the machine eventually. Pirated software is available here for as little as HK$20 (less than two quid) and with China taking over next year, I can see no end to it – all the CDs come from there and the Chinese economy benefits substantially from them. If you think software piracy is bad in the UK, you should see Hong Kong...

**Sam Maxted,
via email**

Thank goodness for piracy. In an industry where the lowest common denominator deserves the highest attention, I

Jonathan Heeraman wants Edge to recognise Square's contributions to the game music world, as witnessed in games like _Final Fantasy III_

find comfort in the pirates of yore: never has a CD been cheaper at £8 a throw. Remembering the marketing ideals of the industry, where Sony for example preached to the sheep that The Product would be priced at £30, we find The Same Old Story where managers tell the now-anonymous artists, musicians and programmers that The Product is Really Worth The Asking Price and that The Marks Will Buy Any Old Crap These Days To Keep Up Otherwise Mum and Dad Will Seem Poor Parents (after all, that is what they rely on) - the adults are a Profitable Waste. Layer a turd with nice graphics and sound and you have yourself an ideal cigarette. Thus, when I see that greed-driven price tag I think of the people who actually made the game: myself, with my substantial salary, cannot live with the guilt of extorting children. As we see, most can. Join The Hitler Youth, it is all the same.

Anonymous, moving on to a more respectable job

he rise and rise of the retrogaming scene has got me interested in videogames again, having not really touched one since the mid-Eighties.

When a friend of mine showed me the Namco _Museum_ series on his PlayStation I was instantly sent on a journey back to my youth thanks to the likes of _Pac-Man_ and _Galaxian_.

What really struck me, though, looking through his collection of more recent games, was how much less entertaining they are than the ones I used to play.

He has about three or four near-identical fighting games and a couple of racing titles that look pretty much the same as each other. So what happened to new game concepts? All I've seen that looks like anything new is _Jumping Flash_, which in itself is a platform game underneath.

I'm writing to your magazine, incidentally, because it seems to be the most like _ACE_, which I used to read all those years ago.

**Geoff Lavender
Portsmouth**

Edge wonders how many more people have been reintroduced to gaming because of the return of 'classics'...

n issue 38 on page 8 you mentioned (briefly) that Jeff Minter and Jag designer Richard Miller are working a new Atari chip. Then you end the article with the sentence: 'Don't they ever give up?'.

If Nolan Bushnell had your ignorant attitude he would have given up after the _Computer Space_ disaster, and you wouldn't have a magazine.

**Thomas Holzer,
Theale**

So what you're saying is, without Nolan Bushnell there wouldn't be a videogames industry today? Because _that_ is an ignorant attitude.

E

I was pleased to read on the Internet recently that _Quake_ is currently being converted to the Mac by Lion Soft. But having read your recent review of the game I was horrified to see the hardware requirements of a 133 Pentium in order to run it at a reasonable speed. As the Mac has higher graphical requirements I was wondering what kind of hardware the Mac will need to play the game (or, more importantly, will I be able to play it on my 90mhz Power PC with 32 megs of RAM, and if not what am I going to do, as your mag hinted recently that a PlayStation version is an unlikely event?).

**Giles Tuck,
Edinburgh**

You don't mention which model of Mac you own, but, working on the assumption that it's a PowerMac 7100/90, powered by a PowerPC 601 processor, your set-up is now becoming the minimum standard for handling 3D graphics. Which means that, yes, you'll have to be looking at an accelerator board for your machine before even thinking about running _Quake_ (which is reported to be appearing in March next year, although neither id nor Lion have confirmed a release date). Mac games are turning a corner now and you're beginning to suffer the same upgrade hassles that have plagued PC gamers.

E

1. I am currently saving for a PlayStation but was wondering when the next price decrease is expected. Will there be one?
2. Considering the arrival of N64 and M2 technology in the UK, how long do you think the PlayStation's lifespan will be before I would have to think about replacing it with better technology?
3. I've heard rumours about the development of a PlayStation 2. Will it be a 64bit machine, and when is its arrival expected?
4. Is it worth waiting for the M2, and when do you expect the hardware to appear in the UK?

**Andrew Walker
Reading**

1 There are presently no firm plans for any cuts, but there are plenty of bundles available around the £190 mark.
2 The PlayStation's massive userbase and unrivalled software support will ensure its survival for some time yet. But if you're looking at machines merely from a raw power point of view, Sony's console is already beginning to look dated.
3 A unit is known to be in continual development, but there's no official word from Sony, unsurprisingly. It's most likely to be a 64bit machine, though, with little chance of backward-compatibility.
4 Software support is what will eventually decide the fate of M2, not the technology itself, and it's worth holding on to see which softcos get behind it. From what Edge has seen so far, Matsushita's console deserves high-profile games to grace its architecture. A UK release is unlikely before late 1997.

E

Ken Kutaragi's plans for the PlayStation to exist also as a platform for developing home programming talent is a visionary and commercially astute move for Sony, and one that **Edge** applauds. Free from the shackles of producers and publishers, the potential exists for the home creation of some truly mould-breaking software. Next issue, **Edge** analyses the implications for Yarouze and whether its relatively low price and accessibility will nurture the kind of design ambition that used to exist in the 'golden days' of 8bit home computers.

Plus, issue 41 will include a long-awaited insight into the world of DMA Design. Located in Dundee, Scotland, the company initially rose to fame by creating the seminal 16bit puzzler *Lemmings* for Psygnosis and has consistently shown itself to be an avid defender of the fundamental principles of gameplay. E41 will reveal previously unseen projects on the PC, PlayStation and Nintendo 64.

Issue Forty-one
on sale December 27

EDGE

M2
EXCLUSIVE
TECH SPEC
EXPOSÉ

Yarouze!
DIY PLAYSTATION
GAME DESIGN

3Dfx vs PowerVR
LEADING THE PC VIDEOGAMING REVOLUTION

40

Issue forty
Christmas

future
PUBLISHING

9 771350 159014