

PLAYSTATIOMEMINTENDO 64 EPCEDREAMCASTESATURNEARCADEENUMEDIA

# "I WANT A FERRARI <br> FOR EVERY TOE I HAVE" 



A


WHAT THE LARA TOMB RAIDER CREW DID NEXT



$T$oby Gard jokes that he wants a Ferrari for each of his toes, harking back to the larger-than-life teenage programmers of the 'BOs. Ironically, Edge cover stars don't come much smaller than Gard and his associate Paul Douglas. As the creators of Tomb Raider, the pair can lay claim to fathering a modern icon, for helping to shift gaming into the mass market and for almost singlehandedly bankrolling Eidos for a year. And yet it's unlikely that even one per cent of Edge readers will recognise them.

The contrast between multi-millionselling game creators and the interchangeable ranks of musicians and actors who grace the newsstand each month couldn't be more acute. By striking out to set up Confounding Factor, Gard and Douglas join an exadus of star developers staking a claim for gaming talent. Of course, not everyone will be a cover star. But at least the trend might help more developers to make bold games like Tomb Raider, as opposed to being shackled to unimaginative sequels.

One of Gard's strengths - animation - is the subject of Edge's main feature this issue. To hear people arguing over the sexiness of a videogame character like Lara Croft says more about how far games have come in recreating human beings than statistics on frames per second or hours of motion capture ever could. Just as animators are running up - against the limits of keyframed animation, techniques like skeletal simulation promise to usher in a new era in realism. Edge examines the front-runners.

The differences between Taby Gard's original character, Lara Croft, and his latest, Rhama (above), represent three steady years of both technical progress and artistic evolution. The difference between placing Lara Croft on the cover of a-videogames magazine or a picture of her creators represents a leap of faith.
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At Core Design they had it all:
fame, success, and LARA CROFT

They walked out

Now, in a world first, they're
ready to show GALLEON, the gane
they risked everything to make

Edge profiles CONFOUNDIMG FACTOR
LIFEAFTERLARA 50



Character animation dissected by Edge
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## VIEWPOINT

EXPRESS YOURSELF IN EDGE - WRITE TO: LETIERS, EDGE, 30 MONMOUTH STREET, BATH, BA1 2BW (email: edgeeluturenetcauk)

aour initial opinions regarding Dreamcast seem to be far more favourable than they were with the Satum. However, in your articles you seem to be obsessed with whether the performance matches Model 3 or not.

This probably won't become apparent until finished software is available, and as of now Sega is confident that it outperforms Model 3. I'll take its word. You were right in your article to say that Dreamcast draws triangular polys, but if it does shift 3 million, which most developers say it does, it will be able to display 1.5 million squares. Considering Model 3 shifts in the region of 1 million squares, my bet is that Dreamcast is at least on a par with Model 3. If Sega can deliver the software, it should have a winner on its hands.

John Bright, via email

0wonder how much money Sega spent on the curly Dreamcast logo? There's a fumiture/omament store in Glasgow's west end called Evolution with exactly the same logo, except for different colours arange on purple if my memory serves me right. Whatever Sega paid, I think it was too much!

Greig Chisholm, Glasgow

what is Sega doing with Dreamcast? I appreciate
Saturn has failed, but is the time for a new console right? Why doesn't Sega learn to play its cards closer to its chest? We have been hearing rumours and reports about Dural/Katana for over two years now (just as we did with the

Saturn), and all of them have proved pretty much correct. Nice one, Sega, what have we heard from Sony?

Does Sega think that if it is first into the market that it will win (that worked for 3DO, didn't itt)? Why hasn't Sega learnt from Sony? Surely it would have been been more sensible for Sega to develop in secrecy, wait to see what Sony

Nick Raiph, via email
The whole Dreamcast situation is

## Why hasn't Sega learnt from Sony? Surely it would be sensible for Sega to develop in secrecy, wait to see what Sony had been doing, then beat it. Sega should realise that 32 bit gaming has peaked'

had been doing, then beat it.
Sega should realise that 32 bit gaming is reaching its peak (most Nintendo 64 and PlayStation

an intriguing one, if only because
Sega has so much to prove.
While polygon counts can make interesting reading, it's ultimately
owners having only brought their consoles within the last 18 months. The market will dry up just about in time for Sega to launch its console. I have read that Sega wants Dreamcast to be a mass-market proposition. Well, I hope it's planning to sell it for under E120 - but with a modem, 12x CD, PVR5G and natty LCD controllers, I can't see how.
going to be software and marketing that will figure most prominently in its success or failure. Rest assured, Edge will be here to offer the most unbiased coverage of the format as it turns from dream to reality.

After the past two years of a consistent and steady level of good software on the Playstation, I find it terrible that the list of four
games I earmarked for purchase this year has yet to be added to. While gamers will never buy every title released, the fact that my list has not been added to because of a lack of choice, rather then personal taste, is temible.

As a devoted Playstation owner, I find myself constantly questioning Sony's policy of flooding its platform with third-rate solwware if the follow-up machine is to stand any chance of market domination or success, then Sony would do well to win the confidence and loyalty of the gaming community by sending the Playstation out with a quality 'bang', rather than a splutter of rubbish. After all, consumers historically dislike a compary that gives them the proverbial two fingers once the money has been made.

I hope a company with the clear perceptiveness of Sony will note the growing dissatisfaction in the ranks. I mean, come on, four games!

Richard Spooner, via email ommiserations on your worst cover yet (E60). Absolutely atrocious. Are you worried that you aren't being noticed on the shelves? Happily, it was wrapped around an excellent issue. In these times of style over content, Edge is a joy.

Duncan Mckenzie, via email

Your reviews of the pre-FFVI Playstation RPGs always compare them to older 16 bit games that you seem to fondly remember. Not having been exposed to them and having enjoyed games such as Suikoden and Vandol Hearts a great deal, I thought I might investigate
further. I briefly dabbled in the twilight worid of emulation but my ageing $\mathbf{4 8 6}$ just isn't up to task (even if it was, I prefer to get my RPG fix relaxing in a comly chair in front of a console rather than hunched over a keyboard).

I was seriously thinking of upgrading my PC just so I could play the likes of Chrono Irigger and FFV, but once again the cost was prohibitive. Then I realised that for the price of a single Playstation game I could buy a secondhand SNES with several games. This is quite amazing when you think about it. Square is about to release a port of the original SNES Final Fantosy V for the Playstation and it will probably retail for more than the price of getting a secondhand SNES and cartridge.

Unfortunately, once again my plans have been foiled, as it appears very few of the great SNES RPGs were ever released on PAL.

Either way I think I'll go ahead and get a secondhand SNES. In recent editorials you've talked about the new mass-market consoles opening up the gaming industry to those who had not been exposed to it before. I think there might be a lot of recent converts like myself who are surprised by the quality and range of some SNES games.

When you consider just how cheap secondhand consoles are, compared to the price of N64 and Playstation games, it seems to me to be a pretty good purchase.

Ashley Wakeman,
via email

After playing the entire Street Fighter and Tekken series, I have to disagree with the © comments Ross Thody made

## calculated, calling for a certain

 degree of cool-headedness instead of frantic button-bashing.Also, in Tekken it is almost impossible to predict what an opponent's first attacking move will be, which always adds an air of tension to the game. In Street Fighter, any competent player should be able to guess that the opponent is most likely to jump in with a heavy kick, use a fireball or a dragon punch-type manoeuvre. All the characters have the same basic
regarding the fighting genre. He has compared two styles of fighting games on one level, while there are many more to explore. Firstly, and I think most importantly, is the fact that the Street Fighter series is wholly 2 (and I include Street Fighter EX). This means that the programmers don't have to make adjustments for real-world physics. Characters move much faster than a human can, making for blisteringly fast and frenetic gameplay.

While this is a very good style, which lends itself well to an arcade scenario, in my humble opinion it is realism, not special effects, that make a fighting game. The Tekken series has this in abundance. From Lei's multiple fighting styles (all authentic kung-fu stances), to King'5 bone shattering throws, to Edd/s superbly realised Capoeria style, all of the characters move and fight as a real person would. Therefore the fights are more measured and

## 'Square is about to release a port of the original Final Fantasy V for the PlayStation and it will probably retail for more than the price of getting a Secondhand SNES and cartridge'

fighting moves, and are therefore easy to predict. At the end of the day it all comes down to personal preference. I like Tekken, Ross Thody likes Street Fighter. I guess we can agree to disagree.

Chizo Ejindu,
via email
via email

You really are hypocritical and console-biased. Let's look at the facts...

Super Mario 64 - a stunning game, very well done. A real winner, and even I will say it's worth ten out of ten. Gran Turismo - a fine game, very good in fact. I have spent many hours playing it myself - ten out of out ten for 'redefining driving games'. Possibly a bit over-zealous on the marking, but I can live with it, as long as your scheme is consistent. Unreal - the most graphically stunning game ever. The most advanced monster intelligence ever. Incredible scale
and level geometry - you cannot say it won't redefine 3D gaming forever. Eight out of ten? Your arguments for this are that it's 'too much like its competitors' and the 'the monster animation is not good enough'. Did you review it on a P60 or something? My 3Dfx-powered P200MMX has none of the aforementioned problems. I'm not sure what games you've been playing, but l've never seen anything like Unreal.

Maybe these things were ironed
out before the final release.
Unreal changes its genre forever. You only need to look at the amount of gamers playing and the number of developers licensing the engine to see that. So why do they not get the coveted ten out of ten? Curious, isn't it?

Adam Wright, via email

some questions to consider: 1. Why in the past ten or so issues have you featured pictures of Zelda and constantly billed it up to be great when Nintendo can't even finish the titie on time? Perfection is one thing but from the way it looks, I don't think it will ever be released.
2. Why do you always use your generic name in reviews, features and everything else you write? 3. Why have you persistently billed GoldenEye to be the best N64 game when it is an unimaginative Doom/Quake/Duke Nukem clone? I appreciate that refinement of cerlain genres is a good thing, but GoldenEye hardly pushes back the boundaries in firstperson shooters.

However, thanks for producing such a fantastic mag. Keep up the good work and all that.

Mark Waldron,
via email

## Some answers:

1. Because, on the evidence to date, it might be bigger than Super Mario 64, the repercussions of which could seriously change the way videogames are designed.
2. That's just the way it is.
3. GoldenEye is hardly unimaginative. How many other firstperson shooters, even now, offer anything like its diversity? It remains a firm Edge favourite, over a year after its release.

## DREAMCAST DEVELOPMENTS EMERGE

Sega's fresh platform is treated to a tentative embrace by the world's videogame makers

## Dreamcast.




## Sega has unveiled fresh shots of

 Dreamcast's. VMS memory unit in use, both in and out of the new console's control pads. This odd Godzilla title is the first VMS titlen the wake of Sega's announcement of its new Dreancast console, further details of planned development for the machine have been released. So far, over 1,000 dev kits have been shipped to over 120 developers worldwide, although sega is asking to see game concepts prior to delivering the devices. in order to avoid a market swamped with B -grade titles, the company is aiming to eventually maintain a quality control system for Dreamcast. However, Sega's current threshold seems rather suspect thirdparty games will only be rejected If they are deemed to contain 'socially unacceptable content', leaving the gates fairly wide open for whatever developers wish to throw through it. A position between Sony's software free-for-all and Nintendo's limited selection of tittes would seem ideal for Sega.

## Cautious comments

While rumours are rife on the internet regarding possible Dreamcast tities, those actuaily confirmed as being in developinemt remain members of an exclusive club. Of the companies Edge has contacted, most have reflected the cautious optimism voiced by Confounding Factor's Toby Gard. 'We only spoke to sega recently,' he admits in this
month's feature (see p50), 'but it's a really nice machine. We'll have to see.' His previous employer, Core Design, is also thought to have a Dreamcast titte in the works, but has thus far refused to comment either way on the game's existence.

Surreal Software, the firm behind Psygnosis' forthcoming PC title Drakan, was recently quoted as expressing an interest in Sega's machine. However, while Drakan's vast ervironments make it an ideal candidate for Dreamcast, Psygnosis' owner Sony may have a rather different opinion. Clearly, in relation to the western launch of the console it is still early days, with many European and American firms ready to do littie more than express an interest. Contacting US Dreamcast developer GT interactive revealed nothing other than the company line.

Mearnwhile, NEC, partnered with VideoLogic in the production of the PowervR Second Generation chipset, has two games underway for Sega. The first of these is an RPG, currently dubbed Seventh Cross and themed around evolution. Players must guide the initially simple character through its life, shaping its progression through interaction with the environment. NEC's second game is Senngoku Turb, intended to be a far more action-oriented experience although RPG elements are thought to feature.


NEC's two titles for the new Sega console are clearly a long way from completion. The highly colourful Senngoku Turb (main, centre) is oddly reminscent of early PlayStation titles. Seventh Cross (right) looks curiously sparse

In the run up to the console's November 20 Japanese release date, Sega will host a number of events to promote its plans. September will see the second half of the 'Sega New Challenge Conference', a follow-up to the original announcement held on May 21. It will be at this gathering that Dreamcast's launch titles will be annouced. including which AM division games, such as Virua Fighter 3, are on their way. (Sega now claims that one of the AM groups has achieved a polygon performance of almost four million flat-shaded triangles per second, although this has yet to be confirmed.) The following month, Sega will give members of the lapanese public their first chance to play Dreamcast titles, at the Tohyo Game Show. Expect Edge to beat the crowds and deliver regular updates between now and September.

## RAGE REVELATION

age Software has joined the growing ranks of Dreamcast developers. Just prior to Edge's publication deadline, the company's director of marketing Nell Critchlow confirmed that, 'Rage Software is proud to be working on incoming for the Dreamcast Japanese launch in November 1998.' He added that, 'We have the deepest respect for the company's [Sega] history and ability within both its hardware technology and software development businesses.

The news that the well-received PC


[^0]release incoming will be a Japanese launch titie is notable, not least for the game being of western origin. Further, it is the first game to publicly demonstrate Dreamcast's compatiblility with intel systems. Critchlow went on to say. 'Rage genuinely believes that Dreamcast technology is definitive second generation and therefore pledge our full support going forward.'

Edge contacted Andy williams, technical director at Rage's Birmingham office, who was able to shed a little light on Dreamcast's current development kits. 'We have Step 2 now,' he explained, 'with the video chipset on. In the early days it emulated the video chip as well. They're expecting a five times increase in speed [over Step 1] for the real one.'

The eariy board that we have is like an emulator. It's got the graphics chip on, but a lot of the other stuff is emulated with the processor. What it seems to be doing is when you
compile, it generates normal Pentium code, and it runs that. So all they've given us is a videocard, basically: Williarns was full of praise for Dreamcast: 'Technically, it's a very nice machine If you were to give most programmers the choice between Dreamcast and PC, they'd go for Dreamcast... Windows is a nightmare.'

While Rage PC titles are of sufficent quality to represent a major announcement, other corversions to Drearncast could be unwelcome. However, williams feels that having a fixed target machine, as with sega's console, will be a benefit. 'To write something sloppy takes half the time. When you only have one type of processor, you know how fast everything goes. And if someone else has made it 80 faster, then you make it go faster as well.'
competition, as always, is a healthy thing indeed.

## Quick RAM fixes

Subsequent to lest nontr's fariure a couple of added dete's regarding Dreancast's technical specilications have been uncovered, wille the muchine's main memory is towb, an adolitonal ent of veaw (vidio memary is also camled by the Powerva second Generation chipset. Addutionally, while the console's modem is definitity to be included in iperese mactines, a decision has yet to be mide regarding the Europeen verion.

Edge wouk certainly be highty dsappointed by such a move, given the vert porantiwl offered by the networking of Dreancast Hopatully, Sega will othe the bulht and reward patient Eupopeen gumers whth a fully enabied verion of tos potert new machine.


For those with a reesonably fast (and stable) internet connection, it is now possible to view elther AVI or Quicktime movies of the irl-san Dreameast demonstration software seen last issue. Log onto www.sega.co.jp/dreamcast/ demo iri.html to downioad the two parts

## VIDEOGAMES TV CHANNEL FOR EUROPE

Infogrames and Canal + announce plans for Europe-wide videogames TV channel

## colles

INFOGRAMES


## CANAL+



Inspired by MTV, Infogrames is set to broedcast 24 hours a day


$\therefore$

It would seem the ambition of Bruno Bonnell (above) knows no bounds. Not content with driving infogrames hard towards the top of the publishing tree, he has announced his intention to back a Europe-wide videogames TV channel. He has signed a 'parity agreement' with French television group Canal + , which essentially means that infogrames will be providing the financial backing for the project. However, Bonnell is keen to point out the independent nature of the new channel, claiming his main interest is purely in seeing it get off the ground. In a recent interview with Computer Trade Weekly he explained that, 'This industry deserves its own channel and we always thought that if no-one else created one, we would.' Current plans are for the yet-to-be-named channel to launch this autumn, with the broadcasting rights for the UK likely to fall to satellite operator Sky. France is expected to receive the signal in September, with the remainder of Europe following shortly after. For the UK and other territories, the channel's content will either be dubbed or subtitled. The station will be funded through a combination of infogrames' deep pockets, sponsorship and traditional advertising. content will be sourced from across the continent, in order to maintain a pan-European feel.

Pop music channel MTV has clearly been an influence in the gestation of the videogames station. According to infogrames UK's Stephen Hey, 'If we didn't see MTV as an inspiration then we'd be mad. However, the channel will be a completely different proposition. It will bring quality and innovation to television just like MTV did.' Content is expected to include news, previews, features and home shopping shows.

Athough projected viewing figures aren't yet finalised, the new station's target audience has been identified. 'Target audiences will vary throught the day,' reveals Hey. 'For instance, teatime programmes will be aimed at the 8 - 16 year-old postschool market, while 4-8 year-olds will have programming at breakdast time. The schedules will be carefully prepared to make sure that we target the correct audience, with relevant. content, at the time of day they're most likely to be watching.'

Whether the imminent British digital television system will carry the new channel is undecided. However, according to Bruno Delecour, chairman of Canal Satellite, This agreement is a natural extension to the strategy pursued by canal + in the multimedia, interactive system and digital technology . fields.' Infogrames' $£ 2$ million investment should 80 some of the way towards making it happen.

## MICROSOFT TALKS DIRECT

## Bill Gates' behemoth finally gets DirectX on track

Microsoft is putting the finishing gloss on DirectX 6.0 and is nailing down the paper specification of DirectX 7.0 . The company is so confibent in Direct $\times 6.0$ 's Direct3D API that it belleves it could supplant specific 3D graphics accelerator APIS (such as 3Dfx's Glibe) in the affections of the development community. And it has issued a challenge to developers: use DirecIX 6.0 to create truly scaleable games.

Kevin Bachus, DirectX product manager at Microsoft, argues that Direct3D 6.0 supports all the features to be found in the latest generation of 3D graphics hardware, and more: 'We can deliver APIs at the same time as the hardware vendors and, in some cases, we're leading - for example, DirecUX 6.0 has support for stencil planes, which hardware companies will be supporting next year. And take multitexturing - future chips will be able to do two textures per polygon; Direct 6.0 can support up to nine.'

He also maintains that developers will find DirectX 6.0 much easier to use: 'Developers have been frustrated by the long learning curve associated with Direct3D. In Direct3D 6.0, the sample code is focused on examples of discrete functionality - for example, we've included the source code to do bump-mapping. The samples are short, readable and can be used in shipping applications.'

## Get off Spiral

Bachus believes that Direct3D 6.0 is good enough to release developers from the prevalent spiral of recreating their games for different 3D accelerator chips. This, he contends, will lead to increased game quality: 'I was speaking, for example, to Shiny's Dave Perry at E 3 , who was saying that the MDK team was ready to revolt because it was having to make versions for every chip under the sun.:

Besides, keeping track of every chip will certainly become increasingly difficult. 'At the end of the year, the hardware will be close to doing 10 million polygons per second, and next year, it'll go up to about 25 million,' says Bachus. 'One of the big challenges facing developers next year will be scaleability. For example, if you run Tomb Raider II on nvidia's Riva TNT, it looks exactly the same as on a Voodoo 1 chio. We're now reaching the point where scaleability of art assets, rather than throughput, is the most important thing.'

Developers will be able to see whether Bachus' confidence is justified when Direct $\times 6.0$ ships in July. The only thing missing from the API set will be the new API DirectMusic, which will be present on the SOK as a beta and will ship in final form as part of Direct $\times 6.1$ in the autumn.

## The next DirectX

Microsoft is now consulting with hardware vendors and developers to set Directx 7.0 's specification, DirecIX 7.0 will include the first slage of Fahrenheit, the new 3D model derived from OpenGL with silicon Graphics' help
'DirectX 7.0 will have Fahrenheit's scene graph and large-model extensions APIs. The release will focus on better 3D, and improvements to Directsound, Directinput and Directoraw,' reveals Bachus. 'For example, in Direcisound 7.0 , you'll be able to create arbivary loop points and the addition of time-samp buthers will let you, say, play a certain sound plus 500 ms . in Direct30, we'll be looking to support quads and other higher-order surfaces, and there will be more complex multi-texturing capabilities.'

Bachus seys games development will soon reech a point where the hardware is so fast that polygons start to neer plxel levels. At this point, developers might abandon polygons in favour of higher-order surfaces
'People are using quads and NURBs now, but I think there'll be at least one more generation of games that use standard polygons. We may do things in Directx 7.0 which jump-start this change, but It's hard to say what. Part of the problem is that NURBs, In particular, are not well understood by most programmers. There are some fantastic effects you can get with higherorder surfaces, but it's not like you'll be able to do things you can't do to the same extent polygornally:

Bachus's line is that Direcux will make change easier, not hardier, for developers to cope with. Edge hopes it will make gaming more streightiforward for PC owners, too.


Ritual Entertainment (which is currently working on Sin, above) has poached Gary McTaggart and Charlie Brown from 3Dfx to work on 3D engines incorporating inverse kinematics and NURBS-based rendering. Satisfying such progressive gaming companies with DirectX will be an ongoing challenge for Microsoft

This image (above) shows the type of smooth surface rendering that is made possible by using NURBs, one of the new 3D modelling techniques which Microsoft is considering supporting in its seventh interpretation of DirectX. The image is a demonstration file rendered with the freeware POV-Ray 3 raytracing package. Rage Software's Incoming (right) was almost a showcase demonstration for the power of DirectX, since the company elected not to produce a Glide version for Voodoo chips


# 3DNOW! TWO STEPS AHEAD OF KATMAI 

## AMD beats industry leader intel in the race to pipe more polygons to 3D processors

$\square$ntel is in the habit of naming its upcoming processor technologies after North American landmarks. True to form, the company's next chip is codenamed Katmai, after an Alaskan wildlife reserve known for its bears. Quite fitting really, as rival chip-maker AMD has made the worid's leading purveyor of processors appear very much a slow and rambling animal.

AMD has just urveiled a new chip called the $\mathrm{K} 6-2$ which includes a feature called 3DNowl technology - a set of hardwired special instructions specifically geared-up for the floating


Dreamwork' Trespasser (top), and Imagine's Ares Rising (above and centre) have both pledged support for 3DNow!
point calculations crucial to the generation of 30 scenes in games it's something intel famously left out of its 57 original MMX instructions, and which the company now plans to incorporate into the Katmai processor, which will essentially be a new variant of the Pentium II. The major difference is that the K6-2 is out now, while Katmai will hit streets in early 1999.

AMD has not only beaten intef to a new processor technology, but has scored a major coup in corvincing Microsoft to support 3DNow! technology under Direct 6.0 . This application programming interface (APP) for games will be out this month, and any 30 game supporting DX6 will automatically benefit from the 3ONOW! instructions. Games can be programmed to support 3DNow! natively, while several graphics card companies, including nvidia, 30fx, Matrox and ATlare, are building additional support for 3DNowt into their driver software.

3DNowl incorporates 21 new instructions to speed up floating-point operations. Whereas 3D graphics cards accelerate the rendering of 3D scenes, 3DNow! assists the process of scene generation at the front end of the 3D pipeline, working out the actual physics of the garne world and moving polygonal objects. According to
Richard Baker, AMD's marketing manager for Northern Europe, 3DNowl enables game programmers to create settings that use more polygons, and have more moving features in them as well. 'You now have more scope available to manipulate the environment that the game's played in. You can

## NEXT GENERATIONS

Cepcom his mounced the nea tree colictiona in is retrothemed Cenervon range Cenervion 3 wil contin $\operatorname{Son} \sin$, Whan, Ered ber and Hgenari. Genermon 4 has Gin Smole, Commoneb and $/$ lercas. Findy Cemertion 5 twnes Sivet Iigher il; Ohonpionstip Editon and SFIIIThbo. Lispe's order is alredy in.
interact and move more objects around on the screen,' says Baker.

Support from game developers has come thick and fast. incoming from Rage already supports 3DiNowl as does Unreal and Forsaken by Epic and Probe respectively. Digital Anvil, LucasAnts, Inner Workings and imagine Studios have also voiced their support. Even so, there remains the suggestion that what 3DNowl really needs is a killer game that will sell KQ-2 to a suspecting public that looks for the words 'intel inside'.
'This is an interesting time for us, because we've always produced parts that basically followed on from intel,' counters Richard Baker. 'Until recently we've pretty much always been one or two speed grades behind. 3DNowl technology is the first time any chip manufacturer has had something before intel. We've got the technology six to nine months before them.

It's worth noting, however, that with $\mathrm{K} 6-2$ chips arriving at 266,300 and $333 \mathrm{MH} H \mathrm{z}$, intel's top-end parts run at 350 and 400 MHz , with the 450 MHz Pentium II on the way. SQ, bullish as AMD may sound, it's still a speed grade behind. Furthermore, Katmai will boast 70 floating-point instructions compared to 3DNow's 21. Its release date has been brought forward from the second quarter of 1999 into the first, with intel citing the success of its 0.25 -micron chip-making process now deployed in many of its plants.


Edge tested a variety of games on an AMD reference machine (above). The overall results were quietly impressive

## Testing the K6-2

Etree recertily put a k 6 -2 reference mactine supplied by AND through a gamepley lext the machine pocted in Irppessive punch when compired to a similerly specilied Pentum II and wes particulaly good ruming Forsiten and moomine. Thls wes down to the fret thet the former has a number of DirectX 6 ors graphical imptemeprations In its garme code, witio the litcter has ecturly been eptimsed specificily for 30Nown. Playing Uneed was a ciopor nin eflar, with the K - -2 proving narowiy superior, while the uidinate ${ }^{3}$ BD benchnark, Quate 2 , was chenty beter an the Pentium il. This is because Quate 2 hes been heeally corted for Perthere, Hougn a patch octimising the geme for sonow is on the way.

## Cutting Edge Cuttings

## LEMMINGS ON THE ATTACK?

## In an uncharacteristic spurt of activity, Scottish developer DMA Design confirms two new titles

MA Design has revealed it has two new games on the way. The first of the twa, Attack, is thought to be a spiritual successor to the temmings series, set for release on PC, N64 and Playstation. It's loosely depicted in traditional DMA style as 'Millwall supporters let loose in Jurassic Park'. Company PR supremo Brian Bagiow told Edge that, 'Yes, we have a game called Attack, but that's all I can say.' The design sketches of small dinosaurs that adorned the walls of DMA's headquarters during E6O's visit now make a great deal more sense.

Clan Wars is the second tite, due early 1999 for PC. 'Take arcade action, mix with castle-busting adventure strategy and you have the beginning of Clan wars,' claims the firm's internet site. DMA also reckons that the game will 'change the way you look at games.' Expect more news, and hopefully screenshots, soon.


Attack is set to feature a range of diminutive dinosaurs (main). However, little is known about Clan Wars (above)

## 3DFX GOES 2D

## New Voodoo Banshee chipset boasts fastest 2D as well as top 3D graphics



Dfx has finally introduced its much-anticipated Banshee Voodoo graphics chipset. Banshee combines the proven 3D graphics capabilities of Voodoo 2 with what 3Dfx claims is the fastest 2 D graphics chipset on the market. Several prominent manufacturers are to produce boards based around Banshee, but prices have not yet been announced. Unlike Voodoo Rush (30fx's disappointing 2D/3D chip based around the original Voodoo chipset), the company hasn't radically simplified the chip. It's also created the 20 technology in-house this time. This should mean Banshee is free of the compatibility clashes that plagued Rush.

But with the chipset targeting the competitive OEM market, cost consideration has prompted 3Dfx to remove one of voodoo 2's two textureprocessing units. As a result, games which benefit from Voodoo 2 's singlecycle multi-texturing - mainly firstperson shoot 'em ups like Quake 2

- will run a little slower on Banshee. On the 2D side, 3Dfx boasts that Banshee offers the industry's most complete hardware implementation of Microsoft's Graphics Driver Interface.

Andy Keane, 30fx's VP of
marketing, said the company didn't feel it needed to improve the 30 capabilities beyond Voodoo 2 for Banshee, pointing out that the chipset wasn't really for hardcore gamers but was a voodoo option for manulacturers and consumers looking for a general 2D/3D solution. Voodoo 2 is really just getting started,' he said.

Facing increased pressure from the likes of nvidia, Intel, S3, Matrox and Videologic, is 3Dix in danger of losing both its hardware edge and its close developer relations? Not according to Keane, who cites the plethora of 3Dfxlabelled games at E3 as a sign of the brand's continuing strength. '3Dfx is the development platform,' he says.

He also denied that the arrival of the universally liked Direct× 6.0 would
impact on the success of Glide, 3Dfx's much admired API. 'Glide is still the thinnest layer lbetween the game and the graphics hardware].' Keane adds that the supposed conflict between his company and Microsoft's DirectX suite is largely fictitious 'in our mind, there's no difference between Direct3D and Glide development. We have more people supporting D3D than Glide.'

Keane refused to be drawn on 3Dfx's next chip, codenamed Rampage, alhough he did admit that the specifications were ready. He went on to point out that 30fx's rivals were all claiming success by supporting features 3Dfx had introduced two years ago. In contrast, the next voodoo chipset is to be 'a generational change.' Keane said the next-generation silicon would be manufactured using a finer 0.25 micron process (pioneered by Intell) which will result in smaller, faster chips. Expect improved anti-aliasing and lighting support at the pixel 5 level when it arrives next Spring.


The speedy Banshee chip is prone to fly off the board if not securely fastened (top). By using the 2D graphics buffer to map an image of the screen onto a polygon as a texture, mirror effects can be created (above)

## UNREAL REALMS

Acontris to 30 Remis' Wherrite ( $w$ wue 3 dralinscom), the forthooring Dute Nutem forver ( $\omega$ be pubiched by GT Interadive) has smithed to we Unneo's graphice engine' Peviously, forever was due lo employ Quate IH code io shit iss pargons. And while its benes, Unro's engine is doso diexper

## COLOURFUL PRICES

Nintende has reveled lapanse pricing for is Game Boy Colvur, set for relase this September Whether UK gomes will pay onyting life the vB,900 (E40) Nintendo will be asting on the stuees of Tollyo hasmi been deoded New ides for the eownded hanched will be disployed in up to 56 colous, and dider games in four to ton

## DVD FOR PSX2?

SCE president Teutisa Tolunda has reveded to Anerico's Business neek magaine that the Playstation 2 may festure a DVO dive. Eien a beric singlesided OVD can hold sound 4,7cb of dma while a duallipec doublevided disc is capeble of storing 17Cb. Eipeat idl Dotby Digral sumound sound, and more FWN. A tor more

## LUCAS DEPARTS

The protracted sile of Vigin treeracive Enemaiment by cuntent parent Viscom has cost the compeny deak. USbised Ucersits is sescring for a new Eurmpen publisher, abet nefucimity given the previous good iditionthip beveen the wo firms. The liss athe to be alficiad by the break is the promising Cim Fondango.

## (out there)

## REPORTAGE FROM THE PERIPHERY OF THE VIDEOGAMES INDUSTRY

## Roger Sanchez gets Fluid

It's all Wipeout's fault. Psygnosis' 1996 titte introduced an aspect to videogames that had been absent for years: hip music. The aural sensation of The Chemical Brothers and The Prodigy perfectly matched the awesome visuals, and went some way in defining its status.

Since then, music has become an important consideration for publishers, as the westernisaton of Gran Turismo's soundtrack and John Carpenter's score for Sentinel Retums will testify. The success of Porappo the Rapper, while essentially a Japanese childrens' game, showed Sony that the PlayStation and its CD-ROM operating system is the perfect medium for music-based games. Which is perhaps why the company now has two other music garnes in its repertoire - Baby Universe, a sort of interactive light show, and Depth (retitled Fluid for the UK), a music studio with a difference.

At last month's annual DJ Culture exhibition in Manchester, New York house DJ and producer
Roger Sanchez took time out to speak about Fluid, the first release of the projected six-game Yasashi series. 'I was interested that Sony wanted to make a game where people can actually alter the music and soundscape and make that the focus,' he daimed.

Taking control of a dolphin, players are challenged to find sound samples in an undewater environment. Only when this is accomplished does the game allow access to the Music Editor, where elements can be put together and saved to memory card. 'You have different inythmic and musical elements that people can put together like a jigsaw, leaming how to build and breakdown tracks,' Sanchez elaborated. I think it's a very good introduction to actual studio production techniques.'

## Lara Croft: is there an end to her talents?

It's official - there is going to be a Tomb Raider movie, thanks to Paramount Pictures. The company's licensing division - Viacom Consumer products recently heralded its purchase of the Tomb Raider rights at a Movie Licensing show in New York, claiming that Lara had attracted more attention than anything else at the event. 'Lara Croft and Tomb Roider have it all,' enthused Viacom president Andrea Hein. 'This is a property filled with strong storylines, and which has had outstanding consumer response to the games and products associated with it. Lara's strong standing in pop culure, and the talented production team signed to the live action feature, show all the indications of Tomb Roider as a huge licensing hit.

Such optimism is to be expected, of course, but is it misploced? Hollywood execs were probably just as excited about the 'Super Mario Bros', 'Double Dragon' and 'Street Fighter' films (see last issue's Out There), until they flopped faster than a Viagra user who's forgonen to keep up with his medication. However, those movies hinged around the likes of Bob Hoskins and Raul Julia - hardly the greatest pulls for young male gamers. The success of the Tomb Raider movie will no doubt be safely assured if the producers pick the right gal to play lara. (And put her in a tight enought vest, naturally.)

Whatever happens, though, Andrea Hein is wrong on one important point. There is a Tomb Raider-related product out there which is unlikely to receive an 'outstanding consumer response'. Yes, the Lara Croft album (deverly entitled 'Come Alive') is finally to be released by Naked Records and distributed in the UK by Discovery Records. The CD includes three mixes of


Fluid's essence is its creative core - a non-competitive, imaginative and leaming experience. It is a brave move for Sony because Fluid is not a 'game' by conventional standards and is quite an uncommercial move, but it represents the logical progression from titles such as PoRappo and Bust-A-Move. 'I's more of a chillout game, where you can relax and expand your mind,' said Sanchez 'Its more organic.' Future rasashi games will follow an experimental path, nurturing other creative aspects previously seen only on computers. It seems that diversity is set to pervade console software...

(Top row) Images from the forthooming Fluid. (Above) Roger Sanchez attempts to mix and load Gran Turismo simultaneously. Some feat
the single 'Getting Naked' as well as two versions of 'Beautiful Day' and accompanying tracks like 'Really Real, 'Feel Myself' and 'Rock Your Own World'.

As could be expected from an album which combines the talents of Rhona 'Help me, l'm languishing on Channel 5' Mitra and Dave 'Is it possible for me to sink any lower? Stewart, the resulting cheesy house and clumsy electronica is not for the feint hearted. Neither, frankly, are the lynics - most concern Lara's independence and strength, but 'Beautiful Day' features this priceless glimpse into her drinking habits:
'A summer's day in London,
All will be just fine,
Lying on the common,
A pint of lager and lime.'
Fans may also be interested to know there is an additional CD-ROM track on the album, which offers a few pics of Mitra in various poses and a little info about the venture. Although in Edge's opinion the only info you really need is: 'don't buy it.


## A Rare insight

Putting an email address on the Internet is an open invitation to humanity, in all its many and varied forms, to pump its views, however whacked-out they may be, directly to where it matters.

Videogame companies are no doubt aware of this when they supply those enticing 'contact us' headings as a part of their Web pages, but the crazed ramblings that consequently flood in beside the usual praise, criticisms and questions are hilarious nonetheless.

Take Rare's electronic posibag for example. The Warwickshire-based developer only opened its new Website in May, but the accompanying contact address has already attracted more than its fair share of bizarre correspondence. Here are just a few offerings, grouped by theme, and totally unedited:

## CONFUSION

Date: Frí 15 May 98 23:31:1.5 -0600
Subject: B0oo hoo hoo
Help me., a ravanous snake has taken my KIGOLD game hostage and is tanting me with "You too shall face the wrath of un-fun games! hahahahah) please tell me, HOW CAN A SNAKE LAUGH???!??

Date: Fri, 15 May $9801: 45: 48$ EDT

Subject: how to get the spyder
1 just wanted to know how to get the spyder in goldeneye because $i$ want to getthe spyder so if it is not much troble to send me the instrutions how to get the spyder please send them thank you

Date: Fri, 15 May 98 17:17:09 + 0000
Subject: Donkey Kong

Why won't your company make a Donkey
Kong video game?

## RAMPANT ILLITERACY

Date: Thus 28 May $98235859+0200$
Subject: Webside
Today I've look at your webside and I'm very surprised. Your tebside was realy impressed. The Screenshots for THE PERFECT DAWK was phantastic. I hape, that this are the cuality for the Final
E: Version of this Gane. The Graphic of GoldenEye and
the Soldiers of GoldenEye was for an Rare Production an Desaster. You have produced phantastic Games in the last Years as DKC or Blast Corps, and the (I hope as soon as possible) coming Gane BANJO-KAZOOIE is an wonderful Game from Rare. In the British Television (BSkyB) Program Fox KIDS NETWORK its the DKC TV-Series are ruming, and this Graphic of the Series was the best, wat I've see in the last Years.

## VITRIOL

Date: Satr J6 May 78 18:05:32-0400
Subject: stink
I hate your company, you st

Date: Sat, 16 May 98 22:35:30-0500
Subject: game
Why do you make a game with such great game graphics and go off and make it so faggetty? You make it gay by "Bottles, and Tooty" that so dumb. the same thing goes for DKR, all the characters are gay. Little kids cannot beat a game like that, it's too hard for little kids, yes I've played it. if you make games that hard, don't make 'em so GAY. PLEASE think about this when you make your next great game. OK. please e-mail me with some response.

## WEIRDNESS

Subject: Type of game
Date: Fri, 15 May 1998 15:22:39 -0700
Rpg!!!!!!!!!!!!!!!!!!!!!!!!!! One
starting. ............. umammmanmm. . . . . . fin
d out someone

Date: Fric 15 May $9818: 38: 20-2700$

## Subject: MY EYES HURT

you guys got a cool logo up in the corner( you know that little spinny rare
thing), Anyways i must have watched that thing spin around for hours without blinking, now my eyes hurt and there all red and dry, THANKS ALOT!

Those wishing to delve further into the psyche of Rare 'fans' can check out the forum ot wwwerare.co.uk, where many similarly profound offerings (as well as a fair amount of considered and intelligent comment) can be discovered.


Rare's presence on the Web is one of the most impressive of any developer. In the run up to this year's E3, it introduced Perfect Dark in a teasing day-by-day, drip-feed fashion

GADGETS

$£ 1,600$
sony

Tel: 0990111999

Nintendo managed to sell over 500,000 Game Boy Camens in the first three weaks of its Lapanese launch in Februery and could well see a simlar performance over here The flsheje lens turns the harnheld garmes conscle imp a fully fuodged digtal camera complere with a variety of jokey editing effects, a timelapse mode and the ability to make minimovies by stringeria up to 47 different images together. Nuning the results into mini worts of art is ests tixo - plig in the printer and grape are turned into stickers that can be plassered anywhere

Obviously image quality on the Garne Boy's LCD screen and stiders is poor, but that's harly the poin. Game Boy mania could be about to take over me world once more.

590 (camera, printer and cable)
THE Games
Tot: 01703653377
Out now

## MUSIC



7 knilions
Duom noom setallits RSS

Tne purpose of tis mini 3 tumis motorid condienening a $C D$ of fermeses by tre liker at Desti charge and Dors of Quiote is a ploner
 MChyuk Kawsima and Massyula natano draw on iechno and hiphon thayl a bue of dwb and he acation of we rack hsstumentiaion ses them apant from so mary of ther woanese comerporares of the moes, Depoth Change's reworing of 'OUB Me Crayy sumants bess. the Nest Beat comitioum is the onty one the fais io astarything Butar fanc, this is the flys ctance io accually have tyem on Ca


Junk Science Deep Dah Deconstruction

Washington's Deep Dish rose to prominence with the hit-mating remix of De Lacey's "Hideaway, further cemening their reputation as ambassadors of deep house win their own singles Stoy Golt' and 'Stranded. Few coudd have anticipsted a debut albun of this caltire - the deph and breadth of the music transcends the house label without abandoning the dancetbor vie Everything But The Girl's rewoitigg of stay Goid' might be predctabie but doesn't iessen the impact And when ET appears, it's obvously more abour crating quality sounds than name-droping. Musical dishes don't come much deeper, or more appetieing:

IM ASSOCIBTION WITH


T 0 P

Out now


## Robotica Toybot

There's sid a long way to go before rotots take over those much-hated, mundare pos, but this is a start. The Toybat is a si-axis robotic amm controlied by a PC ysirg the serial port and some basic, but easy-to-use control sotware. The Toypot comes either as a kitwhich reouires a screwdriver, pliers and soddering iron to assemble - or ready-

DVD's launch in Agril may have cane across as more of a whimper than a bang, but the disc-based move format is fass gathering mornentum with an everincreasing range of software and machines to play it on.

The curest bit of kit so far has to be the compact DVY 560 H , which has been desigred to appeal to the militions of miri-system owners out there As well as leatures lite built-in Dolby Digital decoding the DV.S60H also comes with a Digtal Gamma Correction circuit, which increases detall in dark areas of an image without overssturaing the resi. The resuht is some of the best images yet seen from a DVD player, and fri less dosh.
made, athough there's an eutra chage of E40 for this priviloge

Naturally, the Toybot can't accually do very much - it essentialy just pids things up then puss then down again but it could be just the fing for science studenis, robot unifies, fans of Metal Mickey and anyone etse with just a littie too much ume on their handis
 errik May's 'movator' plunders a renarkzie tackectalogye for wo cos' wortio of musical heaven, one feauring the origins, the other the rembes Athougsi credited, along with han Abtins and kevin saunderson, as one of the original Detroit techno moa this selection demonstrates how Mar/s work has away been more acour soul than mere machine music. This stretches as far back as 1987 , wint the stil-fabulous' 'Stings of Ule' and debut single 'Nude Pholo', ngegn throught to 1993 's tcon', while demonstrating througrout just how much of a debt modern electronica owes Max His music remains as frest, and vinal, as ever.


Hawing alrealy camed a lormidable reputation working alongside Biame Tony Bowes has followed it up remixing the lilies of carnier and lanes Hardway, nunning his own labe, Modern Urban tazz and now perning his solo debut. Although cowiously rooted in drum'r'basss Viewpoins' shows $\theta$ owes is jus as influenced by electro and roling hip hop me fascination wh utra-dense sounds and mufted metodies is innially daunting But airy arts such as 'Aquisse' dempnstrite a way win electronica that recalls the best of the early techno years, showing just how adepx he is at gene-splicing ganres fascinating stuf:

## CD-ROM

## A Bronx fomily Album - The Impoct of aIDS

Two facts: life in the Bronx ain't easy and CD-ROM multimedia has never been this gritty. Profiling the lives of Ralph and Serss, two Puerto Rican immigrants living in New York, A Bronx Famiy Altum talls a sory tail of drug abuse domestic volence and HN

The story is illustrated using black-and-whre photograply raten over a seven-year period during which time the disc's auteur Steve Hart becarme intimate with this family strugging on America's bottom rung Presented simply and styisity A Bronx Family Alturn remains touching and informative without revelling in the misforuines of its protagonisis The turoulent relationship between Raiph, Sensa and thei kods is plajed out very mater of factly while delicate jacz plays in the beckground. This senes to make the odd moments of tendemess and affection captured here seem all the more harrowing particularly when the fote of Senss and her children unfoids.

Though voeo clips pop up occasionally this isn't cutting-edge multimedia Hts clean-preseriation and grity, wel-handied subject matter give this disci an edge cver mary of ins flashier, more technologgically accomplished peers. Mary will keep peace of mind by avoiding Steve Harr's dark and moocy collection of shapst cts from the shapp ecige Unfortunately that means multimedia lite this rarely makes commercial sense, and it's highly unlikely thet A Bronx Farify Abum will make a big splash in seles terms still, it's defonitaly wortri a look


## BOOKS

## Phoenix - the foll \& rise of videogames

While there have been a number of books that have atiempted to tell the story of compurer games, most recenily JC Herz's lop-sided 'loystick Nation', the delinitve version has yet to be wituen. In many respects, 'Phoenix - the fall \& rise of videogames' does not advince the big picture either. What it dues have, however, is one unique quality an obsessive interest in detail. Whereas converxional histories are triuntphal, as if the growth of the computer game hes been a predetermined sucress fuelled by large corporations, Leonard Merman knows differently instead, te tells a sory wat is bult on wectinical advances and smail-scale failunes

Starting in 1862 with Sieve Russel's 'spocever' and contring in year-sized chapters from 1970 up to 19\%, 'Phoeno' chronicles every ansole and pergheral that has ever been produced. It ists their capabilities, price, availability and, in most cases, the reasons for their eventual failure. Sometimes this levet of detall becomes too much and reagess may find the pook dry at first - it's prohably best to tacke one chapter per sitting. In an industry that seems to pride iteelf on only looking forward, such a delailed viewpoint siowty becomes adictive as the basic framevork of tie enterging worio games market becomes apporent.

As sega prepares io launch Dreamcast and reenier the battle with Nintendo and Soryi its executives could do a lot worse tren to pick up a copy of this and remember the mistakes of the past.

## Habitus

So tac, 1998 has been the year where hip noveliss ty to make sense of our 20th century ines following on Irom Doughas Coupland's 'Cirtfinend in a Coma' comes tames Fint's 'Habitus'. In many ways they are smilar boots for exarncte the most important character in both is a child conosived in a peculiar mannec who grows up to be messianic Equally both bocks are strangety millennial in tone, although wittout specifically refering in it However, where Coupland is an inmand-looking author, Flint is more interested in the tracinoiogical worid man crestes and inhabits. He was, after all, a tecinology writer for whed and it shows here. Not since Thamas Pynchon exploded with 'Gravly's Rainhow has a debut author tried to create such a scientifically transcendental universe.

Quantum theor gametic mutations, Alan Turing, the secrets of cahalistic رodaism, Benoit Mandeltrot, Laika the first dog in space), probability theory, JFK, the intemet, fractels, predictive theories of gambing. Fermat's last theorern and the theological paradox of guod and enl al heve their plece in this novel. Unsurprisingt, the piot sometimes gets a bit confusing and many pecple migt by this only to fle it unfinished next to Stephen Hawkens's seminal 'A Brief History of Tirne'. Fint's attempt to make sense of the rise of information and the way it's charged our lives may be doomed to lalure, but it's an enmenaining nide

## MUSIC

 celebration of all thingss Warp-ed, the latest stindig finds 12 Werp artists airing new and excuske material This is someting of an event given that It includes the notoriousy siow-working Nigitmares on wax not to mertion a thorougnly deranged collaboration betweer Aphear win and squarepusher. Plald and the ever-excellent Autechre are on hand to proude more sober doses of techro while Jimi Tenor gives the party the necossary swirg Throw in appeerances from Andrew Weatierall and ax-LFO man Mark Bell ano it all amourts to another madly eclecic release from sheffields finest.


How to Operate With a Biown Mind Lo-fidelity Alstars Lo-fictelley $A$

Its the swagger as much as anything finat makes the Lo-fis so meniorable The sound fuses dance wruh rock more successfully than ary band since Underword ard gimes a nod to the likes of The stone Roses and Spintualised, but mosty it's the same dominating atinude of the band's heroes that can be found on this astonishing first album. Mark E Sminth esque rapoing, sinky disco bass and pumping acid lines all bom large, while 'Battieflag, a coilaborrtion win rock group Pigecohesd, iust could become the dancelioor's summer anthem. 'How to Operate' is as abrivive as it is inventive, but that's exactly what makes it such a compelling track


## Small change for coin-ops

Game developers may harp on about creating arcade-perfect conversions of popular tides, but nothing can come close to owning the real thing. Scattered around Tokyo's Alihabara electronics district are a handul of small shops which specialise in selling coin-op hardware for the home.

As a taster, the Virtua Fighter 3 board shown here costs $¥ 120,000$ (E510), while VF2 costs just V20,000 (£84). In addition, a control set (which also contains a television modulator) must be purchased for around $£ 100$. Puzzle Bobble 2 was available for a scarcely believable $\$ 500$ (around E2), and a variety of recent Capcom games from $\$ 4,000$ to $\$ 12,000$ ( $£ 17$ to $£ 50$ ). Dreamcast? PlayStation 27 Not even dose.


Specialiss stores stock a vast collecion of accessories for discerning arcade otaku, from Playstation pad adaptors (top left), to replacememt buttons - presumably for hardcore Street Fighter fans (above right)


## It's all clear now

Sonys Dual Shock Analog PlayStation controlier has been a favourite of Edge's for some time now. However, the recent range of special edition models that Japanese gamers have been treated to are of particular note, available in white, black, cystal and smoke grey. Close examination of the translucent versions reveals that Sony's controllers are truly 'Dual Shock. Each of the ams contains a separate motor, one for low-frequency vibrations and the other to deliver a stronger kick

Not only are the lapanese versions rather cooler than the standard grey iteration on offer in the UK, they're also around half the price at only 43,300 ( $£ 13$ ).

## Dream gift?

Those lucky enough to attend Sega's New Challenge Conference for Dreamcast at Tokyo's New Otani Hotel were rewarded with one of these 'Sega Memorial
Options'. Closer inspection reveals that the bearer is entided to a free gith to the walue of one Sega share on May 21, 1999 one year on from the announcement.

Featuring a portrait of Sega Japan president Shoichiro lrimajin, the Option's value is obviously dependent on Dreamcast's retail sales. So ring an importer and order one, now...



THIS MONTN...
SONY AWARDS
SEGA'S SYSTEM MASTER
PLAYSTATION SHOCKS



B y his own admission lan Stewart. co-founder and chief evecutive of Gremin, has always been a ployer rather than a gamer. Atter all, it was Stewart who asturely suggested that symbolic miner's strike references be added to Peter Harrap's hugely popular ' 805 s platformer Monty Mole, Gremlin's first breakhrough game. It was this element that saw the game covered widely in the national media. Gremlin was launched using the proceeds of Stewart's fiust business, the computer shop Just Micro. The same nose for business has kept his company independent for 15 years.

During those years the UK has been transformed from a fading and rioting industrial power to the sanitised and creativity-championing 'Cool Britarnis' of Tony Blair Companies such as Bulling, Rave, Psygrosik, and Gremlin Interactive can all point with pride to their place beside moviernakers and musicians in the new order. Bur while other games developers have fallen prey to Electronic Arts, Nintendo and Sony, Stewart has followed an ahemvive route, choosing instead to let Gremlin take its chances on the stock maket last year.

The subsequent purchase of DMA Design has added a feesh zest to Grentiv's release schedule, which has already boasted some much-admired titles such as Zool and Reokns of the Hounting, not to mention the Acwa sports range. Whth games like Actua Ternis, $N_{-2}-$, Buggy, Soul Bringer and the puat lite, Body Honest still to come in 1998, Gremlin appears to be in fine ferle. But in his suite above the busting E3 show floor, Edye asked lan Stewart whether Gremlin Interactive can hold its own in the increasingly comperitive grobal marketplace...

## Edge: How dild it feel to be ranked

 in the Sundigy Times top 1,000 richest people in Britain?Ien Slewert: PoppycodI I dorit believe I am. I was sightuly embarrassed by it I didn't

purticulaty wank to see my name there it doesn't change me as a person.

Edje: it must be incredinte to come from fainty typical beginnings and end up whth this enormous empire... 18: Yeah but it has taken 15 yeas! Things duange gradualy, your eqpectations change gradualy, Ifs not lise winking the lotiery.
Edge: When you started out, you could attribute your success to spotting a gap in the market and exploiting it nuthlessly. How do you keep up to date with emerging gaps now? Do you rely on your front-line soldiens?
Is: Absolutish. There's no woy that lan Stewart as an individual can solely go out there and steer the company.

Edge: Have you had a chance to stroll around the show yet here at E3?

IS: I've seen what I needed to see because the troops have been out there, looking at the products. il have all the videos I need.
Edge: Do you get a chance to play games any more?
Ls: What's really great for me is that we now have another truly mass-market product with the Playsutation - it's bringing down the product complerity which enables anyone of
my age to ploy these games eticiently. I'm very much a 'pick up and play' person. I don't have a lot of time to play games for hours upon end.

I love plajing $\mathrm{N}_{2} \mathrm{O}$, for example simply because I can pick it up, ploy it for 20 minutes and come amay buzing
Edge: Whether or not it should be true,
people seem to get less excited by
games as they get oldes.
IS: I dar't, I got more excited.
Edge: You play more games than
you dild 15 years syo?
ts: Ves!
Edine: Were you not really a gamer in those days?

BS: No, very much not. I defintiely play far more games now. But I think II Im anything. Im more of a 'game participank'. I get as much eniomment out of watching other people pliying games as I do ploying them myselt - especially as nine times out of ten thejre much better ot theml I reolly get a buzz out of that
Edge: How does this E3 show compare to previous yean?
1S: Every E3 has improved upon the last.
Obviously over the past mo years the market

4 conditions have changed tremendousk. There has been a change of market leadership away from Nirtendo, then the PC moved throughi a strong period and now Sony is very much taking the lesd.
Edgs: As a publishes, how do you take account of the cyclical nature of platform dominance?
15: I think the gambling terninology is a 'spread bet.
Edje: Hmm. You aren't showing any Saturn games out there...
IS: No, strange, that We didn't bring the Amiga products eitherl As a company, we endeavour to cover all our basex not only from a hardware point of view but also from a category point of view - sparts products, roleplaying products, action products, racing products. That gives us a broad spread, and it gives us a bit of secunty should there be a big shift.
Edpe: Gremilin came to life in 1994 Obviously we'd been through the Atari relgn by then, but could you have foreseen the enormous industry we have around us now?
E: I don't even think that Nostradamus would have forecast what's happened over the last 14 yeas: phenomenal technological breakdtrougls. Every time you saw a progression in harchere, you visualised it and you thought this is getting reed now. But the fact is that now it realy is. We're looking at products now that are visually Welike.
Edge: It seems that as games huwe got more realistic, some trends have returned from the early deys. Spoce movoders was comaldered really violent, and then violence took a back seat. But now we've got Goldentje, which brings the issue back into focus. We've almost reeched the point where well need to delliberately so back to the abstruct.
IS: Yes, defininely - quike apart fom the fact that if we don't do that the products are going to become very stale, since theyre going to look very similar.
Edge: Would you sgree that ganes are tending to get lilie that anymer? IS: Oh, very much so. Hopefully, what could be recognised with Gremlin - with the range of products that we're puting logether now and the addition of the DMA products - is that we are taking a more left-od-field

approach. This gives us the opportunity to come in from an angle that is very different to everyone etse's.

## SAMPIIIG DMA

Edge: Did you defibentaly purchase DMA to get those kind of games?
Es: l was diven from a crestivity point of
as DMA [otherwise]. And remember, DMA was never used as a label. it was only reafly branded wathin the industry.
LCde: David lones is now the creative director of Gremlin. What has he brought to the company?
IS: He's brought that lime bit eariac to the creative tearn. He's forced us to stand back

DME's games out to other studios within Gremlin?
E5: No, we hove plenty of our own ariginal tifles coming through. And we have the Accua spars range based in Sheffietd as well. I woulcri't want to take anything away frum the creativity and the team we hove in Shefied - its extemely strong But they an

## 'I don't think even Nostradamus would have been able to predict what's happened.

view, without a doubt. We spent tine talking with David [Jones], looking at products in tairly earty demo stages, and something I saw very early on was that they were very exciting - the type of products that goneraly weren't being crated in the incustry.
Edra: Ater spending all that money on Dma Design, it must be tempting to say to punters 'these are Gremlin gomes: Isn't there a danger of submerging DMK's identity?
E: No, were not doing that. The DMM logo will appear prominertly on all the products. I don't see any point in acquining a label such
from the products and look at them that lide bit doser. He's making us book at the real angles that are coming from them and where we're hoping to the the product
Edge: So has he made the move down to Sheffield?
15: No, he's soll in Dundee. He's exremely respected throughout the compary. That's simply because he does hove tis tremendous eye for creating these forally off-hewall products. But that isn't to say the whole of Gernlin will start producing these kind of products.

Edge: So pou haven't farmed any of
only leam from the experience thar David has brought with him.

## UPPER LEAGUE

Edjs: You mentioned the Actuo sports games there. Otviously the only compery that has established a really strong sport's brend is EA. Could Actua become the European rival to thet?
Es: It already is. If you were to ask EA it would say it only has one rival in Europe, and that's the Actua range.
Edes: But the Actuo range is only a couple of games.

IS: We have soccer, ternis, ice hockey...
Edje: Tenmis hasn't made it out yet.
Es: Yes, but it will do, one deyl [laughs]
Edje: There's Actua Golf, too.
IS: Yeah, we're out there. We're obviously not
going to produce American football and baseball products.

## Edge: Why not?

tS: There isn't a big enough European mather for those games.
Edge: You could ahways start selling them in America.

E: We can sell them in the US, but it wouldn't really be a very good use of our resources.

Edge: Do you not think that if you'res going to try and rival EA you need to cover all the bases? 18: As far as the sporis simulations are concemed, we're not using the Actuo brand in the US. Our spons brand there is dedicated to fou Spors interactive. I's a major powehouse as far as spons promotion in the Staies is concerned.
Edge: But if you look three years into the future, when the industry has consolidated even further, wouldn't it be much more valuable to have a globally recognised Actua brand? ts: I think they can run as two different brands. One brand for Europe and one for Anerica. It would be very difificin for us to compete winh Electronic Ats in the United States. Fox Sports Interactive is already a brand. It's already a major sports welevision network. Fox is now becoming a major interactive brand. We'd have to step into the

## 'The market is educated enough not to accept substandard products . . .

Edge: is it getting more difficult to compete with, say, EA in America? Three years ago, could you have been more confident about taking them on? IS: Possibly three years ago, yes.

Edge: Do you think Europeans are going to find it increasingly difficult? IS: [long pause] I think every maket is dificult. There is a consolidation going on in the markepplace, and there are a rumber of ployers that are standing out and proving that they can be leaders because of the distribution they have in place, therr marketing and suchlike. Those players are there now. I don't think it's going to get any more difficult then it is. If you have the right product on the markeplace, you will atways get distribution and I believe that we have the right products caming through. Edge: But if you could always get distribution then why do you have to work with foa?

quite an aggressive one, but one which is very much under control - and if we looked to step into the North American market and publish the Actus range there at this moment in time, or any other products under those brands, it would probably leave us too exposed.

Edge: Talking about European companies, there are smalier setups like Gremilin and Codemssters, then there

## . . over the the las 14 years: :henomenal I ecthonogogical lreakthroughs'

market very fresh with the Actua brand, and
spend millions upon millions of dollars
establishing it.
Edge: What's the setup with Fox? Is it a year-on-year deal?

IS: It's a relationship that started this year. There are a number of products we're working on with them at the moment seven in toral - and the relationship is such that we're happy working with them now and we'll see what the future holds.

IS: The timing just isn't right for us at this moment. It wouldn't be a wise move. The company [Gremsin] is on a growth pattern -
are these bigger outlits like Infogrames, which is groming, and Eidos, which has come from nowhere. Do you ever look

at those companies and get just a little bit scared?
15: I don't get scared at all. I think what a lot of people don't realise is that we're more profitable then a lot of these other companies. A lot of them don't make profits. Codemasters and Empire are both profitable and well-un companies I think we'fe possibly in a better position than them to expand, though. Our product portolio is broader than theirs, which I think is importart - you can be vulnerable if your portolio is too narrow
Edge: Don't you think there's a case for accepting you're not going to survive like this, three years down the line. If you are golng to merge whth, for example, GT or Midway - to establish a pan-global operation - wouldn't it be valuable to do that now, rather than having to jump out of the firm in a few years time?
t5: You're probably asking me a question that I dorit really want to answer at this momert in timel That's a difficult one.

Edge: Infogrames' Bruno Bonnell hes been very public about his intemtion to build a Europeen rival to EA. That sort of talk has a habit of generating its own momentum.
15: Bruno has done a tremendous job of building up the expectations of what

4 Infogrames are going to be doing. The PR maccine has been rolling along for some time now, and Bruno is probably one of the best people in the industry to maximise that. He's a wonderful character. I'm not saying that Gremlin is going to pur itself in the same position. What I am soping is that whatever move we do make, whether it be an acquisition or whatever, we'll still ensure that the company goes forward in a profitable manner. We're not the type of company that shoots for the stars. We're the type of company that targets strategically, and achieves those targets.

## CIIYSLICKERS

Edge: It was nearly a year aga now that Gremlin floated on the market and went public. How has the city changed the culture of the company?
is: It hasn't really changed the company that much. Because of the way that the company is nun, we were in a good position to take on the rigours of city requirements frum an accounting and reporting point of view.
Edge: Gremlin has always been purcelved as a 'gamer's' publisher - has the fact that you're now a quoted company changed your games?
IS: No, it shouldn't change the games at all.
Edge: So you heven't had to start creating games that money men in the city understand?
IS: No, at the end of the doy all the aity is interested in is result, and how the company is progressing.

## Edga: Does the city understand

 interactive entertainment?IS: Well, that all depends on who you're tolking tol There are a group of arsipsts who follow the industry now who are young enthusiastic gays. When you're talling about the other investors, they very much look at stock and the overall
company perfornance racher than book at ary one particular product
Edge: Have there been any real benefits from flotation?

IS: I think one of the benelft from the flotation is that financially it gives us stabiity. It allows us to take longer-tern decivions as to how much we spend on products and how mach time we can spend on them.
Edge: It enables you to spend longer on games?
15: Yes, because of the sisbdity of the compony, we tend not to hove to make shor-tern decisions. You can forecast much more easity knowing you're in a good financial position.

## 6EfIIGG Ticehical

Edge: On another tople, with Actua Soccer Gremlin was partly responsible for introducing motion capture to the UK. Do you still see Gremlin as a technologically driven company?
IS: Yes I think so. But where it's changing now is that it's not necesxrily down to inventing new technology - the really dever thing is how you build these products, and the toola you create that allow you to do it, which is something that's invisible to the user.
Edge: One phase you've already been through a couple of times poursell is that of gaming going mass market and then going bust. Do you think that gaming has broken out of that cqcle

no longer get excived by. Following that there were the cheap home computers, the Spectums and Commodore 645, and then the neat manket dip was due to technological eppectations. People stopped spending money on buing products because they were looking foward to the next set of technology.
Edga: You could argue that the Atari crash happened because there was suddenly a mass market that didn't undentand what they were buying. IS: I think there's less chance of that happering now. The cost of developing products is running into hundreds of thoussands of pounds. And the market
foothall game because ir's got the FIFA loge on the box.
15: Bod games don't sell now, if you look at the chats. It used to happen in tha past God foridid, we probably did it ourselves.
Edge: Do you think it was a viable strategy back then?
Bs: was it a viable strategy in the past just to shovel products out? Yeah.
Edge: Acolalm did it.
15: Yes, I read your inferview with Greg
Fischback [55] and I thought he was very honest And I think Acclaim is now putting things right. The/ve identified that you can now no longer get away with putting a substandard product out - the consumer will

not accept it And even if you do heved certain element of the consumes who are uneducated, they very quidely get edurated by disappointing products.

## THE HaMMIG Game

Edge: How do you think the customer in
the street perceives Gremlin?
IS: Pd like to think as a widly exciting, technologyled producer of games..

Edge: And do you?
15: That's what I'd like to think That's not what I sccually know is the stuation. What they see in the Gremlin product is a very good sports range and people that come out with exvemely solid games. One of the

## 'We're going to be using more videe footage in products than most feature films'

things that you'll see changing as far as the company is concerned is that things will become much more excting.

Edge: is that DMK's imfluence again?
IS: No, this is very much a marketing
inffuence and the requirement to see that the company goes fomerd.
Edge: Some might argue that the average punter wouldn't think anything They might have enjoyed some of your games in the past but they might not be aware that they were Gremlin games, aside from the Actua games.
15: Actua is definitely a brand, as far as Europe and especially as far as the UK is concerned. Gremlin is not a brand, it's a label. I don't believe there is loyely to lobets in the marketplace. Each product is taken in its own rigit, and rightly so.

Edge: So you don't think there's any point in investing a lot of money in building up the Gremlin name?
Es: $1 t$ is important that Gremlin is built up as a name because it's important that the city understands what we are doing as well as the consumer. We will be, as I've said, more aggressive in the way the company markets not only its products but its name as wel.
Edge: Companies like Bullirog, Blizzard and id Software can just produce their games and everyone will look out for them. Surely thare's some valve in becoming somebody of whom people will sey 'T's the next Gremlin game.:
15: Maybe it will be the ner DMA game or the nert Actua product

Edge: Olkay, Actuc and DMM accepted, but what about the other Cremlin games? That's the key question.
15: That's something that if you look around the syand at this moment in time, if you look

of Soul Bringer, this is another apportunity with a leadingedge product with which we could well estabich a Gremlin RPG brand or whotever. That's something which we're gaing to look at very closely. But you hove to lead winh something It's easier for a cortent provider like Blizzard or id becouse theyre wooking in one gerve, and thet's what theyre focused on

Edge: Also, they all made their names with one great game...
ts: Very much so. We're well aware that we heve to do it in a number of genres.

## 

Edge: Does the Internet present a threat to publinhers?
Is: 1 think there will always be a place for publishes. The intemet won't take over the world, not in our liferimes. What a lot of people very seldom realise is the enormous involvement that's required to go into making a produc. I want people to know that what goes into producing them is bigger and more involved than wharts involved in the film industry. It's something that's a tremendous danger to the film industry because our
industry is geting better and better at what it does. I believe that as the industry moves forward now we're going to be making products that require more content than movies - that are movies in their own night We're going be using more video foctage in products than most feature films.
Edge: The film indurtry had 75 years to work out how to make movies before the mutti-million-dollar blockbusters come along. The games induntry has only had a few years. Most of the companies out there - whth the odd exception such as SquareSoft - haven't got experlence of managing projects on anything like that scale. Will that be the next stumbling block for developers? Is: No , I don't think so. I think Square has done an absolutely fantastic job, and looking at Final Fantasy Mill, it's a wonderful visual experience. There's no reason why 75 per cent of sotwere publishers can't do the same Edge: Do you see Gremlin in competition with other games publishers or with other content providers? For instance, will it bother you when the movie 'Armageddon' comes our?
Is: I think we're in competition with any business that eats up leisure time, whether that is wolching television, going to the dinema, plaving soccer, reading sleeping Whas we have to do is continually keep people awake! [Laughs]] Not eating not sleaping - just wanting the definitive inmersive epperience.


## PRESCREEN

## A roll call of the newest arrivals in the world of videogaming

## IF IT MOVES, MODEL IT

 Is the argument for 3D all too shallow?5prites and bitmaps, say your prayers. The graphical third dimension has truly broken in to the innermost compound.

This final act of dimensional cleansing targets adventures and strategy games. Cavedog's Total Annihilation and Westwood's Blade Runner were the warning shots. Now Relic's Homeworld (see p38) and Origin's Ultima $D X$ will finish the job.

But is the revolution wholly welcome? Games are about gameplay. Where 3D enhances games and Mario 64, Tomb Raider and Quake proved it could reinvent them - Edge salutes it. But beware the polygonal armies of a game-killing regime.

As Brett Sperry pointed last month, 3D doesn't necessarily improve strategy games. When generals plotted WWII, they used 2D maps and counters because the tabletop view gave the best strategic overview. Three-dimensional graphics looks great, but their angles can prove redundant: hills can obscure the big picture. Hostile Waters, Homeworld and the rest have everything to prove.

When Churchill planned D-Day, he didn't spend months with glue and airfix models. But 3D games need an engine that takes at least a year to build. And woe betide any game that doesn't look as good as the best come release day.

PC shooters provide a warning. As developers have made ever better 3D engines, they have paid scant regard to anything else. At least the fixed graphical standards of consoles leave room for innovation. Is it coincidence that GoldenEye came on the N64, despite the plethora of PC shooters?

Some games just shouldn't be 3D. Maxis ditched its plans for a fully navigable 3D city in SimCity 3000 when it realised that slow, plain graphics enabling players to walk around the city compromised what its game was about. Worse, some great game concepts never make it because their creators aren't 3D experts. Edge often sees good ideas buried under lacklustre graphics engines. The months pass and the graphics slowly improve - but at the expense of the game itself.

Polygonal 3D games remain a new ball game. When even Rare falters with Banjo-Kazooie, it's clear the rules are still being discovered. And 3D games haven't just abandoned many of the 2 D gamepiay features that sustained gamers for decades, they've obsoleted some of the talent that made them - the people more into making fun than matrix manipulation. Would Donkey Kong and its ilk have been made if its creators had to first master the maths required for realtime 3D?


Edge looks forward to Homeworld (left), Relic's 3D space strategy adventure, with relish. Games such as Ultima IX (centre) and Hostile Waters (right) continue the all-pervading 3D assault

## Edge's most wanted



| Body Harvest |
| :--- |
| (N64) DMA Design |

Nintendo's 6abit update of its SNES classic looks set to provide a quality alternative to the realism of Gran Turismo and Colln Mcrae Rally.

The videogames making waves before their arrival


Spike
(Arcade) Sega

With its simultaneous fourplayer mode, AMZ's latest fighting fest delivers more than just the genre's usual graphical embelishments.

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## Galleon

## PRESCREEN ALPHAS

THE GAMES CATCHING EDGE'S EYE THIS MONTH

## GIANTS



Edge makes no excuses for returning to the dazzing Giants so soon after its debut last issue. The game's multiplayer mode looks particularly interesting, since it's been designed as three warring species (respectively the huge giant Kabuta, the ocean-faring Sea Reapers and the Meccaryns - hi-tech space warriors in exie) rather than the one or two copions multiplayer gaming usually offers. Whether it suffers the art-house exile of ADK remains to be seen.

DUKE NUKEM: TIME TO KILL


CASTLEVANIA 64

FORMAT: PLAYSTATION DEVELOPER: GT IMTERACTIVE


Atthough Duke's gamepley remains largety unaltered (which is not necessarily a bad thing), the camera has been switched from first to thirdperson. Time to Kill is spread across the ages, with Nukem beated to a variety of time-period specific wesponny, and an increased level of blood and guts.

FORMAT: MINTENDO GA DEVELOPER: KOMAMI


Having chosen the likeable futuristic racing litie as the first of its intemal N64 developments, Psygnosis will be hoping this version proves as popular as its
PlayStation predecessor. The use of the 64 bit machine's analogue controller worts particulary well but Wipeout veterans could find the experience a little too easy.



Tentatively penciled in for an end-of-year release in Sapan, Konami's vampire-laden adventure makes its much-awaited 64bit debut These latest screenshots are encouraging showing one of the four characters availsble to players in the final version as they bartie the seemingly endless procession of Dracula's minions. Like the real thing these attack mainly after sumset, preferring to hide during the day, and players must therefore plan their exploration accordingly.

4 APOCALYPSE
Adivision's Bruce Willis vehicle draws ever nearer. Through careful use of texture mapping, Apocalppse's character, Kincaide, bears a reasonable resemblance to the Hollywood star.

The game's plot pithes
Bruce inte a strugge with the four horsemen of the Apocalypse, no less. Spread accoss 12 levels, the thirdperson action is promised to be \%urious', 'non-stop', and 'over the top'.


## ASSAUTT

While ASC Games' One may have locked certain gameploy aspects under its visual veneer, Telstar's pseudo-3D shoot 'em up effort hopes to deliver the goods. One and moployer action is assured over 40 levels split into six distinct environments populated by hideous alien creatures. These require swit termination by one of the game's many upgradesble weapons.


THIEF: THE DARK PROJECT


Formerly known simply as The Dark Profed, Looking Class' firstperson 3D action-odventure titie differs substantially from its peers by introducing elements of perception and ambitious Af routines into the game's characters. As such, players should not be surprised to find guards investigating the noise made by their character's footsieps as they creep around, for example.


## WIN BACK

FORMAT: NINTENDO QA DEVELOPER: KOEI
Probably inspired by Mera/ Gear Solid, Win Back could be the closest N64 owners could get to Konami's espionage affair Levels must be negotiated with the minimum of fuss, so as to reduce the possibility of being detected by the enemy - the dreaded Crying Sheep organisation. Hopefully the gameplay elements will match the game's early but promising visuals.


## KNOCKOUT KINGS

FORMAT: PC/PLAYSTATIOM DEVELOPER: EA SPORTS


Why boxing should be so different to the amply covered martial-arts field isn't clear - sadly, perhaps it's because boxing is langely a western sport. EA has exclusive rights to Muhammad Ali, Evander Holifield and Sugar Ray Leonard, but whether it's recruited equal design taient remains to be seen.


## WILD 9

Including a level where the player races through swamps by boat and another which is just one long drop through air-ventilation pipes, Shiny's Wild 9 is as different as it is late. Most of the levels are 2D platform affairs, with the player wielding The Glove and Rig to pick up enemies and smash them into the environment or grab hoid of the terrain to traverse obstacies.


MESSIAH


At last, Messiah looks like a garne deserving of the attention its engine has recelved. The engine - which adds or reduces polygons in 30 models to maintain the frame rate - is innovative, but so is the gameplay. The hero is an apparently harmiess angel who can posses creatures and then use their weapons and skills, or deliberately injure them. In multiplayer mode players can judge the weapons they're likely to face from the appearance of their foe.


FORMAT: PC DEVELOPER: SHINY ENTERTANMMENT


Edge has now received a fully playable PlayStation version of David Braben's own update of his Archimedies and Amiga classic, Virus. Athough it remains to be seen whether the fixed viempoint can be adjusted, $\sqrt{2000}$ is nonetheless an appealing prospect. Players must save the human race from the alien invaders and their deadly red virus. Expect a range of novel weaponry and detaling.


HOSTILE WATERS


Instead of the massed armies of tities like CAC, Hostile Waters gives players a select - and limited - offensive strike team of specialised units. For instance, tanks are virtually unstoppable but incredibly slow, so they must usually be flown in by helicopter. It's an interesting compromise, and it could make the task of creating a strategy game in 3D less difficult.


## SIN

Valve's Half-iffe and Rituar's sin are filling the void left by Unreal in the PC shooter hysteria stakes. Sin is winning attention for sheer attention to detail. Cut scenes, Duke-stye banter and a training area like that owned by tara Croft all help Rituar's cause. More neat touches include a harpoon for subaquatic levels and a gun which can move opponents around the level.


## S.C.A.R.S.



Futuristic racing with bouncy, beach-buggy-like cars and an armoury of Wipeout-style weapons, S.C.A.R.S. handles well and looks fine, too. The imaginitive track design travels through Aatech ruins and polluted dyslopias and offers players a variety of routes through every level.

FORMAT: PC/PLAYSTATION/MINTEMDO SA DEVELOPER: URISOFT


LEGEND OF ZELDA: OCARINA OF TIME


Another month, another batch of Zeddo 64 shots. Few games can boast having so much imagery published in the videogaming press as Nirtendo's forthcoming epic. Indeed, it currently holds the record for most appearances in Edge's Alphas section. But then, frigheningly few games are like Zelda...


SPIKE


FORMAT: AMCADE DEVELOPER: SECA (AM2)

## FI WORLD GRAND PRX

The format is ssill awaiting a racing title to challenge those found on Sony's rival machine, but Paradigm's FI itfe could finally delver what N64 players have longed for since the
format's first appearance in
1996. It features all 17 circuits from last year's season,
commendably detailed scenery moving as an impressive rate
as well as dpramic weather and an intriguing scenario mode.



Sega's exciting and ambitious new beat 'em up title allows up to four cabinets to be linked via optic cable enabling simultaneous multiplayer sseet fights. The arenas are impressively large, and players can decide to team up against or with - any of the other contestants as they wish. Graphically, the game represents another step forward for Sega's established dominance in this field. Spike will make its first playable appearance at the forthcoming JAMMA show.

## JET FORCE GEMINI

The seemingly unstoppable Rare unveiled its second title at E3 and looks
set to continue the company's recent run of successful titles for Nintendo's console


Some of the more impressive effects in Jet Force Gemini can be found in the ambitious lighting used throughout, particularly for the game's many weapons


The game's alternating levels require players to switch between the main three characters, thus exploiting their individual attributes

Format: Nintendo 64
Publisher: Nintendo
Developer: Rare
Release: TEA
Oright: UK
$\stackrel{\rightharpoonup}{*}$

Announced just prior to the E3 show and shown only as a brief segment of Nintendo's looping promotional video sequence on its stand's substantial projection screen, let Force Gemini passed an awful lot of people by. Yet Rare's potential-packed title warrants attention, promising as it does to take all the elernents of a classic shoot 'em up and place them within a 3D polygonal world with players viewing the action via a thirdperson perspective.

The game is set in an alien universe far, far away. its delicate balance is under threat from the intergalactic crimelord Mizar, whose tyrannical reign must, naturally, be terminated. Normally a relatively simple task if it didn't involve having to battle his army of minions which largely comprises crazed, gargantuan insect-like space-roaming beings. In order to achieve this formidable and seemingly impossible (not to mention foolish) task, players can swap control between the three main characters - Juno, Vela, and Lupus the dog - and each of their individual skills



The landscapes are in 3D, allowing players free exploration of the vast environments (top), populated by disposable, bug-like alien baddies
must be fully exploited in order to ensure progression through the various levels.

So as to introduce some gameplay variety. the latter alternate between frantic action and sectors requiring a more stealthy approach. of course, secret areas revealing bonus items are to be found within the vast, freely explorable levels, with puzzle elements ensuring the requirement of some brain activity. Furthermore, having not forgotten the importance of weaponry in a shoot 'em up. plenty of power-ups are obtainable to amplify the already-impressive artiliery.

In typical Rare form, jet Force Gemini also features multiplayer options to complement the oneplayer experience. Another interesting


Even at this stage, the levels seem hugely varied, with noticeably differing environments populated by bugs waiting to be killed
feature is the inclusion of dynamic weather conditions, forcing players to adapt their combat strategy depending on the climate's wildly unpredictable nature.

Yet, given its video only appearance, Jet Force Gemini's most impressive aspect currently remains its graphical quality. The footage revealed several excellently varied locations featuring highly detailed textures and impressively complex light sourcing particularly noticeable in the game's fire effects. The designers have created a rich, colourful, funar-like landscape together with a series of space-age building interiors more akin to Rare's usual cartoon-like look rather than the grave realism found in GohdenEye. Given the game's nature, this aspect works particularly well.

Moving the plot along are a series of cinematic cut scenes, and an orchestral score further enhances the game's overall filmic feel. Rare remains typically silent about other specific facets of the narrative.

E3 is becoming a platform for the Twycross-based developer/publisher to surprise the videogaming world by revealing new projects (Perfect Dark being the other

Yet another example of the swish lighting effects (above) and further evidence of the variety of alien lifeforms awaiting termination (above left)
show announcement this year). From what Edge has seen of Jet Force Gemini so far, plenty of destruction is assured and, as ever Rare has complemented the on-screen action with some truly impressive visuals

Moreover, it provides weight to the argument that, in visual terms at least, the UK developer is now easily challenging the projects emerging out of NCL's Kyoto offices; something which two years ago would have been considered highly improbable. Sadly, so many other N64 licensees still seem unable to even come close to the standards set by the premier duo.


Although JSF involves disposing of insectoid alien scum, the visuals retain Rare's typical colourful appearance and childlike innocence

## HOMEWORLD

There's nothing new under the sun, but up in the heavens Relic is blending Westwood's classic realtime strategy template with 3D shooters to create a visually stunning saga...


Ships launch in style (above) but the docking procedure is more impressive. As in the classic Elite, ships turn and twist to find the correct angle, then land en masse. (Top right) Who says strategy gaming can't be explosive?

[^1]Homeworld looks like the best bits of 'Star Wars' or 'The Last Starfighter'. It's not the graphics, though Homeworlo's ships are certainly superbly animated. Rather, it's the choreography. Ships roll into battle in delta formations and dock in unison like toast popping back into toasters. Fighters fly in classic pair formations, executing Immelman splits and barrel rolls.
'We've removed the control of flying ships from the user,' says Alex Garden, Homeworld's creator and CEO of Relic Entertainment. 'Now the computer flies the ships and you just tell them what to do. It's enabled us to get an epic dog-fighting look.

Homeworld is a cross between C\&C and TE-Fighter. Players build up massive space fleets, with motherships, research vessels, frigates and a host of smaller ships. Just as in

C\&C, success is achieved as much by skillfully utilising resources as by winning battles. Ships are given orders via the mouse in the time-honoured fashion, while pop-up menus keep the screen clear of clutter. Yet, as in TIE-Fighter, Wing Commander Prophecy and its peers, the action is 30 .

Several developers are working on truly 3D, realtime strategy games. They include Activision with Dark Reign II and Lionhead with Black \& White, while Ubisoft and Take 2 have already had limited success with Uprising and A/mour Command respectively. Other projects, like Maxis' first draft of Sim City 3000 , have, unfortunately, been abandoned altogether.

Because Homeworld is set in space, Relic has the key advantage of not having to draw terrain. Instead, it's squandered processing


Question marks still hang over the ability of Homeworld's 3D engine to manipulate so many polygons at an acceptably fast rate


The mothership must be protected at all costs (top left). As the heart of the fleet, it creates all the other craft inside its spacious bowels


Ship design has been an ongoing process. After rendering up a second fleet of spacefarers, the team went back and revised the first
power on drawing the recoiling and interlinking research pods. The level of detail is particularly impressive as Homeworld will usually be played from a distance. The screen displays dozens of fighters weaving around each other while frigates lob energy weapons from the perimeters.
'When I first got the idea for Homeworld, this is what I saw,' says Garden, 'a big, rolling ball of ships with vapour trails behind them. In the first non-disclosure agreement with Sierra, the name of the game was "Spaghetti Ball" - that's what I saw in my head!

Like Cavedog's Total Annihilation, the shift to 3D graphics ados new dimensions to the gameplay. 'Homeworid isn't actually played on a [linear] plane,' explains Garden. 'Being a 3D game, you can take the ships wherever you like. If you're attacking a capital ship... attack from underneath because it'll have to move its guns around to bear on you.'

Battles in Homeworld can involve as many as 300 different ships, all flying around in 3D. To help players coordinate their fleet, Relic has come up with comprehensive formations - another first.
'It's really important that you use certain formations,' says Garden. 'If you were


Vapour trails from passing ships are included to help judge their trajectory (above). In massive battles, up to $\mathbf{3 0 0}$ ships might fill the skies at one time
attacking a capital ship, the claw formation gives you a much greater advantage than the standard delta formation, because you're able to come at it from all angles. Wall formation is often used with minelayer corvettes... to drop huge arrays of mines.

As your fleet progresses across the galaxy (attempting to reach the eponymous planet of origin), it encounters rival fleets as well as pirates and traders, inevitably leading to conflict. In essence Homeworld plays like a standard realtime strategy game, with asteroids and nebulae instead of ore fields, while research vessels take the role of advanced buildings. The sheer distance of space replaces the fog of war. Dots on the scanner may indicate meteors, salvageable derelicts or the vanguard of an enemy strike force. Spy probes and sensor arrays penetrate the gloom.

Currently, Homeworlo's flaw is its terrible framerate, which Garden says is now the main focus of attention. Edge also wonders whether effective strategy will be impossible to manage given the 3D nature of the gameplay. Certainly, though, Horneworld looks among this year's most exciting PC games. When even the resources are interactive ('You can tiide behind asteroids or blow them into smaller asteroids as in the arcade game. You can send chain lightning stoms down the arms of nebulas'), Relic seems to be taking nothing for granted in its quest to create something fresh.


The ships actually betray a surprising amount of attention to detail. Gun barrels pop out and whirl in a frenzy of polygons

## VIVA FOOTBALL

Will the inclusion of 987 teams, 1,974 authentic kits, 16,224 players and 259,584 player attributes be enough to make Viva Football stand out from the crowd?


Over $\mathbf{3 0 0}$ stadiums have been recreated to ensure Viva Footbalf's authenticity throughout the ages (top right). The crowd plays an active part in the game, and won't hesitate to jeer at poor play from the Scottish side

B$y$ the time Viva Football arrives on the shelves of Electronic Boutique, most ardent football fans might have had enough. Jaded by the plethora of foothall games released this summer, they'll also have endured the most saturated World Cup coverage since, oh, 1994.

But Virgin interactive reckons Viva Football is in with a shot:
'Viva Football is more like real life soccer than any other game,' claims Virgin Interactive's Simon Humber. 'It's got a very open-ended game structure. If you play something like FIFA or ISS, the gameplay is very much 'on rails'. The interface doesn't let you express yourself in a creative way.

Viva Football aims to overcome this complaint with a control method that focuses on kicking strength as much as direction. Passes, chips and straightforward kicks can be performed either by quickly tapping the


Format: PC
Publisher: Virgin
Developer: in-house
Release: September
arigin: UK
joypad - passing the ball towards a highlighted player - or else by holding down the button, which can send the ball anywhere on the field.

Players can thus kick the ball into space or chip it over defensive lines, adding to the authenticity of the game. While other football sims such as ISS 64 have included through balls and the like, Humber says it's the extra level of control that will set Viva apart.
'If you want to kick the ball 50 yards down the field and then chase on to it, you can. If you want to play a short passing game, you can do that too,' he says.

Opening up the field with insightful play will count for little if players merely run back and forth along the pitch following preset paths. So virgin has concentrated on making the players intelligent enough to spot opportunities as they arise.

What goes on off the ball is just as



If Viva Football players are to exploit space more successfully, the camera may need to be brought back (above)
important as what happens on it, which is what gets missed in a lot of computer football games,' Humber points out. 'Maybe you have to move ten yards pefore another player does something - real life is a lot more fluid than that. As you move, everyone else makes runs to complement what you're doing. They don't just react to what happens, they're proactive.'

Humber says that over a year was spent on the AI. 'Originally we thought, "why don't games look like football games?" and then we realised it came down to the use of space,' he says. 'We started simulating some stuff which analyses space on the pitch and after a few weeks it all fell into place.'

This proactive emphasis even fiters through to the speech, with Virgin's PlayerChat audio engine replacing the stream-of-consciousness commentary of other titles. Players will shout for the ball, with phrases like 'To me!' and 'Through ball!'

Aside from the technical innovations, Viva Football also offers something a little different in its structure. Effectively a Worid Cup simulator, it covers every competition from 1962 to 1998 , although the licensing minefield means Virgin must refer to them as Worid Tournaments'. The game was certainly intended to ship before the 1998 World Cup.


Virgin worked with Barnet FC for the motion capture. Not glamorous, but probably in keeping with the 'for the terraces' targeting of Viva Football. Players from four areas of the field were recorded, rather than just one star
but one advantage of the slip is that it has allowed Virgin to incorporate updated statistics from this year's World Cup into Viva's vast đatabase.

Indeed, Viva Footbal's second strength is its comprehensive coverage of the last nine tournaments. Players can pit any team from any World Cup against another, and so resolve questions marks over, say, the superiority of England's 1998 team to the heroes of 1966. All the teams are faithful recreations, right down to the length of their shorts, which change in bagginess according to the decade. Early games are even played in black and white.

If Virgin's plans come to fruition, Viva Foothall could bring fresh ideas to a genre for which the phrase 'over-saturated' seems very understated. It might also bring shell-shocked football fans back for more. Now, that would be a remarkable feat.


Football has changed a little over the decades. When playing with older sides, the ref adopts the home side's rules


Viva Football's 5,400 keyframes of character animation should help ensure smooth animations (above)


## DEEP FEAR

Saturn owners have reason to cheer with the arrival of a Resident Evil lookalike, set deep in
Davy Jones' locker. Expect a heavily CGI-driven adventure that's more than worth its sea salt...


Although its textures are distinctly Saturn-esque - that is, lacking the sharp definition of their PlayStation equivalents - Deep Fear is an attractive game

Format: saturn
Publisher: Sega
Developer: In-house
Release: Out now (Japan)
arigin: Japan
 iven the phenomenal success of Resident Evil in all major softwareconsuming territories, it's perhaps a mystery that few rivals have yet to appear. Sega's Deep Fear, then, has the unenviable distinction of being perhaps the first 32bit out-and-out 'horror adventure' to appear without Capcom branding. Comparisons are inevitable but, with Sega's title bringing some features to the genre, cries of 'cash in' may be accurate, if a little premature.

Foremost among these Sega-sired innovations is the effect that weaponry will have on different creatures. Each firearm including a Colt 1991 A1, MP5, stun grenades and the common-or-garden shotgundictates how the player's foe meets their maker. There are up to ten different 'dying' animations on offer for every assailant that the player encounters.

Based inside a secret underwater US base, Deep Fear adopts a familiar, plot-driven approach to player progression, with CGI


Resident Evil 2 aficionados may find the above shot eerily reminiscent of scenes found towards the end of Capcom's game...
sequences accentuating the importance of certain events. Naturally, conserving limited air supplies is an essential consideration. Edge has yet to experience first-hand what effect this has on gameplay, but finds the inclusion of such a 'time limit' in an adventure game an intriguing prospect.

Due for imminent release in Japan, Deep Fear will no doubt enjoy an enthusiastic reception in Sega's home market, but has yet to be confirmed for UK release. While commercial success is somewhat unlikely on a Bio Hazard-type scale, a similar level of critical acclaim remains a possibility.


Prerendered CGI cutscenes are used, perhaps predictably, to further Deep Fear's considerable plot

## MOTO RACER 2

A year after creating what remains one of the PC's greatest racing experiences,
Delphine returns with a now-obligatory follow-up that looks set to overtake its predecessor .ed


Along with improved visual effects and a track editor, Moto Rocer 2 should contain all of the gameplay values that made its predecessor so very playable


Hopefully, this time, with its hi-res visuals and three multiplayer splitscreen mode, the PlayStation version will prove more enjoyable

Format: PlayStation/PC
Publisher: Electronic Arts
Developer: Delphine
Release: September

A long with F1'97 and Ultim@te Race, Moto Racer was one of the first PC racing games to exploit 3D accelerator cards. The game proved a convincing adver for the emerging technology, with its detailed hi-res backgrounds, bi-linear filtering and speedy framerate. But now astounding accelerated visuais are the norm, so what can Delphine do to provoke interest in a sequel?

The first step has been to make the graphics even better. Like the original, Moto Racer 2 presents a huge variety of circuits (eight location themes, each boasting five tracks), taking in everything from the countryside of Brittany, to the wilds of the Amazon basin and the desolate sands of the Sahara. Not only are they stuffed with scenic detail, but they also boast transient effects like snow, sunlight, fog and even tornados.

Perhaps more interesting, though, is the addition of a 3D rotating map editor. This seems to be something of a trend among racing game developers at the moment (see


If anything expect the setting to be even more varied than first time round, with players visiting the most unlikely of racing locations

Europress' Tommi Mäkinen Rally on p98, for example), and has no doubt been inspired by the number of firstperson shoot 'em up map editors available. Whatever the case, it should add to the longevity of the titie.

Beyond these features, Moto Racer 2 does everything current gamers expect. The PlayStation version offers analogue control support, PC users have a number of multiplayer options to call upon, and both incarnations offer the usual choice between arcade and sim modes. Plus, like the original, the sequel offers a choice of speedway and racing oikes. With Milestone's more seriously intentioned Worid Superbike Championship also on the horizon, bike sim fans will soon be spoilt for chaice.


Just like the original, MR2 alternates between smooth track racing and the rugged, sideways antics of motocross racing




 EOGE REACHES FOR TVE SU'í́s
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F-22 ADF (top row) is perhaps the best flight
sim yet released on
a home computer.
DID has even
succeeded in
leveraging its proven
excellence into military
sim products for the
Royal Air Force and
the British Army (right)


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 tho face of a market-ieacer it one of the most stahle of the PC's stania genres - figit Smuitions And evidentiv, success is nostranger to DiD Entar Martin Kenwright, managing
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of the PC market where the compary thamalcar is resources 'back in 199a, we concaited ine ides of butzk ing





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DID's lineage stretches back to (from top) 1991's F-29 Retaliator and runs through to 1992's TFX and EF2000. Epic (above) was an uncharacteristic and poorly received foray into space-based action

## WARGASM

One game on the lips of simheads at this year's E3 (if only for its provocative titie) was this foray into the realtime virtual battlefield.
Worgosm is perhaps DID's most ambitious project yet and implements a more arcadey style of gameplay targetted at a wider audience than its more typical PC output. Using a Risk-like global-domination sim that allows strategic and tactical control of forces, players choose between three types of combat - from a helicopter, a tank or on foot. And it's this variety of play styles that could make or break the tive.

Worgosm's scenario revolves around the World Wide War Web
(WWWW), a technological evolution of human conflic that now takes place in a virtual environment - bringing an end to real bloodshed. Complete with force-feedback controls, a 'Multiple Wargasm' multiplayer mode and some especially realistic rain, this game has the potential to be a contender for PC sim of the year - as long as the three different combat types do not result in a dilution of overall game content. If it does succeed, expect a flood of 'Fake Wargasm' tilles from rival developers.


Pach playing TFX and thought with a intte bit of roveffication we covid change sorte of our techinoingy to fulfil their training needs They fold us it cost them abou E10,000 to do a traning: misaion, inciud itg fuel - |ust to practice ditopping a leght guiced bomib.-and we coud probably emulate it unt ins: Excurately by using a $\operatorname{FC}$.

Edge: How come you weren't seen off by the big boys in the simulation field?
MK: we din't krow it had antiraly gone out as an operational tequrement and ail hiere big comparies sut ticere wera quating haffa million outh Sycterms on Silligin Groahtits - atid we knocked it wgether in three wefks for à few grand: It was chled TAMPS- Thermai Imbeng Ana Laser Sebignatun System - and it was used in the Guif So the Paf were tokked pink. We myented IITS, es if was callerd - Tialds niteractive Tairnig Systurt - Syphlift all the laguat seuadiark, and theq We gat the nut to to seme of the Karrier 2quartuns in the uk We're lacking an shametha fornacio and going export with it

Edge: It's surprising to think that PC technology could be advanced enough to satisfy military needs..
 Slican Grathiss syeterts, tiut the British infinity lrad
simulatimatiat vere likezX spectrum simulations that thayd paid millina fat - ten-yegr comtracts trom '86-81. You
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## tardwerte compariy wils cutuativ built us teal turrats fot the

rifterent armourari uetucips.

Edge: So what pays better - real-life war or the videogame equivalents?


## F22 Total Air War

In a move that has angered hardcore fans of the original, DID has re-engineered a planned expansion disc for F22 ADF into a full-blown game in its own right. TAW furnishes the highly adranced 3D engine with deep, complex war simulation mechanics allowing the player to be immersed in every aspect of a war, from planning tactics to flying into hazardous warzones. Now, as well as being a combat pilot, there is also the opportunity (should pleyers so desire) to play the role of a tacrical mission planner, a weapons officer, or even an AWACS commander. A new dynamic campaign offers the choice of ten wars over an area of 4.5 million square kilometers featuring accurate geographic detail from eight countries. If this wasn't enough, new multiplayer features include cooperative missions, custom combat and modem play.

Visually, the only noticeable advance that TAW has over its predecessor is the inclusion of true 3D douds, providing realistic cloud layers and adding a new depth to strike missions and visual dogfights. Pentium II AGP support will provide extra horsepower to keep such environments moving fluidly.

 atery as nus

Edge: How do you split the resources of the company between creating games and doing military stuff? MK:

19anch will ust at




Edge: So you haven't really diversified with the PC games you've been doing?
MK:

Edge: Have you looked into the new Sega machine? MK:
$\qquad$
$\qquad$



Edge: So you're branching out on to the N64. What feelings do you have for that market?


## 'WE:VE mOVED AWAY A BIT Fsom beine qavatient about poly counts and what we can git om semely. how What fini facmsen if descim aim greatima 

Edge Does the splintered PC market frustrate you?


Edge: In the past DID was always about technology sometimes at the expense of gameplay. What's the focus of the company now?
MK

## $E$

Considering the precarious nature of the cartridge market, it's pernaps surprising to find that DID's first console venture isn't for the Playstation, but will appear on the N64. Currently looking like a cross between Turok and Battlezone, this blaster marks a departure for the company as it consciously harks back to its more action-oriented roots. The game employs a hackneyed scenario of aliens transforming the planet into a poisonous homeworld via giant terraformers laid beneath ancient historical sites such as the Incan city of Machu Picch, Angkor Wat and the Nasca Plains. The player takes control of an all-terrain vehicle equipped with enough weaponry to put a serious dent in these plans. While the early demo that Edge witnessed revealed littie more than a straightforward arcade Dlaster, DID's experience with deeper, more strategy-oriented gameplay could place it well to capitalise on the emerging trend for deeper, more cerebral arcade gaming to


Lethal Encounter recalls DID's early arcade-style games, Robocop 3 and Epic. In thirdperson mode (main), the game is slightly reminiscent of Nintendo's Starfox 64

# MOVE OVER7 DARLING... 



CREATE THE VIDEOGAME ICON OF THE DECADE

WALK AWAY FROM A FORTUNE IN ROYALTIES

DEVELOP 'THE GAME
OF THE MILLENNIUM'

$T$he phenomenon of '90s videogaming, Tomb Roider dominated every specialist magazine and every store window for months on end, and reaped huge rewards for Derby's Core Design, where the garne was born. Such is Lara Croft's popularity that Sony paid handsomely to keep her away from Nintendo consoles until the end of this century. Lara's face was everywhere, from pop videos to the cover of lifestyle magazines. But behind every great woman is a great mam. Or in this case, two.

After creating Lara, her fathers abandoned ship in February '97, leaving Core - and a notinconsiderable amount of royalty payments - behind them. Surfacing briefly to comment on the Tomb Raider spectacle for The Face, the lead antist on the game, the man responsible for Lara's gravitydefying breasts, disappeared. His name is Toby Gaed (left). In equal partnership with Paul Douglas (right), Tomb Roider's lead programmer, the pair have been busy setting up a new development studio, Confounding Factor.

Backed by interplay and based in Bristol, in the south west of England (a short dime from Edge's Bath HQ), the fledgling six-man team is hard at work, striving to create a title it confidently claims to be 'The game of the milennium'. It's a shock-factor tactic, however, angled to draw attention from aspirational programming talent. "If you don't have high expectations of yourself and high gooks, then there doesn't seem much point,' explains Douglas, Both he and Gard are serious about whan they do, as might be expected from two men who have waiked away from the sheiter of a successtud company to start an independent endeavour. They are, however, clearly enjoying their freedom, and with their new title Galleon they are on course to confound those sceptical about the company's credentiats.

And so, settled within the spacious environs of Confounding Factor's ex-design studio offices (marred only by the dog-eared settee that defines the company's games playing area), Edge set lorth to uncover the story of Toby, Paul and a girl named Lara...

Edge: A good place to start would seem to be your departure from Core Design. What was your impetus for leaving?
Toby Gard: It was just so we could expand and do something more. Core really got into the idea of the Tomb Raider franchise and we wanted to go off and do something different, I suppose that was the main reason. Maybe a little bit of creative differences, but nothing major. We just wanted to branch out on our own.

## Edge. Was it a difficult decision to make?

T: There was a lot of money to be left behind, but we had to make that decision. It was a hasd one but I think we have made the right one, to go out and do our own thing
Paul Douglas: At the end of the day we wanted to do games, not just sit there and rake in the cash. We were already getting bored of just sitting there for two months widdling our thumbs. So as you can imagine we were eager to get on and do something. It wasn't happening at Core

## Edge: What was Core's reaction to you leaving?

TE: They were very upset.
PD: In fact, they stopped our money... But maybe we shouldn't go into that.
TG: Yeah, they weren't very happy.
PD: They paid one month's royalties and then stopped the cheque at the very last second. It went in to my bank and then came out again.
Edge: Did you get any royalties at all, then?
TG: While we were still there, yes.
PD: Just not February's.
Edge: Do you have any regrets about leaving, apart from the money?
TT: Yeah, I think so. Some. There's lots of friends that have been left behind up there, a lot of social life we enjoyed.
PD: Mainly, the money, I think.
T6: Well okay, that's Paul. I kind of rked the people as well. Derby wasn't particularly exciting. It was a

* good place to work, it was relaxed and there was a good bunch of people.



## - GOING UNDERGROUND

As chronicled in E48, Confounding Factor was part of a mass of new. independent developers. Joining ex-Rareware stafl (Eighth Wonder), famed videogame guru Peter Molyneux (Lionhead), and past members of Bullfrog (Mucky Foot), Gard and Douglas were part of a trend that is spreading throughout the videogames industry. Creative individuals are beginning to tire of having to operate under the banner of a publisher, searching for both recognition and independence

After a long stint in the limelight, the big companies are having to move over for brighter stars, newcomers intem on delivering maximum gameplay to the ever-expanding manket. This pattem hasn't ended either, with new mutations ariving each month. Cooperative groupingr of small developers are cumently het news, a trend embodied by the US-based Gathering of Developers (GOD, subject of E60's 'An Auclience With...). But did Gard and Douglas feel it was a coincidence that so many talented individuals decided to go it alone around the same time?

TG: I think that it is going that way. Fragmenting down inmo small groups which are concentrating purely on tying to make good games. I think that it's a really positive way for the industry to move. They have no management corning down from above telling them whet they're doing inn't going to be viable. The only thing they have to do is sell it to a publisher, and the publishers treat you with a lot more respect when you're a small company rather than just an employee. PD: I think it was just a consequence of all the big montey coming sta the game. That's obviously not gone down too well, forcing the '\&a)atives versus accountants' sort of thing thar st happening in a lot of the bigger companies.
Edge: Did it ever feel as though you mere part of a 'movement?
TC: We don't really know any of the others. We consciously made a decision not to keep up with what was happening in the games industry, just to have a break from it all. It was quite good to get away, because with the success of Tomb Raider, everyone was wanting to know what happened to us, so we just laid low and had a bit of a life. fidge: What would you say has been the greatest gain of striking out on your own?
PD: It's just the freedom, I think.
TG: We're paid a lot less here, and we are having to do a lot more work.
PD: The ervironment is a lot more creative. People here are miterested in whax they are doing.
TC: Not that they weren't at Core, you understand [laughs]. It's just the feeling of being somewhere that's...
PD: . . going somewhere.
Edyw Did you have any problems finding a financial backer?
PD: Not at all. We had a fairly good game under our belt so it was easy. I think a lot of other people have had problems. We were very luchy.
Bdze: You've chosen to start this new, independent life a
long way from Derby. What brought you to Bristol?
T6: Because there are lots of things to do, because there are places to go... i.
PD: And because we thought Bristod deserved a premiership developer [laughter all round].

Confounding Factor,
left to right:
Anarev Have
(programear)
Kevin Pateman
(programear)
Toby Gard
(creative diractor)
Matt Bell
(38 artiat)
Paul Douglas
(Eechnical director)
Wot presents
Chris Tector
(programeer)

heet Rhana. He is gifted with a vast $\nabla$

range of eovesent? running, cllabing, $\nabla$

swiening and pleking up objects swoothly


Although these are vorkstation rendors, the polygon count is vell within the means of PC 3D accelerators. The lighting is less so

## VIDEOGAME PIRACY

It's in its infancy, with a relesse date cost out to the far side of Chrisimas, but Confounding Foctor has a game. And it looks like it could be good Very good, even Galieon is a pirate adverture in which the player guides the (male) character Rhama around a series of islands. Thoughts of Lumaits' Monkey tsland series should be banished; there are no wise-cracking sluals in Galleon, just vast environments set to be filled with testing conundrums. Al the time of Edes's visit. Rhama could be seen pounding through semi-texured landscapes, contiming that the anination, at the very least, will be top-notch.

Confounding Factor has a problem, though. Whether the public lnows it or not at the moment, every videogame publication is going to be shouting about Galleori's parentage. Lara Crolt will cast a curvaceous shadow over proceedings, requiring Rhama to use every ounce of his muscular movement to outrun her


One of Gallean's Innovations la the ablilty for Rhama to lock on to objects: enabling hiv to run pasti grab an itas and start using it in one single, seooth motion. The systen is 0130 used for coabat, with the playar guiding the character rather than its attacks - as in Tomb Raider. However, all veaponry will be blade rather than barral based

## GIRL POWER

She's outlived the Spice Girls, and reatined an element of credibility despite her objectificalion by mainstream and specialist media alike. Amid the now-serting furore that engulfed Lara Croft, it has aimost been forgotten what her charccier represented within the gaming world. Buxom babes have ahwers been a factor in a market that caters almost exclusively for men, but none had ever combined brains with beaurly, in hindsigit it now seems an obvious move, although Gard daims dhar Core was reluclant to allow the development team to use a female character.

But while tomb Raider would never have succeeded as it did without Lara, sa she would have fahered without a strong game to saunter through. Maingtays of that cavemous environment, Gard and Douglas sill habour strong feelings for the woman they had to share with the whole world.

Edge: What are your vlews on the Tomb Raider series now? PD: It's good, bue ithink they need to really seriously consider its direction. I don't tint Hiey can constantly keep churning sequels on that engine. They should take Lara in different directions whatever those direciions are -1 don't really want to give them any hints. They should really try and push her out into different genres. Tomb Raider 2 was quife fun.
TG: Hard. Too hard.
PD: And too much shooting of human bad guys.
Edge: Do you think Tomb Ralder 3 [announced at E3] is a

## step too far?

PD: I think it's come out too quicily, they should have left it. This year we've had Tomb Raider 2, and now the budget release of the first one, and then it's straight into tomb Raider 3 . They should have waited a bit, got people really up for it, wanting it. But Eidos needs it What triple-A releases has it got this Christmas?
Edge: You've been quoted in the past as saying that the
game is ahways more important than the character. Do you think that's still true of Tomb Raider?
TE: Well I still think the character wouldn't have been anyching had it not been a good game. I really do believe that. At the end of the day you can say that she had a lot of personality, but that came out through the game. She's quite attractive fooking, in a bizarrely formed way, but just that wouldn't do it. It needed a good garme and after that people could latch on to the character: Just like a film actor, you can like them but they con still do a crap movie.
Edge: Did the marketing of Lara and Tomb Raider ever get you down?
TG: Yes, she was meant to be untouchable, to be this demure person - that was the whole concept, really. And so some of the more down-market marketing did get us down while we were still there, but now they can do what they like, it's theirs! But they did a good job at the end of the day, didn't they. Whether or not it was as sexist as some of the marketing is, is neither here nor there when you are talking eblout that sort of money I suppose.


## - FUTURE FACTORS

Ouside of the creative freedom that leaving Core Design has given Gard and Douglas, and beyond the eveninghour recreation on offer in Bristol, longer term benefits are becoming tangible. Personal freedom has been a welcome facet (to not have a bolloding if you come in at quarter to ten instead of half nine,' gins Paul), as is being in control of their own destiny (although' Gard reckons it's'scary as well). There have been trade-offs, as Gard admits (cthings took longer than we epected to set up, to get done), but overall Confounding Factor is engulfed in a positive atmosphere. Garing into the future is often a fruitless occupation, but Edge was interested to find where the company/s compass was pointed, aside from the short-iem search for final members of staff.

Edge: Would you like to see a situation where Confounding Factor was producing multiple products, or do you think you will always be a one-game company?
PD: Eventually well move to twa teams. I think from a technical aspect l'd like to get people working on pure RSD, which is something very fow companies do. We can have a team that go off and use an engine that has really been pushed forward by others. While some pegple will ingt be working purely on technology, others might be working on the actual grmeplay.
Edsf On a personal level, what are your ambitions for

## Confounding Factor?

P0: Get rich quick and relire llaughs].


Tre/ want a Ferrari for every toe I have... I thinf it would be great (i) everybody who came and worked for us corly make a load of money and could all feel like theyd worked ofil something that was really copl. That we can have a really sypef-cool place that people want to come 1 b . Where we can make really fab things and never compromise on quality, in the way that Molyneux does - which is why he's such a hero.
Edge: You've said in the past that being a game designer is about as cool as working in an abattoic. Do you feel like that situation is improving?
TG: I doubt it somehow.
PD: Who's defining cool? It's not really, though, is it?
TG: I suppose it depends. The Playstation is bringing it into a broader market. I don't think it will ever be cool. At least you can get accepted, and not get quite as mamy funny looks from 'normal' people these days. Most people go, 'Oh really? Thar's nice'.



This attractive redhead (ieft) is Faith. She plays a 'eajor part in things', appearing at intervals throughout the game . Enyironents will be interactive, which ars under construction (riyht). Rhase poses with his yat-tarte matnd sidekicke whoth1 be directable (Eopi

4 continued
Edge: Do you think it will be difficult avoiding the Jomb Ralder factor, in terns of peess and public opinion? I6: I don't think we will, not when we start showing it around. We're not under the shadow of Tomb Raider really, because nobody really knows about us - untid this inteniew comes out: I don't think well have a problem with it because what we are: doing now is much better than what wo were doing at Core. Edge: Yourre developing only on PC at the moment. Clven the supposed competibility between the troo plattorns, Is Dreamcest something you would be literested in? TE: There are disoussions going on at the moment.
PD: But if we do another platforn we will have to get a lot more people in, and we misht start slipping our PC release date: TE: It's a bit up in the air really. We only spoke to Sega recently. but i's a really nice machine, obviousk.
Edge: Is there any particular aspect of Callion that you feel is broalding down eupected boundarles?
$T \mathrm{~T}$ : There is an awful lot of things we are reelly expanding to break beyond the limits of anything eise. There are 50 many 'Unique selling points, or whatever you call them in strange maiketing terms. The fighting...
PD: ... the user interface, so that it can give a newcomer as much satisfaction as someone who has played it for hours. They can get into it in a couple of minutes, that's the mort challenging thing I think it is a really overboked aspect of game programming in this 3D world. Its your user interface, much more than your cool graphics engine Tomb Raider had a fair control system, but we're moving a lot further on than that. That's my goal.


Although :
playable version of Galleon clearly exists (far left). Confounding factor is reluctant to release resitisa Iasages until later in developent. Given the lack of textura saps, if's underestanitable


Ridley Scott's 'Blado Runner' foresay artificial humans walking the streots by the year 2025. In 1898, yldeogams dovelopers are working to roplicate comvincing tuman belings on fomputer ecreens, and the frults of thair endeavours are adging aver closer to reality... n intereating theory has been circilating Hollywood recently, ti surgeats that in a few years time, filmgoens will no longer be able to tell the difference between real actors and computit-genernted characters. The cynical may scoff, hut the foundations are alreedy in place. The Crow' director Ne: Proyas, for instance, famoushy used computir kichnolo y so finish Brandon Lee's scenes after the fitor was Nilled on see. James Cameron filled his Titanic with polygon passengers - not too realistic close-up, but perfect for those dramatic traching shots. There's a long wigy to go, but the SFX Holy Grall - bellevable synthesplans, - is in sight.

Howevec, the movie spedal effects crews are not alone in thelr purnale the videogarife industry its, in a more modent way, been attempting to portroy ralloftic human charactens for the lest 15 yeire. Along the way. there have been some aotable landnatrs-the excellently animated agent in impossible Hizsion, the rotoscoped fiuidity of Prince of Persfo, the multificeted
Cosrad from Delphine's Ahother World - but these were all victims of limited processans, fow-ries graphics and: relathvely peltry colour palettes.

So whet stands in the wey of toda's videogame artists, and what advances are heing made towards creating totally bellevable characters? Edge Invertigntes.

Why does Mario wear dungarees? Moden gamers would answer it's because he's a plumber, and plumbers wear dungarees. A few miscreants may even suggesi it's just a sartorial statement, or that he wears them because he's a cute character. They ate all wiong: Mario wears dunganees because, when the ariginal low-res sprite was designed, it was the only way the artists could make his arms look separate from the rett of his body. Mario did not start out as a plumber - technology made him that wayy

This is by no means an lsolated incidert. The development of human characters in games has aluers been shaped as much by the limitations of the haritwate as it has lyy the imagination of artists. In some ways, this is still the case todiay. According to Gavin Rummery, lead programmer on Tomb Raider 2, Lara doesn't wear a backpuck as a highly practical fashion accessory - it's there to hide a foin in the 3D modeL. For Jolken 2, programment had to cut down drastically on textures to retain a smooth frame rate. The characters in Nightmare Cructures (see p97) were originally meant to have flowing hair and dothes that ruffled in the wind. Current technology just couldn't cope.

## Hardware hurilles

Ir's not hard to pin down the hardware culprits responsible for these compromises, Peber Ryce at AliasiWavefront proffers:

I think one of the largest hariens for realtime gomes has been the limited hossepower and resource space available on delivery platforms. Based on the number of polygons a game engine can push around in realtime, characters have typically been quite low resolution, more so when you have numerous characters - as you might find in a aports sim. Tha limitation extends beyond fust the mumber of polygons, though, to the amount of texture space and the amount of animation deta that can be managed:


Could a Cal end-sequence from Folden 3 (guch as this) hint at the qualiy of ingome charscterisation of the future? While currently relying on motion-caphere fechniques, many believe this is the shape of things to come

Even in the rext-gen age, then-artists are continixally fighting with haidware. A lack of processing power means they have to keepp polygon models as simple as possible. so that the computer can move them about the scieen with anytiong approsching speed. Concurrently a lack of RAM reduces the number of animations each cilaracter: car call upon, in fum reducing how smooth and realistic their movement looks as they walk, climb and jump about the game worid.

Tony wils, motion-capture studio marager at Gremlin, asakes the difficulty of the task clear:

By tar the bisgest barriet to creating fealistic movemtient
 for human characters in games has teen the complevity of the human body and thie way fo moves. An artist trying to generate animations based on fheir own experietrice and knowledge of the way we move has a mountain to dimb. Replicating a movement one has seen or inmagined is hard enough in person, never mind using a mouse or keybould.

Which is pethaps why, for the past few vears, attention has been so rigidly fixed on creating realistic 30 environments Games like Quake, Unreal and, more recently, Forsaken have all been exploring techniques such as bi-linear fittering, reaftime/coloured lighting and transparency to construct staggecingly believable and complex locations, but this has often been at the expense of


Game charoclers are often the viclins of rompitonise: late'i Eidelydo hider a jain in the 30 model. Teiker ztrades texture detal for speed, and owim(thowi) neglets human desprin finour of advariced emvironments human cluracters - the marines in Quoke, for example, an look affriost as 20 as their bitriap Doorn predecossors in fact, ith the weat, most diaracter-based games are currentlybased around intentionslly styised, coinic booke entities You caitt complain that Oosh Bandicont, Gex and Erae dent look tealistic because theyre not meant to.

## New vanities

Given these difficulties, is it actually worth developers tiving to cieste reallstic human claracters? Does believable human

4 animation add to the vidoogame experienice? The area is fraught with ambigulies - as Tony Wills clarifies: The point at which you stop one animation and atart another is tough to choose Chop and change animations too readity and the garrie may look jeriky and unmalitic Leaving animations playing lonyer may look better, but gatne charactiox do nint iesponid to events as quichly as desired: This is a valid point Lata Croft can now call upon some 5,000 different animations and Core programmer Rummery
'The tiggess thariee to creating realistic movement for human characters has been the complexity of the human hodry and the wey ii movers'
admits animation is Fomb Raider 2's bigend memory hog yet many playens feel the extended reatism of Lard's Inovement is a time-fonsuming hindrance. similary in the finst lootbail sims to use motion capture, the foothallers couldnt respond quicky eriough; they were still completines
 alegait manoconves long fitor the bati had been taken from theme and booted down the other end of the pitch.

But these difficulties aren not a rood enough reason to abandon the search for tule game fumans. For a start, not everyone finds Lara frustrating - as tee Carus, studio art director at Psygnosis, confims




Lee Cans sees two contrasting approaches to charsacter delignt. simbolitied by the Princes of Persia (leth) and Morio seres (right)

There are two kchools of thought on character animation. There is the Mario school, and the Prince of Pesin school The Mario school demands instant Imponse to a user keypress. The Prince of Persio school says an action will take place when the body is physically in a postition to be able to do a I think both achooks are entiraly vatid and represent different types of yaning experiences:

Cans is right, of course. The fint thing many gamers remember about thiles like Srpossitibe Mission and Pilice of Pessio are the amatingly lifelike characters. Realistic. animation is patt of the immentan experience- i its part of what pulls playees into the game wond. imerestinfly when Bomb Ratider 2 was fist beins previawed intricate alements of the new title were often overlooked - but every preview mentioned Lara had a realivic ponytail Despite what a few dissenters may lix. Ms Croft is tentament to the fact that humens sell games Eppecially il they look good in shorse.

## Character led

Developer are certinly pot ifnorant to the importance of realistic human churacters, in a typically evanyelical and impassioned address at this year's Compufer Camme Developer Conference, 5hiny's Bave Perry made it perfectly dear how important this aspect of gaining is going to become.

Mary teams, when they ftart an ongine, fust wary about walls and lightirng - they add their mannequin characters as an aftethought.. Characters are extemely important in ganes. They are the thing you lonk at most ther deserve the attertion of your best most creative staft The more real they are, the mors mal the worlds are, and the more they can suspend my bellet It's a Holy Grail that Shiny is imesting millions-of dollan into researching Dur Atessrah engine is Shimys first step into this next evolution of character technology

Sou given the apparent fechnical restraints, what exacly can developers do to create more believable ingarme humans? Well, conveniently, many of the traditional problens are heginning to fade. $A$ high end Pentium can

## BECOMING HUMAN...



Jonden Muchnef's emme uned rotoncopter (exily 2D motion cupture) to hinofuce a new level of fleviblity to the digtal humany, allowirg him to grable ledges and climb, inther than wift nin and fump. The gauns attempted to immene the pligerin a totally linteractive world.

4 when it begins to movel This is where motion capture has become fhe primary tool for animators, bringing totally realistic 30 movement to videogames for the first time There are some incredible examples of motion-captured work around at the moment The beautifut, supple movements of the fighters in Tekken 3 as they shadow box before a bout is a shining erample: the Namco team used tworeal martial antists to capture the moves; they even made sure one was an eypert in Capoeira-based comber?
'We will definitelig ge to the stege where the creatures have musculature, tones, a nevouis system and hight andid low level Als' Chiris Hecker, cuder

so that every fighting style looked true to life. The effort certainly paid off. Every part of every fighter's Body appears alive and ready for combat, with muscles tensing and fists dending ats the characters warm up.

However, everyone that uses motion capture recognises


All charaders begin as wirefreme shdetons to wfith defailinuddedinstages en programmes are becoming intereted in the slicietan itselt Ther want it to react to surroundings in reatime thit it isn't a complete solution in iketf as Ryce argues:

For many purposes motion capture is an excellent way to get realistic human motion, but it does have some issues. Motion-capture data is typically very dense-far too dense to be represented in a game engine. Because of that, we need to reduce the data that gets imported, but not so far as to eliminate the subtleties of the captured motion. Also, motion capture is very sparse with respect to secondary miotion, in typically captures the overall motion of a character, but doesin't capture many other fine details: This requires the attention of a trained artist'


The tessellation ergine ined in Shings Mastanh has been prograamed with a thrrough undenteniding of haman antitamy, is tius the future?

## Dynamic characters

Perhaps niore importantly though, a motion-captured character is something of a mannequin; it can't react to its environment in reakime in Reviderit Evil, for example, ill Valentine can't shoot a zombie and then walk over it - she walls through it Similarly, as great as the characters are in Coldentye they do have a habit of tryusting their shoulders through dosed doon. In fact, videogame characters are forever putting their ams stirough walls, obstader and each other. Motion capture alone can do nothing about this as it is fuat an animated sequence drafted on top of an envirofment. Cliris Hecker, a veteran coder and respected authofty on ingame phycics, puts it another way:

Wotion capture sucka. Its just a fancy way of getting an animation loegp into the computer. It doesn't tell you anything about the dyriamics of the movement. What does a motion-captinged animation do if one of its limbs hits something or gets fied dowm? Nothing. It either continues the animation and fooks stupld, or it stops playing the animation and looks stupid.

Even motion capture professionals recognise this as a problem. Howner, they do go as far as to suggest constructive solutions.

There are several ways to crack this', asserts Nick Bolton, project manager at Vicon, who makes motioncapture yptems for the videogame and film industries: "The "duh" approach is to capture the actor responding to those obstructions and plysical contacts. This is what they did for G-police and Batman and Robin. The second way is to include -intenction and responsiveness as part of your game engine. Here the character is principally controlled by the motion capture data, but when an obstruction comes along, the game engine ovemides that data and forces the interacting segment away from the object:

This is certainly the direction a lat of animation RAD is going at the moment. In fact, several developers are already producing dynamic characters; characters that respond to the world around them, and interact with it on the fly. Appeal's forthcoming action adventure, Outcost, for example, employs a currently fashionable system named Inverse Kinematicr' - essentially a series of algorithms Which can control the skelefal structure of a character, in realtime, in relation to its environment. So now, when Cutter, Outcast's hero, is walking through ore of the game's

## 1996

TOMB RAMEA
Linciol is one of the most importart dwaces th wideopene histany, giving plipus an inovible amount of controd over a compla milonment Despite Ba fates, Fomb Rolder's brwe new 3D woild reminded developens that tellitk humun churades could sell.

several voxel-based environtments and he comes acooss a raised floor surface, the تK algorithmis work out the difference between the usual surface and the new one, and alter the footstep animation accordingly. No more wallking-through-objects misery.

Messiah, too, uses anatomical techriques, but it has no choice. The game features a realtime tessellation engine which reduces or increases a character's vistial detail as it moves further away - or nedmer io - the player. thilomimaticly, if the engine only had exterial polygon data to work on, it may decide to lop. off a shoulder or leg whem a cilaracter is in the distonce: So Stiinty came up with an altemative mearis of storing and generating human characters:
"And that means a stondge format where yoy describe how impontant every part of the body is," explained Dave Pery at CGDC. Basically, you need anatonty rules and regulations. The final engine has to fight to save that nose by stealing polygons from under anms, belinid the bade, until the last possibile instamt. Whem you don't worry about anatomy, the result of these eqirations tends to be a dharscter that seents to boif ds they move in and out of the screen. Using our method exch of the chariders in Mersioh are modelled in about 500,00g polygons in 30 Studio Max 2 belore they are anatomically compressed:

## Art forms

This recourse to the skeleton is a noteral way towards realisme teonardo da vind intricalefy studied the intemal anatony of the humin bod, believing an understanding of the structure of the musdes, the skeleton, and so on, would

Whe ploper is to belleve in the character, the latter must react to pain in a helievable way: In Resident Evil 2, Leom and Claire will begin to limp if injured. while in Coldencye, characters act differently when hit, depending on the imgace trea

give his painting more rexlism. Videngame designers are doing the same ming, is far is mofion capture is concemed, the skeletom of the dranteter is a simple stick diagram -a vessel to kang the polygers form and lorget about. But today's artisk and programimers are attaching physios to tie sikeleton - they are induding routines to manipulate the charader's posture and movement. They want it to read to its enviraniment to take fonges stepes downhill, to mahe shorter steps when unsure of the ground surface, to farmp when injured. Motion capture is not the be all and end afl af realostic animation. It is a fool rather than a solution.

New software is aiding this move tuxards skeletal precisiont AlfatWaveffont's revolutionary 30 art package


Pfoyers inte initinidinely impressed by belisvable character animation - which is pethips why it fipured to prominestly in Segar's Dieancent presentitions. The rimiming Soichico trimajin deno ant the erily shots of $\mathrm{D}_{2}$ both shioned of incresely matistic diatacter dregn: Kicmos equate this with impresuive processing. power. Segits iotb is done Mago, indodes an anatomial development tool which can be used in both Cal sequences and realtime garnes. Things tike the way a character Wallk, inctading all the wrinkling of the surfaces of the knees, the amount of hipsway, spacing of the feet, etc; can be buit into a character using defommations that are related to inverse kineumatic bone movemient, faid spacing of feet am be a mathematical expression bäsed on firp position, etci' sssents Peter Ryce. By preparing a character property, air animator can concentrate on the basic motion of the character and rely on the encapoulated behivioais to genierate the corvincing secoridary motion!?

In offier words, through sortware like Mfoyn, design teanis are now athe to build dratracters with complex.


T997 Tungk: amosaun hurte
 but faruk's erbemen ane maucintr Efelhe and highly detitiod Thepe are some grot death scemes, too Shoot the atarien in the neck and dey binal to a hak, prob this ppuring kegoter and shith to the pevind. Gectoiturus finm


## 1597

 soldiers roll about to woid hre and Meralu invies hor hoed and thumbs her din efile hading into compumer. More in portenth, though, solviens react ilfervinty depending on ehrev you shoot them. Ets efdidine rovien.


Outcrut (above) and Caten Fandongo (ridta) both employ procedural minution to male the lend churaces napond to their sumoundings
muhtifaceted skeletons, and skin which rescts to those skeletons. At the moment the techniques are in their infancy. In the future, characles' real muscies will flex and when they re attocked they will take reat injuries to different parts of their bodies. These injuries will directly affect the charader's movement - a notion that's been eqplored in Coldenfye and Reodent Evil 2, but will become more complex as the soltuare creates a more user-friendly process

## Weight, tension, muscle, strengith, tat quanaify, haircuil - all of these will soon be introduced to make the digitital nuppal rease properiv' Franck Saue, Appeas

And it doesn't end there. Developers are also looking into methods of perring characters to react to the world in a highly visible way. Procedural Animation' is a method of taking information from the environment and applying it to the churacter in resaltime. This can have a number of uses, as Frenck Semeer, artistic director on Outcorst explains:
'Cutter's head has a procedure that measures the height of an object and rotstes the head's $X$ axis to match the direction of the object. It now looks like Cutter is concerned with his environment:

LucasArts uses a similar effect in Crim Fondungo. When the lead character, Manmy, enters a room, he automatically looks around for amything relevant. Acconding to Tim Schafer: creator of Full Throwle and Day of the Tentocle, this has iwo uses

Thindicates objects of interest within the room without using intrusive cursors or icons, and it also gives Manny this appearance of constant alertness as he walls through the game environment'

Again, this is an area Allas/Wavefront has looked into with Moya. Peter Ryce explained that the sottware includes a scipting langunge called MeI. (Maya Embedded Languaga) designed to help artists creote procedural animations and complex relationships between different animations:

You could create a script thit uses a random function to blink the eyes of a characaer every so often. This type of animation relieves the animator from having to remember to add all the secondary motion, after they have created the main character motion, and it cortainly adds to the realism:


In effect the systam erables artists to iadd lajer upon layer of detail on fo their dafraters and thien manipulate and dired the whole fot int orie gio, miaking the process much easier. And the easier it gets, of course, thes cmore likely we are to see characters that toss then ha\& dench their fists. look around, and malit offier nisinstic seconditiy mimements

Widescale use of dymanic dfaraters कs stall at long way
 intersive, so progness is fiksty to be slow: As tuinpule es get incressingly powerfut, more developers ane findy to explore procedural animation, realistic skin, and motion cappture which incorporates inverse kinembitic functionss Fanck $S_{\text {auta }}$ certainly believer games are hieading this way:
'Characters will soon become , dutononmus digital puppets - things that stand, walk, mir and foll, all with mal physics. Following the introduction of real skiletons. mome information about a charactes intrinsic qualities wall follow Weight tersioh, musde strength, iat quanitity tairout - all of these wifl soon tie infroduced to make the digital puppet react properkK

Chis Hedke believes gomie chiciciens coridd almest come to resemble fiveng, thaniking onstursairs

We will definitely gat to the poiint where the creatures hene musculature, bones al nervis systimi, and high and low level Ak, where the laghi fevel AI will thirik atouat livigs Tibe, 7 want to $g 0$ lorwart" and the low level ail will he a controller that says, "okay, need to put my left fobt forwarid without tipping over this stact of thuigs fom Entymer if you look at some of the reseanch if this ainsa mo see some amawing stuff, fike Karl Sims vitunl nuctives. He brefeds ; creatures that teach thenselves how to swink, wall, fiomp. fight and so one They 're increfible thought suill miffinentany?

By attempting to clezite a virtual form Croisertien, Hollywood is setting its gighor rather tow What game designers have in mind is far mure minesting - diafoters that react in realtime to their environments-stepping over obstuctions and examining interesking offeds, dxaracters with expressive flaces and real, physish fiaseif bodies that are susceptible to injury, and blect, Videogme antists ant the Frankenstems of the zistcantury. Their monistets are waiting just around the comer.

# Motion capture: the way ahead? 

> Just three years apo, motion cappure was on the periphery of game design - the presenve of only the richesi developers.
> Now it has become an almost abbitrar velement Butt as is otten the way with burgening technolooy, there's more to come . . .

For thase who have been living in a cave for the last two years, motion capture involves recording the movements of a performer on to computer, sp geating a completely authentic animation sequence. The videogame industry currently emplops two disparate motion-capture methods optical and nagnetic The lormer Imvolves setting up a series of camerss around a perfommer who wears reflective balls on each important body joint. The cameras jecord the movement of the balls and then the artist takes this 2D data. |dentifies onscreen which balts relate to which body part and so construict a 30 model
'There have been several advances,' asserts Nick Bolton. The scale of things is bigger. People are now capturing volumes of up to 11 m whereas three years ago they were looking at 2 m . Now, multiple actors are being captured so you can get all the interactions between characters. The technology has grown to meet these needs, 30 the Vicon sptem can now talke up to 24 cameras, can capture for 24 hours and comes with enough markers to capture four actors. I's all got serious!

Angus Fieldhouse in chisrge of the Psygnosis motion-capture studio in Cheltenham has also noticed the benefts of new technology:

## 'The Holy Grail of molion capuure is makikerless, realime cappute, so you can be lara and interact with olher davers in the game in the capture sprace' lick Balloa Vican

based on the movement. The data is then passed into an art package like 30 Studio Mar or Alfas. Magnetic capture is similar, but covers the actor in magnetic sensors connected via cable to the PC Which then records movement as if 3 D image

## Magnetic attraction

Out of the mo, it weens optical motion capture has emerged as the indastry fivourite. It gives the. acions more freedom of movement, and there is no magnetic interference from neathy mutallic objects. Companies like Gremlin, Psygnosis and EA have their own studios, and the technique has become an integral alement of game design.

However, the sistem has not always proved Ideal. As Dave Warfield at EA Sports points outs

IIn the past, you hisd to wait days even weeks to see if a move worked, and vould have to do it by hand, or get the actors back in to re-film it if it hadn't' These problems would have been caused by a combination of hardware and saftware deficiencies, Early motion capture setups could only use a limited number of cameras, and as three have to see each ball as it moves, certain sections of an actory body would often be occuded - something which wrould have to be painstakingfy corrected by an artist. The software, too, was rudimentary in the early days, taking: hours to convert the 2 D video data to a 3 D model. However, those problems are now disappearing.
"Capturing mukiple performers is certainly possible. This is particularly uselul for prerendered sequences, as you get for better interaction from the performers. Furthemore, cameras are faster now so we can capture movement more accurately' This is definitely a bonus: 120 MHz capturing allows, soy, beat 'em up moves to be caught with more precision than ever before, opening a wealth of possibilities to companies like Namco, Sege and Capcom.

## New maturity

Motion-capture software has also become more sophisticated over the pasi year.

It used to be thist working with motion capture was a dull multistage process that required a great deal of user involvement'; says Nick Bolton, So we introduced pipeline
processing about six months ago which automates the complete processing task it enables the tser to go all the way to deaned-up, labelled data without any ues interaction!'

This advance in speed is thatiks partly to improved biomechanical modelling techniques in the motion-capture software. In the past, this software would look at the 2D video data and see only a randomly moving collection of dots (the mariest on the actors body). Now, however, the designers are programming in an undentanding of the human body, so the soltware knows the: knee bone is connected to the thigh bone, etc. It can construct a 3D model based on the dati- taking a massive workfoad off the artist.

Advances in biomechanical modelling are also opening up new avenues for game developers.

Other areas we want to pursue include manipulating or mapping human movement on to more fantastic creatures, sins Fieldhouse. This could mean stretching the data to create glants, or cutting and pasting motion-captured limbs from ceritures to produce hideous, mythical beasts:

Nick Bolton has a vision for the future:
The Holy Grail of motion capture is markerless, realtime capture. This will improve the current way motion capture is used, but would open up the possibility of players actually being captured sis part of the game. So you can be Lara or Crash and interact with other ployen in the game and phyaically interact in the capture space. It will be introduced to arcade applications first and will then move into the home. Such a form of capture is about two to three years awary. Expect a whole range of motion-capture appllications to emplode st that point: Irs soing to be big?


Motion cupare dela can add coniderable realien to videopanes - espedilly those based wround divese fumen movement


## The alternatives

# Attrouph motion capture is erivoing an increasindyly tidit gipip on the videogame industry. not everrone is plaving along. Edge takes a brief look at the alternatives 

## Skeleal Animation

The mail US developer, Ritual, could not afford to incorporate motion capture into its forthooming action adventure, sin, so the company developed fts own proprietary animation fechnique - simply as a plug-in for $3 D$ studio Max. The skeletal animation system enables artixts to create thousands of animations for each character wit few overheads. it aiso allows for regional damage - which means when acharacter is shot in the shoulder, the damage only shows there - plus, the victim will reel backwards in the direction of the bullets an advanced and compelling feature that looked mamellous in ColdenEye.

We can also attach "bones" (models) such as guns or helmets to our characters at any time, points out Joe Salinske, product manager on Sin. These can be employed on the fly by characters. As Salinske puts it, The bones system is cool. Let's say one guy is altacking you with a shotgun - if he runs out of ammo, he'll throw the shotgun aside: and pull out a pistol. Shoot a guy in the head and you'll kill him in one shot, But, if he's wearing a heimet, it may deflect the damage altogether' in effect, then, objecis become a physical extension of the character. H's an ingenious cancept.

## Body Physics

Chrls Hecher wouldn't touch motion capture with a barge pole (see p60), His burgeoning soltware company, Definition 6 , is developing a complex. character animation tool based heavily on physics. Hecker talked Edge through the basics:
'Our simulator suppports constrained rigid bodies, which means you can take a body (call it


Ritual has used a Staletal animation technique' to create the character movenment in its forthomirgs thoot ' Em up, sin
the lower arm) and constrain it to another body (the upper arm) and set the type of joint between them. In this case you'd want whar's called a: "revolute joint, which is a fancy name for a joint that has only one rotational degree of freedom. In other words, a hinge or elbow, Now, once you've got this joint set up you furn on the simulator, and the forces propagate through this joint correctly, 30 if ) pull on the wrist, the arm straightens out and then drags along aftet me Bisically, it acts fike a: real arn. You can build an entire model of a creature using bodies and joints, and it. your simulator supports contact for constrained bodies remember, if youfe physically simulating things, the ground doesn't just magically work: your simulator has fo actually compute the forces the ground exerts on the objects to keep them from sinking into it -you can drop this creature and it will bucke and fail to the ground like a ragdoll. As an aside, these separate constrained bodies are just how the simulator sees the object your renderer can skin between the bodies:

Anyway, now the rial hand part comes in: you. have to write code for a controller that ats as the creature's muscles and makes it stand up and act Itike if s alive if you go all the waty you have to wite a controller that will balonce the creature, make it focpmote, and make ir do alf the stulf it has to do in a game, like swing a sword without falling over, climb stairs, etc. It hass to do all this stulf by exerting forces at its jpints, because in a real simulator you can't simply move its body parts directly or the object won' interact with its envirotiment coirecily (which is why you see today/s animation loop characters swing their arms through wallis during their animations). You can't have an arm hit a wall or table or bad guy and bounce off correctly if you're not exerting forces on the arm like a real muscle:

In some ways, this concentration on physirs is the way the videogame industry is ulready heading in. However, it is doubtful many other companies will abandos motion capture attogether Not only is the syatern a convenient way of getting animation put together quiclly but it's also accurate.

Hecker's ideas represent the very forefront of game physics and may well filter down for use alongside motion capture in the future.


For Grim Fandango, Lucwarte used hand animetion nuther then motion caplure to complement the game's miflied look

## Traditional Techniques

Do gamers actually need or want all characters to be realistic? By employing things fike motion capture and complex ployics, is the ultimate aim of all developers to get as close as possible to portraying real humans? Not necessarily, Konami, for example, threw away all of its motion capture date for the characters in Merol Gear Solid and went back to tsing key-frame animation - the aim being to capture the took of an anime movie and the cool, heavily stylised atmosphere of that genre.

Similarly, Manny in Grim Fandango is not a 'realistif' character and no motion capture was employed to animate him. Instead, the artists used hand-drawing throughout to give him a kind of filmic stop/go animation look - heavily inspired by the characters in Tim Burton's The Nightmare Before Christrass in both cases, realism wasn't the desired effect - the teams took their inspiration not from life, but fom other art forms.

But this is no less valid than the quest for realisin. With Maniry, LucasArts is trying to create an engaging character, a character who - in his own lwisted world - is believable and alive Sonic wasn't a realistic being, but his impatient foottapping when the player left him stationary for too fong was a particularly interesting addition to the platform gerxe -it gave the character a personality beyond slavish artherence to the joypad. Tim Schofer expresses this best:

How "realistic" the charactess appear is not really imporfant. Its how compelling the character is, both visually and in terms of personality. If a big, cartoon-like lace is the best tool for expressing the character, then that's what you should use. But some characters are done more service with subtlety and realism. The technique doesn't matter, it's how artully it's used, I have no rules against realism, 1 fust hiven't found a use for it yet'

## Is this the future?

# Beyond videogame development, spectaculara divances are being made in the realms of human arimation and design. But what exists at the very cusp of tecinology today, may well be helindt tomorow's inuame charceters.. 

To understand what videogame characters will be like in the near future, the best place to look is current prerendered sequences and CG animations. Alchough it is almost inconceivable that ingame humans could roon ival the realism in, say, the G-police FWV sequences, hight-spec PCs are almost powetul enough to render this kind of thing in realtime

Perhaps the most significant tools currently employed in CGI are NURBs, or Non-deformed Uniform Rational B-splines. NURBs are a different way of describing shapes than polyzons: rather than using triangles as the basic modelling blocks, NURBs enable anists to create objecte out of perfect, highly complex curves. This pystem, agsin used in the G-Police intro and supported in Moyo, is commonly utilised in CCI sequences to build reallstic human characters, but is at the moment too processor intensive for realime use.

## Face value

Another technique currently popular in CG is facial motion capture, Twentr-eight tiny markers are positioned around the face of an actor and his or her facial movements are filmed and converted into a 30 face model. The tectinique is used both for emotional expressions, and for diatogue - in fact, Angus Fleldhouse at Prygnosis has talked about motion capturing an actor and recording their speech simultaneously to create alniost perfect lip-syching. This would be a massive step forward for RPG and adventure games which include a lot of verbal communication between characters. At the moment, few games have
attempted this as polygon models are far too low detail for the benefit to show but, as hardvare becomes more powerful, the possibilities abound.

## Further afiald

Not all CCli advances are being made in the realms of the presendered intro, of course Computer animation is rapidly becoming an essentisl component of the movie industy, both in the field of special etfects, and in its own right as an entertainment medium. Pixar has made huge progress in its own representation of humans since working on Disneys huge hit, Toy Story" (the company built its story around weys because ther were easier to produce - they are meant to look plastic and unreal), its latest short. 'Ger's Came', centres around atf old man playing chess in the paik and employs a new mefflod of generating incredibly smooth surfaces: Named 'subdivision surfaces', it divides and suborivides the surface of an object, mating it smoother and


Terss Cisine; a nev animsted yequient Fr have (of Tor Ston' fame), wees complex human animifion tectrifiques. 55,000 poly model, constructed using SGI indigo wortstations and multiprocessor reality engines, was produced for a getman yideogame programime, but will appear woridwide. Cort's Adrian Smith oullines how complex the 'entity is; Nil the altributes regarding how she moves have to be builif into the model, even to the ertent

## II the nerson plavino Lara savs a ward, the face of lara will do the same. Her lips will move to

 form the ward aind her cheaks will puill doun accorriningy' Adrian Snith, Coremone complex, without the 'tears' which often appear between NURBs.

Television is also experimenting with CGI characters. Last year, a French TV station ran the series 'Planet Donkey Kong, which featured Rare's platiorm hero convensing with live presenters (see E45), and Core is developing a Vriual Lara Croff to represent the heroine in TV appearances The

that if Lara' says a word, then the face will do the same. For example, her lips will move to form the word and her cheels will pull downwards accordingly. This is the same for muscletone - if we bend an arm, the correct muscies will flex: Dynamic character animation rears its anatomically correct head once again.

Concepts such as these are put of reach as far as realtime gaming is concamed. However, Core is repufted to be working on a game that utilises some of the technology involved in Virtual Lara?

Elsewhere, programmers are talking about using NURB-based characters in PC games and there are nimiours that Playstation 2 will support NURB modelling As for facial motion capturing companies like EA Sports, Shiny and Appeal are already experimenting with giving their ingame chafacterś realistic expressions. More human than human? One day, perhapi... $E$

[^2]Forget the desktop: the computer is a playpen and a new breed of software developers is stacking it full of toys. Are they the future of interactive entertainment?



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interactive toys aren't games, though.
Thay're niaythings interactive toys are abour messing around

Yet toys - which typically provide os smalles briefer more intimate experience than tul-fiedged gantes - also farely tap fite the kind of dosh that fuels the games Industry. So how do such things get finarged? Many do it for fren, for the pure pleasure
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## Aspiring art

At the very taf of the interactive toy ford chand Peter Gebrie 's company Real Worid Multimetia pas the money ts threw at monumental aristic new mexia projects like Eve, releasedif 1996 , and the recently faleased interactive nerrat ve, Cerempriv of Innocence (see Ebri, Gabril's own interestif artists and muscianis, pus nis massve fan base has meant that Realworig oals precure curious, artsy semi-ganes ant stil trnt a ready audence They also prownde eguar subscription-only enhanted Co-RON/s


Real World's Eve (above) followed the path trodden by the first Peter Gabriel multimedia extravaganza, Xplora. One of the first interactive toys, it's hard to argue that two men city sitting in a urinal (right) is art - though many tried


Is it subversive, is it perverted or is it just a wind up? Regardless of whether its intentions are honourable, Superbad is an excellently unhinged place to spend an hour

4 filled with the work of Real World music artists and interactive toys.

Talk to a range of designers, producers and managers involved with the company, and a common thread emerges: they're all fed up with the generally dull state of the CD-ROM and online worlds and are looking for ways to redefine interactive space. Says Alex Mayhew, creative director for Ceremony of innocence and current artist-in-residence at Createk, 'My interests are combining the kind of interaction of an arcade game with a human aesthetic - something that isn't computerised and pixillated - and placing that in an emotional and poetic context. I think there's a huge range to explore.'

Ceremony is an attempt to achieve emotional depth yet retains a sense of play a narrative between two characters unfolds through a series of interactive postcards whose often humorous puzzles need to be unlocked before they flip and reveal the next line of the story. It's neither game nor interactive book, full of art, storytelling and music. Unusual, but guaranteed a significant audience because Real World can give it the profile a smali design house never could.

But even highbrow toys with the Gabriel imprimatur have the same problem as more modest interactive offerings: the distribution chain. 'Retailers say, is this music or a computer garne?' compleins Real World multimedia and online manager Lisa Howe.


Retailueps say, is this music or a computer game?' complains Lise Howe. 'There's got to be some kind of revolution in the retail chain. '
'There's got to be some kind of revolution in the retail chain.' in the meantime, like others, Real world is offering its products where interactive fans know to look: on its Website. More straightforward musical offerings audio CDS by artists who add in interactive, computer-accessible elements - are another form of musical toy, and have few distribution problems because they are offered with all


Peter Gabriel's latest CD-ROM, Ceremony of innocence, includes stunning video art snippets and some nifty digital frippery



Antirom's work is ephemeral and irresistible. Toys mixing dance and sound (above) are favourites
the artist's other titles. Such offerings tend to fall into two camps - older rockers who don't understand interactivity, and newer, dance-influenced outfits who think computer code is as essential as musical notes.

An early tech-sawy adopter of enhanced $C D$ is longtime musician Tom Robinson, a Mac and technology fiend who 'was appalled at the vast waste of space on the average CD.' In 1995, as he was producing his CD 'Having it Both Ways', friends at Canadian new media firm Datapanik suggested filling the space with multimedia. In went an eclectic mix of music loops, photos, text, video, interviews, and safe sex info.

The problem was that few people were that tech-ready. So now he prefers to put the interactive stuff on his Website. He also notes that Microsoft has shafted people who bought enhanced CDS in the mid-' 90 s, because Windows 95 dropped the driver needed to play them. A patch which will work

## In new media at the moment, <br> music is clearly the new Rock and Roll - many intriguing design houses are doing things with sound engines which makes for some great toys


for all affected CDS can be downloaded at http://members.aol.com/panikcode/.

## Sound design

In new media at the moment, music is clearly the new rock'n'roll - many of the most intriguing design houses, especially at the small and funky end of the market, are doing things with sound engines which makes for some great toys. Take Antirom, the quirky sound and vision crowd loosely affiliated with the much lauded London design house Tomato (of 'Trainspotting' fame). Antirom's 11-member, management-less cooperative ('Sometimes making a decision on a project is like 11 people going to the video shop for one video,' says Tomas Roope) creates CD-ROMS which closely knit sound samples, running on their own sound engine, to a range of click-and-play images. Where Antirom stands out is that it pairs the fun-with-sound approach to a witty, able, often stylishly retro graphics sense. And it has peddled the combination successfully to corporate clients.

Prior to the 3D-effect CD-ROM for Levi
Strauss that came with the necessary specs,


Antirom's first sponsored project, D-Code, targeted youths about the dangers of drugs



4 It created a nationally distributed free CD-ROM called D-Code for the National Drugs Helpline. Designed as a quiz game on drug use, it eventually awards players with access to a full 'sound arcade' or mixing desk, a prime example of active rather than passive entertainment.

Some of the best Websites to play around with are those connected to new media outfits working with sound. London-based Audiorom has a site full of small sound toys structured into its design. There are also downloadable sound and Shocked files, as there are at Bath company Modified's site. Modified also sells its soundmix CD-ROMs there - download demos for a fun test run.

Despite hiring the talents of hot design studios, most commercial sites remain yawningly conservative and uncreative in their use of interactivity. And even the best company sites throw their own promotional


Modern icons find a home at the VR Pantheon, produced by the Dublin Institute of Technology. Elvis finds a new role as a digital plaything (right)
material at Web users. That's why a mysterious site with no clear purpose deserves the final accolades. There's plenty of them out there, thrown together by Net geeks in their spare time, a digital labour of love. But the question still remains: why?
'I'd been doing Web stuff for work and decided to try my own to see how I could break the rules about designing Web pages, says Ben Benjamin, the San Franciscobased designer of the site Superbad. The bizarre but brilliant site, heavily Shocked with bits of Java thrown in for good measure, has been constructed over three years, he says.

Why is the site, which has nary a word of explanation for its existence anywhere, so... anonymous? 'I think it's more interesting if people don't know who's doing it; like it could have been done by a machine, or a lone nut in a garage, or a group of people, or a company with a really whacked-out mission,' he says. 'Superbad doesn't explain itself at all and doesn't really need to because it doesn't have any information anyone's trying to get.'

The online VR Pantheon, constructed in VRML by WIII Waller and Tim Redfern at the Dublin Institute of Technology, is a shrine to 20th Century preoccupations - designed to experiment with multi-user environments and shared properties Visitors can explore a number of 30 worids, including one entirely dedicated to, who else, Elvis. It is this hybridisation of interactivity and interconnectivity that has revived the CD-ROM, as links to Websites open up greater flexibility and access to updated information. 'Cathedrals represented the ultimate in technology for their time,' explains Waller. 'Computers, in a way, now have that function in modern society.'

Thank God computers make pretty cool toys, too.






4 and actual emulator software additions - makes its Internet entourage comparable, and possibly larger than, the online community that so
 enhanced the longterm appeal of id's Quake.

For many dedicated gamers, MAME offers an opportunity to revisit old favourites, much as a movie enthusiast might collect Frank Capra classics. Although its DOS version is largely inaccessible to the casual gamer unfamiliar with the vagaries of Win95's command line interface, simplified front-ends (and instructions) are freely available. And, should gamers be willing to be patient with the release of each update, a dedicated Win95 release (with accessible GUI) is posted on newsgroups and dedicated sites shortly afterwards.

MAME has progressed far beyond the point of being of interest to hardcore gamers and desktop toy collectors alone. Disregarding, for a moment, the legal issues that surround the supply of ROM code, MAME's list of supported software spans the interim between the beginning of the arcade industry up until as recently as 1990 . While it's certainly not the case that every title developed during that period can or conceivably will be made available for MAME, many significant moments in videogame history are.


Games featuring limited colour palettes and a lack of fast-moving images are quite obviously most suined to lower-specced PC users


Some of Atari's biggest coin-ops are available via MAME. Supporters of the cause go to, great lengths to ensure authenticity: Marble Modness may not be trackball compatible, but it works excellently with a mouse

It's during this era in particular that a huge number of gamers will have cut their teeth on the likes of Galago, Zavoon and Bomb Jack. And, while it's unlikely that many such 'veterans' will credit or even acknowledge Taito's Phoenix as being one of the first games to feature basic cinematic embellishments - it featured scrolling starfields, iris-like fills and 'wipes' between levels - such titles are, at the very least, of passing appeal. The videogame industry has a history that precious few sources can relate as well as MAME.

## Remembering a golden era

For the casual gamet, MAME provides a nostalgic voyage into what was, retroactively considered, a halcyon era of creativity for a fledgling marketplace. By today's conservative standards, the inventive, off-beat nature of many early arcade

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$$ games appears an aberration, a far cry from the tightly focused and market-led design of modem equivalents but, invarisbly, the appeal of older titles is brief for all but the die-hard. Beyond 1984, however, the number of titiles that continue to offer a degree of lasting appeal increases. New Zealond Story and Rainbow slonds, for instance, are seminal platform games that retain the playability that justity their categorisation as 'dassic;

Gountet and Toobin' are poignant reminders of Atar's days as a genuine industry hearyweight; Tecmo's Double Drogon, the thinking man's Final Fight, will be fondly remembered long after Core's Fighting Force has been (perhaps rightully) forgotten.

For the dedicated retrogaming enthusiast, MAME is not the realisation of wildest dreams per se, but it comes close. As Saimoria's brainchild emulates the original PCB, it's possible to tweak and experiment with the operator controls of various ROMs. With Tehkan's Bomb Jock, for example, players can alter the tenacity of the pursuing mechanical bird, the number and speed of more generic assailants, and the appearance and Irequency of coveted ' E ' and 'S' coins.

MAME also offers the opportunity for users to fulfill long-held ambitions of playing certain arcade games to the very finish. Its dedicated cheat function works in a manner similar to that of commercial add-ons, like Datel's Action Replay, for consoles. By searching game code for certain registers and making note of alterations - like, say, the reduction of a


MAME originally started life emulating small-scale coin-ops such as Galaxian, but it has now progressed on to more ambitious tittes


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lives counter from one to zero - MAME allows users to experiment with such titles in a manner previously impossible.

The completist, too, is catered for. That MAME supports a version of Ghosts ' $n$ ' Goblins in which the last weapon is a cross rather than a shield will be of negligible interest to many, but a precious joy to a select few. In fact, a number of garnes supported by the emulator are available in different incarnations - bootleg versions, territory-specific releases and, in some instances, altemative versions of a game developed by another publisher. There's even support for 'cocktail' modes, where the video display is altered for use in a tabletop cabinet.

Although MAME runs exact copies of supported ROMs, the emulation of certain titles can be, at times, a measure short of the arcade perfection many would expect. This is due to each game requiring dedicated driver support. Pieces of software tailored to facilitate the communication between the relevant processor emulation code and the game itself, these are continually updated by supporters of MAME, with each revision improving the quality of the title in question.

As previous versions have demonstrated, games making their debut on the emulator are invariably flawed in some manner. From the 'usual suspects' that are poor, or offer no sound emulation and imprecise colour usage, to crash bugs on later levels, it's not just the MAME code itself that is constantly evolving. Version 0.31 sees Zaxoon, Millipede and Shao-Lin's Rood boast improved colours, while Gorf offers better speech. In addition, Punch Out and Donkey Kong 3 (in its day available exclusively to the lapanese market) have aural accompaniment for the first time, both being reliant on the sound hardware found in the Nintendo's NES console. Yet another interesting development is the improvement of clipping routines for vector graphics games, like the recently 'updated' Battlezone or the experimental nadir that is Stor Wors - and, what's more, anti-aliasing support is included for both.

There are many, many other alterations and additions to driverz, of course, the number of which rather illustrates the enthusiasm with which the coding communities have embraced the MAME ideal. This can, largely, be explained by the simple desire of such otaku to see genuinely flawless emulation of their individual favourites. However, the contribution of the MAME team in making their source code and wisdom freely available is considerable. As the Multiple Arcade Emulator is programmed in C, each PC release can (and is) ported to Mac, Unix and even Amiga plattorms. All that its development team ask in return is that those using the code share their discoveries and alterations.

## A legal minefield

The AAAME team are, quite naturally, unwilling to discuss the legal implications of their emulator. With the entire emu scene existing within an unusual legal grey area at present, those involved in the project are keen to avoid publicity as a means of avoiding darnaging litigation.

One individual close to the AAME project, however, felt compelled to discuss the issue with Edge but - understandably - was unwilling to be named. One of his comments in particular rang true: 'tt's a pity that while the AAAME team moans about emulator overviews that bitch about the copyright issues for people that don't own the boards (as I do) they can't be bothered to help somebody do it right?

He argues that MAME has a legitimate use as an 'archive tool' for owners of original PCBs, a library program with the added bonus that the 'supported' games can be played. The reason why arcade ROMs were on the Net in the fint place was for people who owned the arcade games

( $)$


Green Beret


Return of the Jedi



Fairly obscure oriental fighting games sit quite happily alongside more mainstream fare on the many Internet sites carrying MAME ROMs


4 and needed to fix them,' he says. The use of ROMs by legal owners of the game hardware is 100 per cent legal. MAME's intended purpose is to archive technical info for arcade games. Being able to play them is merely an added plus. This is why [the] MAME [team] has not bothered to create an ultra-slick user interface.'

The fact that the Win95 version of MAME does feature a simple user interface, and front-ends are available for the DOS version - although, it must be said, the central MAME team have little or no involvement with the coding - rather renders the latter argument obsolete. Also, with the release of each new MAME beta,


When emulating certain coin-ops via MAME, it's probably best not to opt for keyboard control in attempting to replicate the experience... its accompanying 'What's New' document details compatibility with new RDMs and improvements in emulation standards - actual 'technical information', in the sense that Edge's contact implies, is therefore often conspicuous by its absence.

Each new release of MAME boasts greater compatibility with existing coin-op titles, and is capable of supporting a handful of new ROM sets. Authors of drivers and improvements, and providers of sound samples, are given credit in the documents contained in the MMME download. So how, then, could the team argue that their emu is intended solely for the use of PCB owners, when the casual, game-hunting Web browser is so royally catered for?

Dave's Arcade Classics (www.davesclassics.com) is a highly regarded site that covers console, computer and arcade emulation. It is not in any sense MAME-specific, yet has arguably the best (and most reliable) collection of ROM sets available on the Net. it also allows users to download the latest MAME betas almost immediately upon their release. During Edge's last visit to the site prior to finishing this article, 8,033,335 hits had been recorded on its web counter since its first day online. But, more astonishingly, the site's MAMA download page - that is, a solitary page with versions of MAME alone - had a web counter total of $1,323,631$ visitors since

June 30, 1997.

## Other sites carrying

the emulator, while not boasting such impressive visitor figures, certainly

Many sites feature warnings to the effect that ROM sets may only be downloaded if the individual owns the original arcade board support speculation that MAME is fast becoming the largest piece of freeware gaming software in the world. Despite arguments to the contrary, the project is no longer the underground concern it once was. The mainstream beckons, yet remains elusively beyond the grasp of the project. The reason, as if it need be related, is simple: the legality of RDM-set supply and ownership.

## Many sites (Dave's Arcade Classics

 included) feature wamings (or, rather, 'requests') to the effect that ROM sets may only be downloaded if the individual in question owns the arcade hardware, or for an evaluation period of generally 24 hours, after which players must delete the file or purchase the relevant PCB. Some go as far as to validate downloads for owners of retro compilations - the argument being that awnership of Playstation Willioms Arcode Classics validates possession of an accompanying MAME version.Naturally, these and other such statements - in legal terms - are paperthin, and could be challenged with ease by all but the most naive lawyer. And, with games from the early ' 90 s now supported, MAME could soon become a victim of its own success.

With retrogaming compilations offering publishers reasonable returns, it's only a matter of time before the existence of MAME is perceived as a threat. Indeed, with the 'update' fast becoming a favourable publishing strategy, developers are becoming cautious with ageing legal properties.



## The future of emulation

So what can the future hold for MAME? On one hand, its existence grants many forgotten classics a new life on a different platform, providing once-curting-edge arcade software for the price of a download. It could be argued, however, and with equal validity from a publishing standpoint, that the MAME scene is one of the largest examples of organised piracy in the industry at present.

One option is an attempt to truly take MAME into the mainstream. Could manufacturers be persuaded to release older titles into the public domain? Software houses, like many businesses, are not known for their philanthropic tendencies, but perhaps older, inert titles could be made available? But such a route, too, could spell the end for the MAME project. Part of its huge appeal at present is the excitement of downloading a new update, before finding the new ROM images it supports. With its catalogue of supported games whittled down to the few that publishers are prepared to 'part' with, could it maintain its current


The arcade scene of the 'Bos, dominated by non-dedicteded cabinets running distinctive titles, is now thriving in the home thanls to MCME level of success? Hardly.

## Another (rather less likely) possibility

 is to make MAME a more commercial concem, with ROMs downloadable from approved sites for a modest fee, a proportion of which could go to the original copyright holder. 'I would love to see this,' says Edge's source, 'but I don't think it will ever happen. Tracking down copyright holders for games where the original companies no longer exist, coupled with myriad legal issues, is an insurmountable task. But I would love to be proved wrong:' He is, however, concemed about MAME becoming a retail product. I think the best way to destroy MAME is to try and make money off it. With a few notable exceptions - such as leff Vavsour's original Williams Arcade Classics - the commercial emulation scene is littered with half-baked attempts to cash in on the nostalgia craze. With MAME, we listen to feedback until it is 100 per cent perfect. No Christmas holiday market deadlines. No pressure from those who care more about the bottom line than a quality product...Edge finds itself in the uncomfortable position that, while eager to champion the MAME cause, the legal issues surrounding the emulator and the ROM sets it supports are too significant to ignore. With this in mind, the opinions of both readers and software industry figures are welcomed: how can MAME continue in its current form? Are cerlain Edse-reading publishers prepared to authorise the use of arcade ROMs? Can (or should) MAME become a commercial concern?

And, with the likes of $720^{\circ}$, Chouls ' $n$ ' Ghosts and Strider now fully

 playable, how can Edge meet its print deadlines? Answers or speculation to Viewpoint at the usual address...



## The definitive monthly assessment of the world's latest videogames

## Fair game

S
ince the beginning of the interactive entertainment age, magazine review scores have been the subject of continuous contention, dispute and the occasional death threat. And even after an editorial team has agreed on a score, it risks facing the same fusiliade from software publishers.

The current, rather disheartening state of affairs sees nearly all videogame publications rate games on an artuifially restricted scale, where a game receiving 70 per cent or its decimal equivalent is considered an average titie, of little or no interest to most players. in other words, rather than use the whole of the scale, which may seem a radically logical approach, most magazines are essentially only using half, or at most, just two-thirds of it.

Edge evaiuates games on a scale of ten, where five naturally fepresents the middle value. Perhaps shockingly, then, a game receiving a 'seven out of ten' is in fact a competent titie with noticeable flaws, but which should still appeal to a considerable range of players and naturally more so to those who favour the titie's particular genre. It does, after all, score two points above average and should therefore not be considered as such.

Sedly, with the vast majority of videogame publications failing to treat 50 per cent or five out of


From left Anmy Men and Tommi Amäkinen Rally - substandard tities likely to be labelled as such by magaxines awarding them 70-odd per cent. And Yashr's Story, Edge's interpretation of a perfect 'seven'

## Videogames on the Edge

The games - old, new, whatever - that have grabbed Edge's attention this month


GoldenEye
(Nintendo)
vet another appearance
for Rare's masterpiece as an Edge staffer finally reaches the game's extra tevels, nearly a year after its E48 testscreen.


Time Crisis 2
(Namco)
Hours have been spent putting this teamplay game through its paces Enemies falling to bullets from an unseen partner definitely ups the pace.


Blast Corps (Nintendo) It's a Rare month as Edge gets strategical while revisiting the iwycrossbased company's explosively entertaining. first original NSA venture.


Ghouls ' $n$ ' Ghosts (MAME) Researching this month's MAME feature brought Capcom's seminal horror plattormer pack to life. unforgiving, but so amaxingly atmospheric.

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Jikkyou World Soccer: World Cup France '98


As seen in Donkey Kong Country, the development team seems to have had more fun designing the bad guys (top, second). Cauldrons act as teleports (above)

## 

Freezeezy Peak is one of Banjo-Kazooie's best worlds, both visually and in terms of gameplay. Looking down from its highest point can be dizzying
takes shape as Banjo's littie sister Tootie is abducted by the evil witch Gruntilda, Who is intent on stealing Tootie's good looks for herself - Banjo and kazoole are destined to rescue her. Unfortunately, such a childilike ensemble of characters and story will do littie for the N6A's image as a toy, particularly among 'blood and guts' gamers. It's not to the game's detriment, however, although the characterisation is perhaps a little predictable. As ever, Rare's 'baddies' are far better realised than its 'goodies':

Key members of the team
responsible for Donkey Kong Country formed the core of Banjo-Kazooie's crew. Aside from a similar animal-based collection of characters, clear parallels can be drawn between DKC and Banjo. From the sprawling hub level (Gruntilda's Lair) to the animais that can be utilised for in this case, morphed into to open up more area for exploration), echoes of the older titie run throughout the team's new game. Many of the ideas have been better integrated this time around, although the concept of two controllable


Once learned from the myopic mole Bottles, Kazooie's flying ability becomes a weicome alternative to running around
characters could have been far better explored. Jon Ritman's 8bit classic Head Over Heels featured separate characters, with distinct abilities, that could be joined to access new areas. But such innovative touches are sadly lacking in the permanently connected Rare characters.

However, by tying the dual heroes so closely together, Rare has allowed a wide variety of moves to be included in the game. They're not all available from the outset, though - the player has to learn new actions from the friendly mole Bottles, who emerges from his hills at selected points. As expected, this then facilitates access to new areas of the game. Even with over a dozen obtainable standard moves, the control system remains commendably intultive. Every move is beautifully animated, though the Mario-style high jump (hold down the $z$ trigger and press $A$ ) is of particular note.

In addition to guiding Banjo and Kazooie, the player must also make full use of the game's camera in order to progress. Rare has tried to accommodate


While mind-numbingly cute in style, the game's soundtrack is a fine demonstration of interactive audio, with music blending between areas
all tastes, with both a zoom and rotate control, and a 'chase cam' which tracks behind the character. While the system works well on surface sections, the many underwater sequences are marred by the sudden switch to a fixed camera position. On occasions this proves intensely frustrating, with Banjo and Kazooie regularly drowning while trying to retrieve one of the many collectables, because the player can't see the action.

> - The core of Banjo-Kazoole's gameplay is, in traditional platform game style, built around gathering a number of items. Chief among these are the notes
and jigsaw pieces that unlock the game's later levels. Scattered throughout the central hub world are points where jigsaw blocks garnered from each of the worlds are used to unlock the entrances to further stages. Additionally, there are various 'note doors' placed strategically throughout, each marked with the number of notes that must be collected to pass into fresh areas. This approach forces the player to scour each world for the maximum possible number of both items, rather than the more leisurely, open adventuring of Super Mario 64 . Other collectables include Gumbo skulls,

Format: N64
Publisher: Nintendo
Developer: Rareware
Price: 550
Release: Out now


Changing into the various creatures via Mumbo isn't always a success (above)


Kazooie's invulnerability move comes in handy at times (main), though not ahways when expected


To unlock new worids, players must use jigsaw pieces to complete the puzzles scattered around the hub world (top, second). Doors 'sparkle' open (above)

4 which the player can trade with Mumbo the shaman (one of the game's strongest characters). Mumbo will transform Banjo into an animal, and it is these creatures that are Banjo-Kazooie's strongest facet, with good design and fairly novel implementation. Sadily, not every stage has a Murnbo hut, whilie the time spent morphed seems over all too soon.

Puzzles in the game rely too heavily on the player's physical dexterity rather than their mental agility. Players are asked to guide Banjo from $A$ to $B$, with the only obstacle to progress being the narrow ledge between. None of the stages match the intricate layout of Mario 64's Wet/Dry World, although some (such as the snow-bound Freezeezy Peak), stand out among the nine areas. The visual theme of each world, be it sand, swamp, ice or haunted and industrial, has limited the game's conundrums, not enhanced them.


A reluctance to experiment with environments, allowing gravity to defeat imagination, runs llike a stream through this game. Banjo may outpace Mario's visuals with a loping ease, but - sadly the former game's mechanics are a pale imitation of Miyamoto's old master.

While unable to match Super Mario 64, Banjo-kazooie leaves the numerous Playstation 3D platformers floundering in its wake. There's no doubt that Rare has constructed a towering technical achievement with this title. Just as Donkey Kong Country redefined the limits of 16bit console visuals, so Banjo-Kazoole does for the current generation of

Throughout the game, information about Gruntilda must be learnt, which serves to win a novel 'gameshow, one of its best features, near the end
machines. Fresh faces on the videogame scene are likely to find Banjo a rewarding investment. But beneath the good looks this is platforming-by-numbers, with the player channelled through a tight script that is brought into sharp relief by a lack of innovation in the control system and gameplay. Rare's title relies on the proven formulas of yesterday not daring to be different - an unavoidable factor which will leave videogame cognoscenti wondering what all the fuss is about.


Edgo matien:
Eight out of ten


## cull werat pally



Between stages, the player must set up the car for those that follow (top). CMR caters for all tastes with its multiple twoplayer modes, including special stages

including special stages


Defeating alf comers on special looped stages rewards the player with new cars, such as the Lancia Delta (top)
undoubtedly fall at that hurdie - Edge will only reveal that Lancia's Delta Integrale is among those to be found.) These extras are gained by racing head-to-head on a looped special stage, with first place garnering the reward. Additionally, the full gamut of rallies cannot be accessed until the player has defeated each one in the game's full 'championship' mode. It's exactly this type of reward structure that PC racers such as Ultimere Race Pro (six out of ten, E56) lack, much to their detriment. The imminent Windows 95 version of CMR will fill a much larger gap than it has to on the playstation.

While Colin McRae Rally's ordered progression is welcome, any driving title is only worthy of a podium place if it conveys a realistic handling feel to the player. Codemasters has not reneged in this area. CMR's licensed cars are imbued-with a driving feel that surpasses


One of the few niggles with CMR is that the cars don't quite 'weigh' enough, causing extended crash sequences. Jumps are effective, though

Rally. It could be argued that CMR's external views don't deliver quite the raw, seat-of-the-pants feel of Sega's racer, but it's a marginal call. Played with Sony's Analog Pad, Codemasters' game provides a steady stream of reflex-testing moments, demanding total concentration. McRae himself was called in to assess the cars' handling. while members of the development team tried out rally cars for real. CMR's realistic feel ranks alongside that of Nintenco's sublime $1080^{\circ}$ Snowboarding, and brings about the same desire to replay stages to perfection.

Blessed with over 50 tracks, a reasonable two-piayer mode, watchable

Gran Turismo-style replays and its fine handling. CMR provides the ultimate in rallying reproduction. It is more simulation than arcade titte, such is the level of its authenticity. There are occasional chinks in the armour, including a sometimes-reluctant handorake and graphical glitches, and a stronger engine and exhaust noţe would have been welcome. But these are not enough to detract from the fact that Colin McRae Rally is the most comprehensive - and playable game of its genre seen to date.


Edye rative:
Nine oul of ten

Format: PlayStation
Publisher: Codemaster
Developer: in-house
Price: $\mathbf{E 4 5}$
Release: Out now


Top to bottom: the five views of Colin McRae; distant, close (Edge's favoured angle), in-car, over bonnet, and the highly demanding driving seat option

## sfilinle nfuunls

Format: PC/Playstation
Publisher: Psygnosis
Developer: No Name Games
Price: 540
Release: Out now


Sentinel Returns seems almost too simple. The square grid landscape might have been improved but the weird textured background is distracting


Multiplayer Sentinel Returns (above) is disappointing, being too frantic
 hen Geoff Crammond created sentinel back in 1986, his ethereal strategy game, fashioned out of an abortec tank sim engine, was like nothing before A game as simple as chess, yet one which couldn't have been created without computers, Sentinel enthralled a generation of archetypal thinking men.

Apart from a couple of critical changes, Sentinel Returns plays like its forebear. The player begins at the fowest point of a corvoluted, tree-dotted landscape, while at the highest point on the map is the Sentinel. Both player and Sentinel can absorb energy from any objects at a lower elevation. The player can turn this energy into robots or boulders. Robots enable the player to move around the map, by teleporting from one to another. Trrough boulders, the player can place robots at a higher elevation, and work up the terrain.

The Sentinel is rooted to the ground and can only tum its death-dealing gaze in discrete, timed steps. If he spots anything other than trees (including the player) he drains its energy. To kill it, then, the player must absorb this energy from

## QUEST 64



Graphically inspired in many areas, Quest 64 nevertheless fails to captivate due to underdeveloped gameplay onsidering the languid state of the Japanese N64 market, and having the privilege of being the machine's first 'turn-based' RPG, it comes as something of a surprise to find Quest 64 (nee Holy Magic Century Eletale) making its initial appearance on western shores. Whether US publisher THQ felt it simply couldn't wait while developer Imagineer extended the game's considerable development period is open to debate. But videogame economics and the impending arrival of zelda would suggest that someone, somewhere, decided to get the game on to shelves as soon as possible.

Despite some interesting aspects, Quest 64 appears to be a rushed and incomplete product. While imagineer has produced a competent and asthetically pleasing 3D world and some interesting battle mechanics, all the other roleplaying trappings that players have come to expect are suspiciously absent.

A few screens of introductory text is all the game proffers by way of plot, and an absence of cinematics leaves the unfurling tale of an apprentice magician

- and his search for his father left in the


The game follows the familiar outdoor-indoor format of most RPGs, and presents some particularly attractive interiors (above right)
hands of corversations with characters en route. Alas, it's hard to see how any sort of storyline could really help. anyway. The game quickly falls into a pattern whereby each town visited has a problem that needs to be dealt with before the player can continue. This invariably involves an arduous levelling-up process and constamt combat until the player is strong enough to encounter the bosses of each town.

> In reality, the batties are the only actual gameplay on offer. While their structure is similar to Square's muchlauded Parasite Eve, in that the player is given an area to freely move around during combat potentially avoiding enemy attacks, in practice it fails to work half as well. The game tends to freeze characters until an altack is launched, so when executing a quick camera cut, it's all but impossible to see where you should move to avold damage.

It's easy to see Quest's potential as the first console RPG to marry a turnbased system with a full 3 D world. But with no puzzies to solve or secrets to discover (bar a few treasure chests), the actual roleplaying aspect becomes pretty much redundant. Just because Quest 64 is avallable now and Zeida isn't, does not make it an essential purchase, and $\square$ it remains a missed opportunity. 5

Edy nting:
Five out of tea

Battle sequences involve simplistic turn-based combat


Format: N64
Publisher: THQ
Developer: Imagineer
Price: $\mathbf{\$ 5 5}$ (£35)
Release: Out now (Us)
\{Game supplied by Department1 contact $01719168440 \mid$


There are many shops to visit (above) but, oddly, nothing to purchase. Coliecting items is merely a matter of talking to the right people


## BREATH OF FIRE III

Format: PlayStation
Pubilisher: Capcom
Developer: in-house
Price: 445
Release: August


While the 3D isometric backdrops are a step forward for the series, their simple, building block construction can create a Lego-like appearance to the levels


Story-advancing cinematics, be they rendered or hand-drawn, are non-existent in Breath Of Fire III. Any plot advances are acted out using the ingame graphics
$T$ hings don't immediately look good for the latest in Capcom's only RPG series in its move up from the 16bit SNES, Breath of Fire IIt has gained a Final Fantasy Tactics-style, polygon landscape and plenty of colourful special effect5; but to the majority of Playstation owners, weaned on photorealistic squaresoft renders: its brightly coloured . environments and canoonish characters will seem like a step backwards. Coupled with a storyline that immediately falls into the oversubscribed category of 'lone, heroic youngster, last of his race, can he fuffil his destiry and overcome the


Investigating a ? can reap rewards, but at the expense of plenty of battles
terrible evil?' Bof ill seems doomed to a life of role-playing clichés before it's begun. Despite a slow start, the game does eventually begin to show its one true strengith: attention to detail. The characters have retained special abilities that only manifest themselves when they are leading the party. Players who remember the original fishing and townbuilding subgames will also find them nere. But looking deeper reveals smaller, less obvious additions that give the game an added life. The player is able to cross a previously conquered section of land without having to worry about intruding battles, and town inhabitants now have more than one reply to questions. Setting up camp even enables players to cut away to the campsite to glean hints from their team mates on what the next move should be.

Alas, with littile in the way of strategy, randorn battles are an RPG staple to be endured here. Combat is acted out without switching to a separate battie screen, resulting in small and unimpressive enemy graphics, while the 'auto-fight' feature


Battles are traditional turnbased affairs, although some feature unlikely adversaries
goes someway to underlining just how tedious this aspect of the game can get.

Against the odds Bof w does exude some charm, Dut it's unlikely to win any new converts to the RPG cause. While it's clear that its creators have strived to take the best from the previous titles and improve upon it, many will find that the frequency of the random battles and long levelling-up process needed to proceed quickly wears their patience thin. Without some fresh approaches to the console RPG it can only be a matter of time until the fuse ignited by Final Fantasy $V I I$ fizzles out, and the genre reverts to its old, die-hard status. As such Breath of Fire III can only be recommended to those gamers who see themselves as
members of that particular group.

Etge tuting:
Six out of ten

## X-COM: INTERCEPTOR



Here the player is approaching an alien processing plant in an X -COM fighter. The speedy deep-space combat sections are simple, but effective

T aking something of a gamble with its $X$-COM brand, the latest retro-styled science-fiction title in the series ditches the wargame elements that made its predecessors so popular. Instead, it's a 3D deep-space shoot 'em up game engine bolted on to the familiar empire-bullding structure, with players controlling the X -COM team as they attempt to offer protection to humans in an area known as the Frontier. An area rich in mineral resources, green-skinned extra terrestriais and pirates threaten to steal the valuable deposits.

Navigating the main game menus involves turning '50s-style dials, looking at scanners shaped like portholes, and clicking on over-sized buttons, Such playful presentation helps to take the sting out of an outstandingly complex strategy section. Starting a campaign with just one x -COM base, a handful of fighters and little knowledge about what lies beyond the immediate area, the idea is to build up a comprehensive defence network. Probes must be dispatched to widen the sensor net, research carried
fleets amassed, ready to strike when an enemy fleet is spotted. And all the while the aliens are readying a Doomsday masterpian that must be thwarted.

At this level, it's a familiar formula of resource management. Limited funds must be used wisely, new pilots recruited, craft equipped and restocked, and more cash earned by successfully providing protection to the outposts and ore processing plants in the Frontier. But as with previous $X$-COM games, the actual confrontations play a major part in allthis, drastically affecting the plot, the strength, power and usefulness of the outfit, and also the research abilities. Salvage alien technology and it can be used to further the player's own.

The fighting element is integrated successfully, with players selecting whether to jump into the cockpit of a fighter, and taking direct action alongside wingmen. Although spartan, the $3 D$ graphics reinforce that glorious retro feel. with ailen craft bathed in red and green lights, and often taking the form of classically designed flying saucers. The combat is frantic, with craft zipping past


Format: PC
Publisher: Microprose
Developer: In-house
Price: $\mathbf{E 4 0}$
Release: Out now


The enemy craft designs (above) will be familiar to alleged abductees everywhere
the cockpit at an alarming pace, much as in $X$-Wing vis Tie Fighter. In fact, those familiar with LucasArts' space opera will feel right at home here, so similar are both the filght and fight elements. It is worth noting, though, that those more concerned with the arcade side of things will probably find Conffict Freespace (see p96) a more compelling option.

The shift away from wargarning may well enrage dedicated $X$-COM fans. But in doing 50 , Microprose has managed the previously impossible task of blending real strategy with 3D space combat. Both elements have been well developed, with a game of enormous depth and instant gratification the happy result. If only all sequels could demonstrate such invention. 5

## Effe inting:

Eight oult of ten

Format: Playstation
Publisher: Infogrames
Developer: Amazing Studto
Price: $\mathbf{E 4 0}$
Release: Out now


In this sequence the player actually appears inside a giant's stomach

## Heart Of DARKNESS

Once the player begins an action, its
animation must run to completion.
This alone results in countless deaths

.$n$ a videogaming world still obsessed with 3D, older gamers will instantly view the 20 perspective and sprite-based action in Heart of darkness with melancholic fondness. Every level boasts beautifully animated characters parading in front of gorgeous, highty detailed and imaginative backgrounds.

However, the plot - as set by an opening FMV sequence of unprecedented length - would have benefited from a littie more creativity: after spending another school day daydreaming, Andy and his canine companion, Whisky, rush towards the park in the hope of getting there before the forecasted solar eclipse takes place, blissfully unaware that the next few

the award-bestowing community because sadly. Heart of Darkness is not very good. Criticism cannot be levelled at its 2D perspective - Abe's Oddysee proved that as long as the right gameplay elements are present, the experience can be as immersive as some of its polygondriven counterparts. Unfortunately, in its quest to produce a cartoon-like title, Amazing studio seems to have ignored the crucial aspect of playability.
infinite lives sees the proceedings rapidly degenerate into a trivial process of trial and error, with substantial FMV interruptions that not even a quirky end gimmick can hope to save. Some of the puzzles are competently thought out but never brain-taxing and once completed, there is no incentive to go back.

It may have spent the best part of six years in development, yet Heart of Darkness emerges as a flawed and deeply frustrating experience. $\qquad$

Etge ntive:
Four out of tin

## counlunios sumume



The geography of the levels might not be wholly convincing, but the situations facing players present new challenges
f all the exponents of the new unit-based wargame genre to arrive so far, commandos is the first to really capture the essence of the idea, featuring a design that leaves as much room for strategy as it does realtime excitement, and a control system able to cope with the demands of both.

Graphically the game seems to belong to another era, with hand-drawn mugshots and landscape graphics evoking the 'Commando' comic books of childhood.

But Commandos is happy to follow its own internal wargame logic, and use familiar imagery, situations and exploits to evoke the spirit of Worid War II. Scube gear, patrol boats, cable cars, road blocks and other staples of countless Hollywood movies all foom large. There's even a spy character, able to infiltrate enemy compounds unquestioned. it all creates a terrific sense of atmosphere, despite the obvious lack of realism.
yet, when it comes to the abilities of the characters, and their interaction with the enemy, Commandos is at great pains to do things by the book. Line of sight figures strongly here, with visible cone overlays revealing what the enemly can


While attempting to cross the river in an inflatable dinghy, a passing gunboat opens fire (top right). The enemy makes use of several vehicles, though the footsoldiers provide the greatest threat (above)
'see', two distinct areas indicating what can be seen fully, and what is only visible when above ground level (making it safe to craw). The enemy is also programmed to hear events, and so the destruction of military gear often results in utter chaos.

Commandos successfully addresses the tricky problem of placing up to six characters under player control by providing the option to split the screen up in a variety of ways. The movements of each are displayed in separate windows, each of which can be zoomed in or out, and even switched to track the movements of another character (friend or foe). It can sometimes be confusing.
but ultimately proves hugely entertaining. Much like the game as a whole, in fact Ironically, however, it's the combat that blots the game's copybook. Attacks often happen too fast for the player to respond - the point-andclick system proving to be inefficient. But it's not long before the need for stealth becomes obvious, direct confrontation often arising only as a last resort. The action may be reatime, but the tactics needed reveal it to de a complex wargame.


## Elye rating:

Format: PC
Publisher: Eidos
Developer: Pyro Studios
Price: $\mathbf{1 4 0}$
Release: Out now


It's possible to observe each characters' moves concurrently (above), while the line-of-sight routines are well handled, adding much to the gameplay

## IESTSCREEN ROUND UP

## Weroames

As expected, the connection with the 1980s movie of the same name is tenuous at best, but Wargames is more interesting for its re-working of familiar realtime strategy themes, tying in unitbased control and fully 3D landscapes with the simplicity and tight mission structure so beloved of console titles.

Not unlike Return Fire, rather than opting for indirect control of the units, players can switch between and take direct control of the various land, sea and air forces in the game, playing for NORAD or the WOPR computer forces.

Visually wargames is too cartoonish, although as the levels progress the lay of the land affects strategles to a greater degree. Later missions - there are 30 singleplayer levels in all Introduce more unit types and improved firepower. Multiplayer Issues have been well addressed, with two deathmatch modes, capture the flag and cooperative missions, while all views use an enterprising, diagonally split screen.

If there's a problem here, It's that everything is just a little too tidy and punctual. Calling in airstrikes and hack computers adds colour, but missions end too abruptly. Nevertheless, Wargames' blend of direct, arcade-style unit control proves surprisingly successful. Edge hopes the ideas showcased here are explored further.

Elye mating:
Sever out of tem


Format: Playstation Publisher Electronic Artu/MGM -ipkeractive Developer: Interactive studlos price: $\mathbf{8} 40$ Reiease. Out now

## Final Fantasy VII

Despite its mythic status, a PC conversion of Final Fontasy VIl was far from certain. Bar Resident Evil and the recent run of Sega titles, it's hard to think of many great Japanese console gumes that have made it to the realms of the PC

Happily, FFVII survives the transition unscathed, Despite all the PC developers absessed with creating stories, narrative-diven adventures are actually becoming rarer on the platform. Players may take a while to appreciate the Japanese take on RPGs, but once they become involved in the unfolding drama they won't look back

The only downside is that the ported graphics suffer on a monitor, in comparison to other PC games. The stylised 3D characters works well enough, but the backdrops, which seemed so wonderful in console form, look a litte fuzzy on the PC. Edge can't help feeling it's a lary - il economical - mehod of porting the game. Nevertheless, Final

Fantasy $V$ VI is definitely a viral purchase for advemturous PC owners.
 Edje riting:
lline oul of ten


Format: Publisher Eidos Devaloper: \$quareSoft Price: \&40 Release: Out now

Conflict Freespace: The Great War


The last few months has been a time of refinement rather than innovation for PC gaming, with titles such as Unreal and Forsaken buliding upon proven genres, demonstrating an impressive dedication to both graphical and gameplay techniques, rather than innovation. So it goes with Conflict Freespace, in theory an offshoot of the venerable Descent series, but actually a bang up-to-date re-interpretation of the space opera genre made popular by Wing Commander.

The visuals are, predictably, the first noticeable improvement, with both software and 30 card-based modes lending the game an understated majesty. This isn't a title awash with lens flare and harsh lighting tricks, but the detali lavished on the spacecraft and their various states of destruction is peeriess. Best of all, there's a fluidity to the game that brings out the best in the physics engine - every dogfight possesses grace and subtiety. Good Al for both wingmen and enemy craft, along with strong plotting for each mission further enhances the simulation-like feel, the battles possessing a truly epic quality.

Of course there's nothing going on here that hasn't been tried before.
But with its sensible approach to multiplayer (a dedicated online server is provided for internet gamers), faultless look and feel, and a refreshing lack of FMV, Conffict Freespace makes a dependable entrance into a sometimes disappointing genre. Recommended.

Edye rating:
Sever out of ten
Format: PC Publisner interplay Deveioper volition Price c40 Reiease Out now

## Viper

The 3D shoot 'em up genre is one that has strangely been lefi mostly untouched by the Playstation, as developers opt for the commercial assurance of racing, thirdperson adventure and 3D platform tities, with a resulting high proportion of depressingly mediocre software.

Viper, then, comes as a relatively refreshing addition. Players control a futuristic helicopter and must fight their way single-hendedly through levels housing high numbers of cybors: controlled warcraft. Thankfulfy, there is plenty to help this suicidal mission, mainly in the form of weapon power-ups and energy pick-ups.

Visually, Neon's touch is as evident as in Tunnel 81, with colourful and effective lighting effects dominating the relentiess onscreen action. The levels, too, although occasionally structurally simple, have a fairly solld feel and offer an occasional opportunity to select one of two routes, either of which eventually lead to a rather uninspiring end-of-level boss.

Disappointingly, there is little in terms of Innovation, Neon having opted for a rather traditional and safe approseh. Repetitive blasting through 14 similarly structured levels assures that what ilttle enjoyment might have Initially existed rapidly degenerates into tediousness. However, anyone desperate for an alternative to the usual PS suspects might find it agreeable in short doses.
 Edge rating:

## Six out of tell



Format: Piaytstetion Pubilisher Infogrames Developer, Neon Price: $\mathbf{\text { E } 4 0 \text { Release: Out now }}$

## liphtimare Creatures

Like Eidos' Deathtrap Dungeon, Kalisto's hormor-taden title uses a thirdperson viewpoint and dyamic camera system to portray the actionbased adventure. This time it's the fighting element ther's pushed to the fore, with each lesd charscter Ignatius the monk or the swordwielding Nadia - possessing an array of moves comparable to those found in Inue beat 'em ups. Combos and secret moves feature strongly, es the pair seek out devil worshipper Adom Crowley in Victorian tondon.

This odd blend of horror and combat works well, the ability to decapitate and generally dismember the various undead creatures unleashed by Crowloy proving most satistying. However, the sdventure element is thin at best, the 16 levels serving as a backdrop to the combet more than anything, And, while the creatures are impressive, possessing suitably unnatural styies of movement (limping zombies, for example), there aren't enough to prevent bate fatigue setting in. The developer has also failed to make the game's own event clock independent of the processot, resulting in a game that's unplayable on a P350 of above.

Nightmare Creatures is arguably a litte too simplistic for PC gaming tastes. But then that hasn't done Resident Evil any harm. Elge ratiaf:

Saven out al ten


[^3]
## Xi

It's unfortunate that traditionally (with the exception of Tetris), puzzle titles sell very few units, because occasionally one comes along deserving more than the limited attention span it's guaranteed to get from the gaming public. Developers, of course, know this hence the relatively minute proportion of puzzlers currently available on the market. An ironic situation, considering the lifespan offered by a randomly generated puzzling environment is such that players have a tendency to return to it months after finishing the likes of Tomb Raider, for example.
in Japan, things are significantly different and it's not uncommon or surprising to see titles such as SCEI's IQ doing particularly well upon release. $X i$, the latest brain-taxing venture to emerge from one of Sony's internal development teams, is sure to better its predecessor, and continues the company's devotion to producing innovative titles.

Stemming from a stupefyingly simple concept, $X i$ has players running around a board comprising 64 squares on top of dice, and moving them around with the aim of matching the top side and thus eliminating them from play. The number displayed determines the number of dice needed before their sinking-into-the-board act takes place. While this is occurring, players wishing to obtain bonus points have a limited time to 'tag' as many extra dice onto the descending group as long as the top faces match the ones disappearing. Highly impressive combinations and point scoring results.

In addition to the oneplayer game, single individuals can occupy themselves with the 100 -level puzzie option while more people offer the opportunity to engage in the twoplayer cooperative or competitive modes, and a Multitap opens up the fiveplayer war game.

While not the new Tetris, $X i$ is a wonderfully playable, compelling experience whose varied modes further extend an already considerably healthy lifespan.

Byen arisy:

## Eight an of tek



Format Playstation Pubisher: SCEI Deveioper In-house Price: \%s, soe (Eza) Release Out now (Uapan)

## Tommi Mäkinen Aally



There are really very few reasons to buy Tommi Mäkinen Rally. With its realistic approach, Codemasters' Colin McRae Rally may offer a somewhat different experience, yet given the nature of both tities comparisons are nevertheless Inevitable. And those wishing something more akin to Europress' title can still purchase a copy of $\mathbf{v}$-Rally, safe in the knowledge that infogrames' ageing effort remains a superior game.

Mäkinen's car dynamics are distressingly inferior to those found in Codemasters' inspired title. While on the track, the vehicles' bodywork fails to pitch and roll, resulting in a very convincing floating effect and very unconvincing handling characteristics. There is also little sense of speed, other than in firstperson perspective. Often, cars seem to be crawling along at little more than $\mathbf{3 0 m p h}$ despite the fact that the speedometer is rapidly approaching the 90 mph mark.

The game does offer a commendable number of tracks, yet sadly, very few of them prove particularty well designed. Thankfully, a comprehensive track editor is available for those wishing to create something more testing, but this alone cannot save the game.

Elye netien:

## faur out of ten

Format: Playstation Publisher Europress Develoger Strange Productions Price. £40 Release: Out now

## MOK

Following E60's update on the state of Mac gaming it seems apposite that one of the better PC conversions should be reviewed this issue.

Originally created by Shiny Entertainment, MDK immerses the player in a stytish, future earch scenario. Controlling a biack clad ant-hero, Kurt, players are committed to full-on action from the start. After the game commences with him plummeting head-first fowirds the earth, $M D K$ is, essentially, a 3D plafform shooting game. However, there is decent gameplay variety, aided in no small part by being able to switch to a zoom-in sniper mode. This enables Kurt to launch mortars toward previoushy untouchable foes, and to pick others off from a great distance. He's also gifted with a beautifully fashioned parachute, constructed of four hoops.

Technically, Mac MDK for Apple is a creditable piece of work. Edge tested the game on 604e and G3 processors, both of which delivered a more than acceprable frame rate. As with many PC-to-Mscintosh conversions, the only drawbeck is that MDK has been seen elsewhere - a long time ago 5 Edje tatiog:

Eifht out of ten


Format Macintosh Publisher: Anco Developer Shokwave Price: $\mathbf{8 3 0}$ Release: Out now

## Jikkyou World Socter: World Cup France 'g8

Due to a Japan-only licensing deal, this import release is in fact the second official game of the 1998 World Cup competition (following Electronic Arts' effort - see E60). More importantly, though, is the fact that it is the sequel to international Superstar Soccer 64, Konami's benchmark football title. This factor, almost by default, makes it a storming sports simulation. Working on a time-honoured principle, Konami hasn't changed what is a proven core game engine, and hardened IS564 players will immediately feel at home with its successor. The control format is nearly identical, the only tweaks of real significance being mid-air challenges, a new defensive clearance, an alternative method of swerving the ball, and elevation arrows to complement directional arrows during dead-ball situations.

So gameplay in general remains largely unchanged in this follow-up. the through-ball manoeuvre proving just as important a part of successful play as previously, and the variety of attacking and goal-scoring styles as Inspirationally implemented, too.
improvements in Jikkyou World Soccer '98 are largely aesthetic, then. Matches are accompanied by referees and their assistants, new celebration animations follow goals, and a number of superfluous touches, such as stretcher-bearers appearing for injured players, complete the package.

In audio terms, the Japanese commentary is admirably comprehensive, going so far as to include a handful of real player names such as Simione an aspect that will not appear in the Western version in September.

Overall, a slightly underdeveloped sequel, but still a beautiful game. Elye ratiy:


Format: M64 Publisher Konami Developer un-house (Meajor A) Price: V7,s00 ( $\mathbf{f} 40$ ) Helease Out now (Sapun) (Gaine supplied by Department! contact 0171916 84t0)

## DEVELOP

Charting videogame creation today, for tomorrow

## Beyond polygons

0ne of the major issues facing game developers currently working on the next generation of rendering engines is that of scalability. In a fast-moving market with a wide range of machine corrigurations and performance, it's difficult to know just where the line between speed and detail should be dram.

Curent graphics engines are almost all based around polygon technology, where 3D objects are represented by a series of flat suifaces. These surfaces are easy to design, calculate and display, as only the corner points need to be considered. However, polygon models suffer one major drawback - once a model has been designed, it contains a set number of polygons, and hence requires a certain minimum amount of time to calculate and draw, no matter how much of tis visible onscreen.

This leads to the case where a model which is a large distance away from the viewer, and is in fact only a few pixels high onscreen, is still being calculated and drawn at its initial detail level, slowing the engine down massively. There have traditionaliy been two solutions to this problem - distance dipping and detail reduction.

Distance dipping is simply the process of reduang the number of objects to be drawn by removing any over a cerain distance from the viewer. This is fast and simple, but can get annoying for players, who then find objects 'popping up' in: front of thern.

Detail reduction is the preferred approach, and relies on having several copies of the same model, each designed with a different number of polygons. Then, when the model is close to the viewer, a high-detail version is used, and when the model is further away, the engine switches to a lower-detail version. This approach works well, but requires extra effort in designing the models and, more importantly, if the switching points for the models are not carefully chosen, the changeover may be noticeable.
Due to these problems, some developers are now looking at the possibility of a detail reduction system where rather than forcing the designer to create the different models, the game is able to decide how many polygons it can handle (based on the processor load at that time), plus how many polygons will be visible, and generate a model with that number of polygons by itself, based on a single high-detail design.
The key to this approach is to stop representing the original model with polygons at all, instead using a format that contains information about the structure of the model (usually in the form of cumes, as most high-detail models are for characters,


Messiah's 3D engine exploits both deformation (which changes the shape of models) and realtime tessellation, which alters the number of polygons in 3D models

Which are essentally aunved objects), which can then be easily converted into polygons at a set detail level. One solution which has existed for some time is known as NURBS (Non-Uniform Rational B-splines), and is used by many popular modelling packages such as 30 Studio, as well as being supported by OpenCL. The screenshots below show an example of a landscape rendered as a NURBs surface at both high and low delail. However, NURBs systerns require very complex mathematics, and are not generally suitable for reatime game graphics. As a result, developers are starting to work on their own systerns, based around similar concepts but optimised for fast realtime use.

Among the developers working on this technology is Shiny Entertainment, whose current project Messiah already uses a system like this, and John Carmack, who is said to be working on a reallime detail control scheme for Quake 3

Chances are, it won't be long before hardware accelerators catch up with this technology, and the next generation of game engines may run at the same frame rate no matter what configuration they are running on.

- Next mortit's issue will carry an in-depth report on revotutionary graphic rechniques poised to bury palygons, the cument staple of 30 game engines



## $720^{\circ}$


w

poors britht cleady defined playlields are typical lobit fare. These shats

| Publisher: Atari | 1988 |
| :---: | :---: |
| Developer: In-house | Arcade |

## Arcade Gears: Image Fight/X-Multiply

delto, Xing has re-releosed two lesser-known titles

## X



X-hultiply offers stunning organic envitonments and a faip-sixed dose o playcbility Irem's creativify shines throught in this latest Xing converition

Image fight is a diverthg - if dated expenencer, mounilis use of

Format | Publisher: Xang Entargainmen |
| :---: |
| Developer: |

Release:
Origin:

## STREE FIGHIER ALPHA 3

CAN BIGGER GRAPHICS AND BETTER MOVES JUSTIFY ANOTHER STREET FIGHTER INCARNATION?


SF favourites such as E Honda (top) and Blanka (above) make a welcome return in Capcom's latest

W hile ofther developers attempt to design innovative coin-op concept5, Capcom seems happy to unvel yet more instailments in its dragging beat 'em up series. Street Fighter Apha 3, then, joins the other SF sequels currently circulating arcades, namely SF III and SF EX 2

Some new faces have joined the toumament. Karin is a high-school girl chalacter from a popular weekly manga publication, while R Milia is another female and the only original character. Three modes of play are offered, the first two reflecing the fighting dynamics employed in Super Street Fighter II X and SF Zero, the third allowing players to string new combinations together and intoducing a guard gauge making it impossible for a character to block attacks atter the indicator has been depleted. This requires players to adopt a more strategic approach.

However, even the promised two endings do fitle to disguise the absence of Street Fighter Aphia S's revolitionary features, opting instead for the tried-and-tested approach of its predecessors. As such, it's sure to delight tans of the series.


As with every new Street Fighter sequel, the graphical overhaul is accompanied by new characters and a new fighting system featuring a bigger and more impressive repertoire of special moves


## TECHIIO DRIVE

Developar. Namco
Release: Out now (Japan) Origin: Japan


Although seemingly simple, the 15 levels take a while to master and prove very amusing

st announced at the AOU show las February, Nameo's Techno Drive distinguishes itself from the hordes of driving coin-ops by being significantly different. And in order to reflect the game's titie, Namco has opted for fluorescent colours and flat shading throughout the levels.

Set in the year 2505, with trafic problems escalated to unimaginable levels, paralysing every main road in Japan, drwing ability has deteriorated to such a level that a machine is sent to the past as a woy of reeadurating diners in order to solve the problems of the future Ployers thus engage in 15 mint-kames designed to test and develop driving ability, These are divided into steering footwork and practical techniques. The foot skill sections, for example, require no steering and 'drivers' must negotiate jurnps and avoid moving obstacles by displaying prower control ability and quick reaction times, Each play allows the choice of three gamest after which the machine physically prints out a rank of the player's ability, from A to E . Overall, then an intriguing title.


Visually, Techno Drive represents a complete and drastic departure for Namco, whose previous arcade racing titles have included the comparatively serious approach of the firm's Racer series

Techno Drive's final stages require players to use all of their acquired skills to negotiate some fiendish tasks (above). The game's tiered levels (left) are no less tricky

## Gallery






Mindur of the orisnul's graphical madiacrity, Bialfog has made Dungean
Kugper MS visualt a pronty. As well as replacing the ingante sponces with
 which leq them th nutsourpe work to two Pais based cornmanes
 мrtibisiasm for the garne. Modeling and rencering was tasked to Animare. Which las pesvicusiy createn special efferts lor French telpvision


Voted Maraztine of the year
1997 industry wwards


[^0]:    Incoming for Dreameast should easily out-gun the PC version

[^1]:    1. Format: PC

    Publisher: Sierra Studios
    Develóper: Relle Ent.
    Release: November
    Origin: USA

[^2]:     put together by cal luminaries such as Chris Landruth, testify, But Mora can aleo be unod to ciente ingame characters

[^3]:    Format PC Publisher Activialon Deveioper Kallsto Price $£ 30$ Reiease: Out now

