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volume **two**

23

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Interstate '76 delivers all the thrills of *MechWarrior 2* with muscle cars and a pumping '70s funk soundtrack. The game's protagonists remain in full polygonal glory, even in the cut-scenes, to give gameplay a sense of continuity. Page 147

ONLINE GAMING: *Meridian 59* and *Steel Legions* bring gaming to the masses



Introducing the...

Next Generation Disc Edition

This month, for the first time, there are two **editions** of **Next Generation** — one with a CD-ROM **packed** with game previews and demos, and one without. Because you're reading this, we know that you've paid the extra three bucks for the **Disc Edition**. For this we **thank** and congratulate you — we think you made a smart choice.

In the **turbulent** and "boom/bust" nature of the game industry, information is power. It is on this premise that **Next Generation** was launched two years ago. Now, technology enables us to go a step further. Now we can not only tell you about **new** developments in **gaming** but let you see and play for yourself.

Of **course**, it's still early days for the **Disc Edition**. The disc itself is quite **unique** in that it is designed to work on both Apple Macintosh and IBM PC compatible machines — and this raises a few operational bumps. Certainly, you will have many questions that the simple ReadMe (.txt) file cannot answer, and so we invite you to e-mail us at **ugp_ng_discs**@imagine-inc.com, and be sure that we will respond in a reasonable amount of time.

We plan to **improve** the Disc Edition's scope and execution over the months ahead. And we believe that as an information resource, the **Disc Edition** will grow to be as **valuable** as the magazine itself. Also, now is probably the best time to **subscribe** to **Next Generation**; it's possible to save a **massive** **70% off** the cost of getting the **Disc Edition** at the newsstand. Find out how on **page 32**.

Thank you for your support of **Next Generation** so far — the future will be even better.

NEXT GENERATION

NEXT GENERATION

November 1996

Contact

Next Generation
Imagine Publishing, Inc.
150 North Hill Drive
Brisbane CA 94005
Phone 415. 468. 4684
(e-mail: ngonline@imagine-inc.com)
FAX 415. 468. 4686

If you have questions about subscription, please contact us.
Customer Service 415. 468. 4869
Customer Service fax 415. 656. 2486
(e-mail: subscribe@imagine-inc.com with "Next Generation" as the subject)

Editorial

Neil West editor-in-chief
Chris Charla he was here a minute ago...
Jeff Lundrigan reviews editor
Tom Russo assistant editor
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Colin Campbell editor, *ng online*
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Patrick Baggatta, Roger Burchill, Nicolas di Costanza, Dave Roberts, Steve Kent, Mike Salmon, Marcus Webb, Mike Wolf, Bernard Yee, George Zachary, Amy Tong, Doug Perry

Photography & Artistic Contributors
Cal Clapper, Harvey Gong, Emil Yanos, Nicola Hartley

Advertising

Doug Faust advertising manager
Aldo Ghiozzi account executive
Baldo Ghiozzi evil twin
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Production

Richard Lesovoy production director
Kim Hansen production coordinator

Imagine Publishing, Inc.

Tom Hale cyber "dude"
Kurt Kagle we have no idea who this is
Bruce Eldridge newsstand sales manager
Holly Klingel vp circulation
Jonathan Simpson-Bint publisher
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Chris Anderson president

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International Licensing Representative
Robert J. Abramson and Associates, Inc.
720 Post Road
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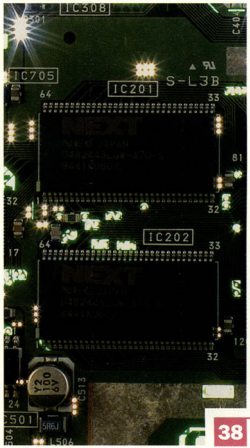
Due to court order, Next Generation can no longer hide funny things down here on the masthead. Instead, watch for new educational masthead supplements. Starting next month, *The Vole: Nature's Little Furnace*



6

Who's the real boss of Sony?

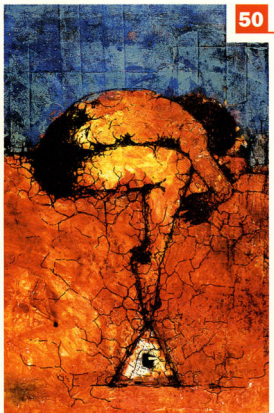
Next Generation speaks exclusively with Terry Tokunaka, the President of Sony Computer Entertainment Japan



38

Total recall

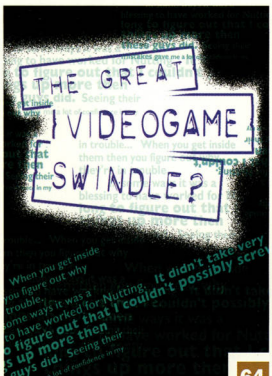
A console or a computer lives, thrives, and survives on its memory. So how come so little is known about it?



50

Artificial life

A new branch of science may fundamentally alter the way we play games. A **Next Generation** special report



64

The great videogame swindle

Just who is responsible for the birth of the videogame industry? **Next Generation** unveils the real story







News

"Sega City" readies for its online launch • Nintendo 64 ships in the U.S. — so why is Nintendo acting so scared? • Force feedback is coming • Games in development news



Alphas: 55 pages of new game previews

We smash our record breaking issue of last month with 29 previews including: A profile of Sega's new coin-ops, *StarCraft*, *Interstate '76*, *Resident Evil 2*, *Wave Race*, *POD*, and more



Finals: 22 new games reviewed

The holiday season is almost upon us, and that means software publishers the world over have your cash in their sites. They'll sell you crap, if they can. We're here to stop 'em

6 talking

Will Sony's real boss stand up?
Next Generation talks to Terry Tokunaka about why U.S. Sony bosses keep getting fired

14 breaking

News
All the latest information from the world of gaming:
22 **Arcadia** (coin-op news and updates)
24 **Generator** (word from the developers)
26 **Movers 'n' Shakers** (business news)
28 **Joyriding** (online gaming)

32 subscribing

Save cash and time
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38 ng hardware

Total recall
New memory technology will maximize the power of new processors — and that means better games

50 ng special

Artificial life
Computer game characters that are actually "alive!" The gaming world may never be the same again

64 reporting

The great videogame swindle
Next Generation delves into the controversy surrounding the dawn of the videogame industry

75 ng software

Alphas
Games in development around the world, featuring: *Game Day '97*, *Treasures of the Deep* (PlayStation); *Mass Destruction*, *Herc's Adventures* (Saturn); *Wave Race*, *Shadows of the Empire* (N64); *Titanic*, *Army Men* (PC); *Meridian 59* (online); *Jet Ski roundup* (arcade)

266 rating

Finals
Including: *Crash Bandicoot*, *Project Overkill* (PlayStation); *Bomberman*, *Virtua Fighter Kids* (Saturn); *Olympic Soccer*, *Olympic Summer Games* (3DO); *Z*, *Albion* (PC); *India Jones* (Mac); *NHL '97* (Genesis)

284 now hiring

Want to make the games that make the young girls cry? It starts here in our recruitment section

291 corresponding

Letters
Of course, this is your magazine (without readers, what are we?) so make sure your voice is heard

295 ending

Next month...
Next month, the battle of the consoles...

EVERYTHING ELSE TAKES A BACKSEAT.







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SCEA bosses MIA:
Steve Race. Olaf Olafsson. Marty Homlish. Jim Whims. Heading up Sony's U.S. PlayStation operation has quickly become the videogame industry's equivalent of being ordered by Darth Vader to take command of the Death Star. It's obvious that all the big PlayStation decisions are made in Japan, so...

Will the real boss of Sony please step forward?



Teruhisa "Terry" Tokunaka is the President of Sony Computer Entertainment Enterprises, the Japanese company that is in overall charge of PlayStation operations all over the world. Despite having divisions in both the U.S. and Europe, it is Japan that really pulls PlayStation's strings, and it is Japan that should be regarded as the nerve center for all of Sony's videogame plans.

While Sony Computer Entertainment America has suffered from management turmoil (they've got through four corporate figureheads already), Mr. Tokunaka has remained steady at the helm in Japan. **Next Generation** met with Mr. Tokunaka in SCEE's headquarters in Tokyo for the following world exclusive interview.

Big fish. Little pond?

NG: Most people believe that PlayStation has been a huge triumph. What do you think the main reasons are for its success?

Mr. Tokunaka: The software, basically and foremost. From the very first day, we received great support from the software developers in Japan, and then in the U.S. , and in Europe following closely behind. Today, PlayStation is very well supported by the software industry, and we have very good products coming out.

This is for two main reasons. Firstly, PlayStation's hardware format has been very well accepted by the creative industry, and this is as a direct result of the architecture design of our engineers — at launch, the PlayStation was so advanced that the creative people were excited. And second, we also made sure that the business model was easy to accept by the software developers' management.

Also, certainly since we announced that we have exceeded five million units manufactured, and since we have the largest cumulative installed base of the next generation game formats, it means that we can offer the most competitive cost of development. This makes us more attractive to the software developers, and so we benefit from somewhat of a positive spiral. And we intend to keep this position in the future.

NG: But so far, the 32-bit business hasn't come close to equaling the 16-bit business. There were far more Genesis and Super NESs sold than there have been Saturns or PlayStations.

Will 32-bit ever catch up? Or is it destined to be a smaller business than 16-bit was?

Mr. Tokunaka: [Smiles]. I'm certainly hoping that the 32-bit business will be bigger than the 16-bit business, and that we can expand the market.

NG: Trip Hawkins argues that 32-bit systems are destined to fail, and that it won't be until 64-bit kicks in that the game industry will reach the heights that it did with 16-bit.

Even Ken Kutaragi — the designer of PlayStation — has commented that the lifespan of dedicated game systems is falling. The 8-bit machines lasted eight years, and the 16-bit machines lasted five years. So is it reasonable to expect that the 32-bit generation — Saturn and PlayStation — will last an even shorter length of time, maybe even only three years?

Mr. Tokunaka: I don't know. At the same time, maybe I should mention that the difference between 16-bit and 32-bit — PlayStation versus Genesis or Super NES — is much bigger than the difference between 16-bit and the 8-bit formats. So I do not know if the trend of decreasing lifespans will continue.

Certainly there are new factors that determine the life of a platform, so maybe it is a mistake to look at the previous systems and draw any conclusions about what is happening today.

NG: As well as making the hardware exciting for game developers, to what extent did you make sure that PlayStation's development environment was easy to use?

Mr. Tokunaka: Our engineers tried to make sure that developing games for PlayStation was easier than it was for previous generations of videogame hardware. The emphasis was put on making it easy for content creators — and not technicians — to work with PlayStation. Sometimes, despite the opinion of the management, some creative people have developed PlayStation games because they liked working with the format, and then subsequently persuaded the management to go ahead.

NG: Sega is now claiming that while your "easy" development environment may have helped PlayStation at launch, it is now a handicap.

Sega says that Saturn's longer learning curve means that although at the start it was tougher to program the Saturn, at this stage of the war Saturn developers can continue to discover new tricks and hidden power, but that PlayStation development is maxed out. Is this true?

Mr. Tokunaka: I don't know. I am not an engineer, but I think this argument is misleading. The potential level of games is a function of the basic architecture and capabilities of the format, and in that respect, I think no one will argue that the PlayStation has less power than Saturn.

But much of the power of PlayStation's software comes from the libraries, and these are constantly being updated and have grown more and more sophisticated. We started with 400 libraries, now we have in excess of 1,500. This has been achieved in less than two years, and as a result it is very easy to produce better and better software for PlayStation.

NG: You say that at launch you were able to make PlayStation development attractive to





"management." Is this because you were using CD-ROMs instead of cartridges?

Mr. Tokunaka: Choosing CD-ROM is one of the most important decisions that we made. As I'm sure you understand, PlayStation could just as easily have been worked with masked ROM [cartridges]. The 3D engine and everything — the whole PlayStation format — is independent of the media. But for various reasons (including the economies for the consumer, the ease of the manufacturing, inventory control for the trade, and also the software publishers) — we deduced that CD-ROM would be the best media for PlayStation.

As a result, in Japan we have been able to successfully reduce the software price very substantially, compared to the cartridge days. So it was very attractive for consumers who are used to purchasing $100 software to all of a sudden have a 40% reduction.

NG: If you could launch PlayStation again, would you do anything differently?

Mr. Tokunaka: No, I don't think so. [Smiles].

Steve, Marty, Jim... who's next?

NG: Sony Computer Entertainment of America has done very well in terms of dominating the 32-bit market in the US. But there has been a surprising amount of managerial turmoil. First there was Steve Race, then Olaf Olafsson, then Marty Homlish, then there was Jim Whims.

Why all this instability?

Mr. Tokunaka: [Pause]. I don't know. [Smiles]. But all of these changes are to ensure that our basic PlayStation strategy is exercised in all of the important markets.

In Japan we make very quick and sometimes very drastic decisions as to how we want to do business. And we expect a similar decision turnaround in other markets. We use what we hear from our foreign subsidiaries in terms of market information we make decisions on a global basis. I think that the new management team in the US will be best suited for this purpose.

"In Japan we make very quick and sometimes very drastic decisions about how we do business. And we expect a similar decision turnaround in other markets"

NG: What are Sony's bigger goals? For example, Matsushita hasn't disguised the fact that it is actively working on a 64-bit game machine that will eventually incorporate both online capabilities and DVD. Surely a large consumer electronics company such as Sony must be working on a similar strategy?

Mr. Tokunaka: I'm not prepared to comment on the future. But what I can tell you is that engineers are always thinking forward, and they always dream about stuff that they may want to accomplish in the future. They are always thinking about new things and are never satisfied with the current technology — and that's why there are always technological advances.

The same is true in every market, in every industry. But I'm not prepared to discuss what we are doing. And you must remember that if change happens too quickly, it's not good for anybody.

NG: You say that one of your goals is to expand the videogame business beyond the traditional teenage boy audience. Do you feel you have been successful at doing this?

Mr. Tokunaka: Not yet.

NG: So how will you manage to increase the number of women who play games?

Mr. Tokunaka: This is what I am testing every day, with my wife! [Laughs].

NG: So does she like many PlayStation games?

Mr. Tokunaka: There seem to be some differences between what I like and she likes, and what my son likes, and what my daughter likes. It all depends on the software, and maybe there should be more women creators who will design the games that they want to play. I think these days are coming, and we will be ready to help whichever women step forward to do this.

Here comes Nintendo 64

NG: To what extent do you see Nintendo 64 as a threat to your business, and what preparations did you take for its launch?

Mr. Tokunaka: Our sales have actually increased since the introduction of Nintendo 64, so in some ways it can be seen as helping us. Maybe it was because of the increased total amount of marketing effort, so people who have not seen the videogame market for a long time are now coming again, and many of them are choosing PlayStation.

NG: Five years ago, the Nintendo brand name was very powerful. But after the hard-fought 16-bit war with Sega and the disastrous Virtual Boy, do you think that Nintendo is as powerful as it has been in the past?

Mr. Tokunaka: Nintendo is very powerful and will continue to be powerful.

NG: In Japan, Nintendo sold 300,000 Nintendo 64s in just the first week, but since then, sales have fallen. Do you see this decline continuing?

Mr. Tokunaka: It is a fact, there has been a continued decline in Nintendo 64 sales.

NG: Do you think that Nintendo 64 will ever overtake PlayStation sales?

Mr. Tokunaka: [Pause]. I don't know. We are very confident about PlayStation, so it's difficult to imagine how we can sell lesser quantities compared to N64.

NG: What are Nintendo 64's weaknesses?

Mr. Tokunaka: The software price and the cost of hardware. Also, because of the limitations of the memory capabilities — because it uses

cartridges — there are some things that the PlayStation can do that the Nintendo 64 can't.

Also, because of the cartridges, it's a lot more expensive for game developers to make games for Nintendo 64. It also takes a long time (because all the cartridges have to be manufactured by Nintendo), and it's more expensive for retailers, which means that it's more expensive for consumers as well.

NG: A lot of people consider the battle between PlayStation and Nintendo 64 as a battle between an extensive library of great games versus *Mario 64* — maybe the best game of all time. Do you see it this way? And if so, who will win?

Mr. Tokunaka: In terms of the number of software titles, *Tekken 2* in Japan has exceeded one million units in Japan already, and there are many titles that have exceeded 500,000 units. I don't know how many units Nintendo has sold of *Mario 64* , but we have a large variety of software products that are selling very well.

I think having a broad range of games is very important. From the simple consumer standpoint, when buying a videogame system they want to play good games, and they want a good variety of games. This is the main reason they purchase the system — and so PlayStation's broad library has to be a big advantage.

NG: So far, PlayStation has appealed to an older audience than the 16-bit consoles did. Does this mean that as Nintendo continues to market to its traditional teenage audience, that the games market will be split by age, with Sony and Sega taking the adults and Nintendo taking the kids?

Mr. Tokunaka: I don't think so. We certainly started with a higher demographic about one-and-a-half years ago, but we are seeing a continuous decline in the age of our customers.

NG: Is this worldwide?

Mr. Tokunaka: Yes, but I follow the Japanese statistics most closely. When we changed the price to ¥24,800 [$250] we saw a dramatic change in the demographic. So maybe the reason that we started off with an older audience was because of

"PlayStation sales have actually increased since the launch of Nintendo 64, so in some ways it can be seen as having helped us"

price. And we have been telling our licensees that we are seeing a very dramatic change in our customers. So as we are proving this, the software companies are developing the sort of games that are acceptable to a younger audience, and we are trying to create these type of games ourselves.

Our current price is ¥19,800 [$200] and this makes us even more attractive to much younger generations. This price, coupled with new software, creates a combination that appeals to old and young generations. We want PlayStation to be enjoyed by everybody. This is my dream.

NG: So you won't concede a draw by giving Nintendo the young gamers and you taking the older gamers?

Mr. Tokunaka: No, I'm not confining ourselves to one particular market.

NG: Do you see 64DD, Nintendo's proposed add-on, as a solution to Nintendo's cartridge problems, and hence a threat to PlayStation?

Mr. Tokunaka: I haven't seen it, so I can't comment on it.



Falling game prices

NG: You have recently introduced a range of budget titles in Japan. This is a powerful weapon with which to fight Nintendo (because they can't match your budget prices).

Will we see more budget games released?

Mr. Tokunaka: This is something that we have to talk to licensees about concerning individual titles, but there will be more released. By the end of the year there will be at least 20 budget titles.

For the software developers, once they have recouped their original development cost and the installed base of PlayStation's has grown with new users coming in, then they are willing to reissue the same title at a lower price — and make additional profit. This is possible because CD-ROMs are not expensive to manufacture. This would not be possible on Nintendo 64.

NG: Is there not a danger that by releasing a line of budget games, consumers will be less inclined to spend $60 on full price games?

Mr. Tokunaka: I don't think so. In the audio CD market, some of the old music is sold at the discount rate — and there are also compilations

— and it has no effect on the full price market. Namco is selling the original *Tekken* at a discount price and is still selling many copies of *Tekken 2*.

The battle with Sega

NG: In Japan, the battle between PlayStation and Saturn has been very close. What is your understanding of who is winning this war?

Mr. Tokunaka: It's very close. Maybe there are some times when one pulls ahead, but I think we are very close to each other in terms of the aggregate number of units sold. Recently, however, since the launch of Nintendo 64, we have been outselling Sega by a very large margin — and hopefully this will continue.

NG: Have you ever spoken to Sega, offering them a deal to publish their games on PlayStation?

Mr. Tokunaka: I don't think so. They haven't asked us. [Smiles].

NG: If they asked you, would you give them one?

Mr. Tokunaka: Possibly. I don't know. I don't know if it would be of any interest to them.

NG: Right now, Sega is losing a lot of money, and a lot of people are speculating that Sega may quit the hardware business and instead focus on doing what they do best, which is make great software.

Mr. Tokunaka: I don't like to speculate on the business of other companies. I only discuss my own strategy.

NG: OK. You must be very pleased with the deal with SquareSoft to bring *Final Fantasy 7*, *Tobal No.1*, and all of Square's other top games to PlayStation.

Mr. Tokunaka: Yes, obviously. I am very appreciative of the fact that they chose us because their creativity could be best expressed on the PlayStation format, on CD-ROM. They could not do *Final Fantasy 7* on cartridge, and another advantage for them is that they are able to include a free demo CD of *Final Fantasy 7* with *Tobal No.1*.

"I don't believe that Psygnosis producing games for Saturn will hurt PlayStation"

NG: Could PlayStation have gotten to where it is today without the support of Namco?

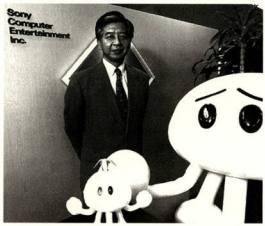
Mr. Tokunaka: We are very close to Namco. They are a key software developer for PlayStation. They are a very powerful ally in this business and I think that both Sony and Namco have benefited from the very, very strong relationship we have.

NG: Perhaps Sony's other most powerful ally — certainly in the U.S. and in Europe — has been Psygnosis. It must be very disappointing for you that are no longer exclusively working for PlayStation. Is this is a big problem?

Mr. Tokunaka: No. Psygnosis will continue to develop good PlayStation games.

NG: Does it not damage PlayStation that Psygnosis is also developing games for Saturn?

Mr. Tokunaka: I don't think so. I don't know



what quantities they are selling on Saturn, but I saw the Saturn version of *WipeOut* — and it was OK, but even I could tell the difference between it and the PlayStation version [Smiles].

So no, I don't believe that the fact that they are producing games for Saturn will hurt PlayStation.

The future of 32-bit

NG: Many people argue that the biggest threat to Sony, Nintendo, and Sega — and the reason that 32-bit sales have been smaller than 16-bit — is that the PC has taken over as the game-playing platform of choice on a global level. Do you see the PC replacing dedicated game platforms?

Mr. Tokunaka: It is hard to believe that this will happen because technology continues to change.

I remember this kind of argument from ten years ago when the first game machines were launched. There was a similar argument from the computer industry, saying that because a computer can do so many things other than playing games, the dedicated game machines would not survive. But this did not happen.

Computing power is scarce, and will continue to be so, and so there will always be a market for a low-priced choice. And because engineers are always finding new ways to provide powerful technology cheaper, they will always provide this choice. And there will always be a market for concentrated, specialized computing power — like a games machine — as well as a market for more expensive, more open, flexible computing power like the PC. This is my feeling.

NG: Historically, the game market has settled into a duopoly of two main formats battling it out for supremacy. Can PlayStation, Saturn, and Nintendo 64 all survive, or will one have to fail?

Mr. Tokunaka: I don't know, some people argue that there will be only two. But I simply don't know. I can just hope that PlayStation will continue to do well throughout the rest of this year and into next year, and then we will see how Nintendo 64 is accepted by the consumers.

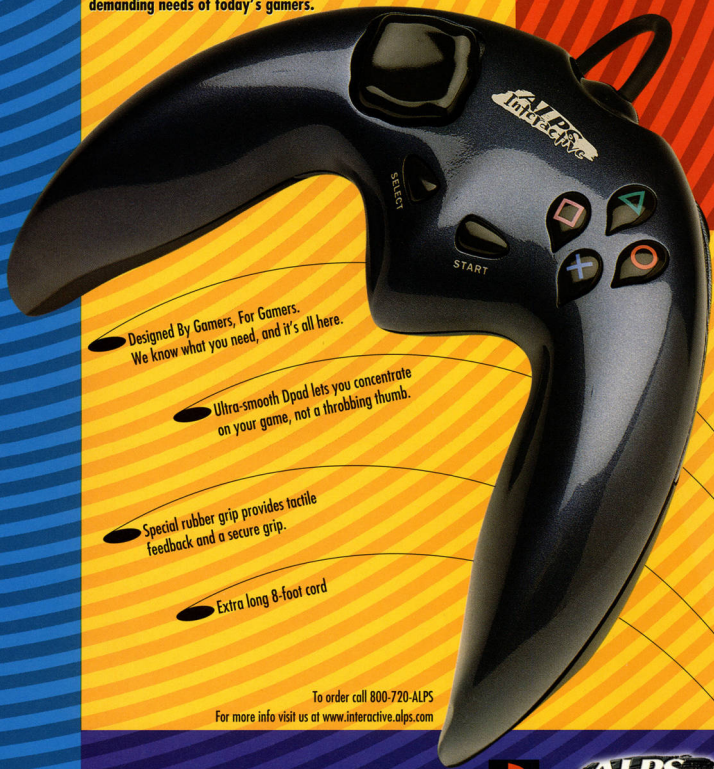
If next year there are three of us left in the market, then so be it.

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Nintendo 64: Can Nintendo succeed with just two games? No one knows/**p.14** • **In the Studio:** Games in development/**p.17** • **"Sega City":** Sega's NetLink peripheral is set for U.S. launch. But where are the games?/**p.19** • **Arcadia:** Coin-op News/**p.22** • **Generator:** Force Feedback/**p.24** • **Movers 'n' Shakers:** Business News/**p.26**



Videogame news from Japan, Europe, and the U.S.

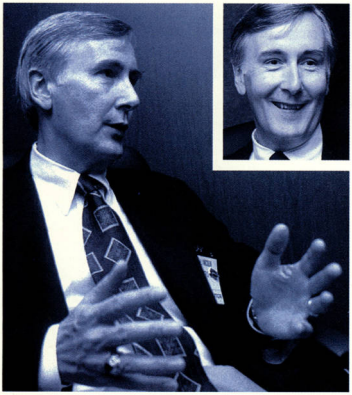
Nintendo's leap into the **unknown**

Are two great games enough? No one knows. Nintendo 64's U.S. launch on September 29 asks gamers to place their bets...



Imagine for a minute that you're Howard Lincoln, the chairman of Nintendo of America. Four years ago your company — known in the industry as the 900-pound gorilla (partly in homage to your *Donkey Kong* heritage, but more because of the way you've bullied competitors and partners alike) — was badly humbled by Sega, which used gutsy advertising (who can forget the peeing dog?) to make its products seem hipper than yours. They cleaned your clock in the process. In fact, you were elevated to the top U.S. position because the chairman of Nintendo in Japan, Hiroshi Yamauchi, booted his own son-in-law, Minoru Arakawa, out of the number one slot as a result of those plummeting sales.

You tried to take the moral high ground to cotton to a nation consumed with family values and fears about violence by releasing a bloodless version of *Mortal Kombat* and taking swipes at *Night Trap*. You got trounced yet again by Sega, which delivered all the blood; you saw *Night Trap* sell a half million units — this from a crappy FMV title, whose creators started publicly thanking their "wonderful PR department at Nintendo" for most of the sales. Although you played a brilliant catch-up game with *Donkey Kong Country*, you followed that with the introduction of the disastrous Virtual Boy.



Nintendo of America's Howard Lincoln, faces the bizarre situation of the delayed Nintendo 64 facing its toughest criticism as it finally launches

Now, you're just about to introduce Nintendo 64 in the U.S. — a year late. Reports in the Japanese press claim that just weeks after the product's Japanese launch, it's being turned into sushi by the Sony Playstation — which sends your stock plummeting on the Tokyo exchange, until trading is actually halted. One of your best hardware designers, Gumpei Yokoi, has just walked out the door. You've got Sega about to deploy an enormous ad campaign touting *Nights* for Saturn, as its NetLink readies for an aggressive launch. A guy in a *Crash*

"If you had to paint the bleakest possible picture, you could. Then I'd look at you with a big smile, and I'd say '*Mario 64*"

Howard Lincoln, Nintendo of America



Can Nintendo 64 triumph in the U.S.? Nintendo is confident

STOP press

No Nintendo 64's for Europe — yet

U.K. and European gamers are currently looking enviously over the Atlantic, as Nintendo has announced that Nintendo 64 will not launch outside of Europe and the U.S. this side of Christmas.

Rumors persist that Germany may end up with 50,000 Nintendo 64's, but the rest of Europe will have to go without.

On-line gaming, friend or foe?

While the online gaming boom seems to be great news for gamers, one group who isn't happy about it is the store owners.

A new report from Datamonitor predicts that online gaming could take 20% of the entire gaming business within four years — and that means less games being sold at stores.

$149 PlayStation?

Rumors persist that following Nintendo 64's dip to $199 from $249, Sony will react by dropping the price of PlayStation from $199 to $149.

Although this move doesn't seem to sit with Sony Japan's desire to keep prices high, it would probably be enough to ensure — and perhaps even extend — Sony's lead in the next generation videogame race.

Psygnosis bidding "starts at $300m"

Psygnosis, the company that Sony bought for less than $30m two years ago, is now enjoying watching the bidding for its impending sale reach numbers ten time what it paid...

Bandicoot costume is laughing at you outside your own corporate headquarters. Sony is boasting that it'll have 127 Playstation titles on shelves by Christmas. Both your competitors are at sub-$200 price points, and they play software from $49 CDs. You've only got two games for launch: *Super Mario 64* and *Pilotwings 64*; each of them $69 cartridges.

An ordinary mortal in this situation might say: "I think it's time for early retirement." Especially in an industry where people go down as if they're pop-up targets in a new level of *Doom*: Sega CEO Tom Kalinske and product development VP Joe Miller took bullets in the head as the result of disappointing Saturn sales; then there were Sony US co-operating executives Jim Whims and Angelo Pezzani, who insisted to their proud Japanese parent company that even mighty Sony needed to be value-priced to gain market share. So successful was the Playstation launch that their narrow-minded superiors decided the Sony brand had obviously merited a premium price rather than a discount price, and gave the two theirs.

But read Howard Lincoln's lips: "If you had to paint the bleakest possible picture," says Nintendo's man in the hot seat, in an exclusive interview with **Next Generation**, "then that would be the picture you just painted. And then I'd look at you with a big smile, and I'd say three words: '*Super Mario 64*'."

But is he right? Is Howard Lincoln's confidence justified? The fact is that no one knows — yet.

The launch of Nintendo 64

on September 29th (actually, the first U.S. units went on sale three days earlier on the 26th — having shipped from Nintendo's distribution HQ in South Bend, Indiana on the 25th), was a leap into the unknown.

No one in the game industry knows for sure how damaging it is for Nintendo that only two games are available at launch, but then know one has dealt with a game like *Super Mario 64* before. No one knows how significant it will be to consumers that Nintendo 64 is a 64-bit machine, whereas its competitors are "only" 32-bit. No one knows for sure whether cartridges will be an advantage or a handicap. In short, gamers are in the strange position of at last having all the facts and the hardware in their hands — but being none the wiser as to just how big it's going to be.

The shocking truth is that no one at Nintendo knows either.

Certainly, the history of the computer and games industry has been defined by so-called killer apps that have pushed the sales of hardware: *VisiCalc* for the Apple II, *Lotus 123* for the IBM PC; *Pong* for the Atari VCS; the original *Mario* for the NES; *Sonic* for Genesis. Even we at **Next Generation** two months ago used the five words "greatest videogame of all time" in apposition with the three "*Super Mario 64*." But can one game do it by itself?



Nintendo 64 launched in Japan on June 23. Sales briskly reached 800,000, but then quickly slowed

And if *SM64* is indeed the game that makes all others pale and stale by comparison, why does Nintendo seem to be running scared? Why did the company in August decide to lower N64's price by $50 to $199? This after the company had been saying for months that it could get "only" 500,000 units in time for Christmas, and warning everyone to reserve their units in advance. The laws of supply and demand generally indicate that you don't reduce price when demand is expected to exceed supply. Is Lincoln in fact worried that not being at price-point parity with Playstation and Saturn is corporate hara-kiri? Have more N64 units miraculously materialized? Is Nintendo actually *scared*?

"I think we

could have raised the retail price from $249 to $300 and still sell it out," says Lincoln. "But I don't think that it would be in our best interest, or treating the consumer in a very credible way. We dropped the price because we know that ultimately, the $249 price is going to come down, and I don't feel comfortable with the idea of gouging the first five hundred or so thousand game players who pay full price." Certainly, this is an uncharacteristically altruistic sentiment for the chairman of the game industry's

Who is it?

A former managing editor of Next Generation, he has left the magazine to head up a new WWW-site dedicated to Nintendo 64. The site promises to deliver daily reviews, news, and previews

breaking

"There is no basis for these rumors that Nintendo 64 has fallen off the wall. We are very, very pleased with what is going on in Japan"

Howard Lincoln, Nintendo of America

It is...

Douglass Perry. The site, *N64.com*, is the premiere site of the new Imagine Games Network, and can be found at: http://n64.com. All at Next Generation wish both Doug and *N64.com* well

900 pound gorilla. "But also," Lincoln adds, "this will put the maximum competitive pressure on Sony and Sega." That's more like it. But why — if Nintendo 64 is doing as well in Japan as Nintendo claims — the sudden need for extra pressure on Sony and Sega?

Of course, there has been speculation that Nintendo lowered its price after a Japanese newspaper reported that NU64 sales had taken a precipitous drop (especially vis-à-vis Sony) after its first five weeks of sales. And if Nintendo 64 really is under-achieving in Japan, it not only casts a dark cloud over its performance potential in the U.S., but also it frees up more hardware units for the U.S. market — and these two factors would probably lead to a $50 price drop.

But this theory "is nonsense," according to Lincoln. "The pricing decision was made long before these articles even appeared. A Japanese newspaper wrote an article that was absolutely on its face flat false, but as you might expect, a lot of damage was done in the process."

But there's certainly no denying that sales of Nintendo 64 have slowed dramatically since launch.

"There is no basis for these rumors that somehow Nintendo 64 has fallen off the wall," Lincoln maintains. "The fact of the matter is that we are very, very pleased with what is going on in Japan. When you can sell through a million hardware units in the middle of a heat-wave in the summer in Japan in the space of five weeks, you gotta admit, that's not bad."

And the slow down is sales is no more dramatic than Nintendo had anticipated? "No," Lincoln maintains. "Absolutely not." So why the need to put more pressure on Sega and Sony by dropping Nintendo 64's price? "First of all," he says, "we did it because we have been the leader in the videogame business for many years in the U.S., and we want to maintain that leadership. Second, by going to the $199 price point now, it really does enable more people to get into the category, and more people to play *Super Mario 64*."

But Nintendo was supposedly facing a sell-out situation anyway. By dropping the price to $199, no more people are able to buy one. Looking for clues within Nintendo itself proves fruitless. On the departure of Gumpei Yokoi, the designer of the original NES, Lincoln says, "it's an absolutely coincidental happening. I have known Mr. Yokoi for fifteen years, and he's a very good friend. I have known for some time that he wanted to go out on his own and develop games, and I know that while we were disappointed to see him leave, he is going to be developing games and hardware for Nintendo on an independent basis."

Perhaps it is the lack of games that forced Nintendo to reconsider its position. The games business has always been driven by software. Nobody wants to buy an electric drill; what they want is a hole in the wall. And what you get with Nintendo 64, at least out of the chute, is two pieces of software. To some that would be $170 per hole, which is not what most consumers would call value pricing.

Lincoln contends that this is merely a short-term issue, and that price-per-hole, so to speak, will decrease rapidly over time. "If Mr. Yamauchi is known for anything," says Lincoln, "it is his feeling about how the videogame industry can only survive if quality games are made. I don't believe that it is possible to make quality games when you're releasing 127 games on Playstation. But Mr.

Dream Team Update

Nintendo has released an up to the minute list of companies who have been granted "Dream Team" member status. So, just for the record...

Hardware:
- Silicon Graphics
- Rambus

Development Tool Partners:
- Alias/Wavefront
- Multigen
- Software Creations
- Nichimen Graphics
- Paradigm Simulations.

Game Developers:
- Angel Studios
- DMA Design Ltd.
- H20 Entertainment
- LucasArts
- Paradigm Simulations
- Rare
- Software Creations

Game Publishers
- Acclaim (*Turok: Dinosaur Hunter*)
- BMG (*Silicon Valley*)
- EA (*FIFA Soccer*)
- GT Interactive (*Ultra Combat*)
- Gametek (*Robotech: Crystal Dreams*)
- Mindscape (TBA)
- Ocean (*Mission Impossible*)
- Time Warner/Williams (*Wayne Gretzky Hockey*)
- Virgin (*Freak Boy*)
- Williams (*Doom 64, NBA Hangtime, Mortal Kombat Trilogy, War Gods, Robotron X*)



If it were any other company than Nintendo, and any other game than *Super Mario 64* (right), then the launch of Nintendo 64 would have to be regarded as a complete disaster. But as it stands, it is difficult to argue with Howard Lincoln's confidence — at least, until Sega and Sony respond



The real Mr. Yamauchi

Andrew Pollack of the New York Times reported on Nintendo Corporate Limited's Chairman, the fearsome Mr. Yamauchi, and uncovered the following snippets.

• Mr. Yamauchi does not pursue any hobbies except the Japanese strategy board game Go. He is a master.

• All Nintendo employees are invited on a company trip every year. Much fun is had at theme and amusement parks. Mr. Yamauchi never attends.

• Unlike many entrepreneurs, he does not participate in any civic associations. To those who criticize his low profile among the community at large he answers: "I think I am involved in community service sufficiently. I'm the biggest individual taxpayer in Kyoto and Nintendo is the biggest taxpayer over all."

• Howard Lincoln has this to say on his boss: "He's a tough old bird. He doesn't think about anything except Nintendo."

• When unhappy with an employee's performance he calls them "dasai" which, roughly translated, means "lamer."

• Technical and creative staff say he never unduly interferes in their work.

• When asked to take over Nintendo at age 21, Yamauchi's demanded his cousin be fired first.

• Now aged 68, he says he wants to retire but won't because, "I don't think there is a good successor at this time."

Yamauchi put his money where his mouth was, and he said: 'I'm serious about this quality issue. Let's take the time to make certain that these other launch titles are as good as they possibly can be'."

Admirable sentiments, certainly. But we've all heard it before, and after a year delay waiting for software, there are still only two games. Surely this has to be considered a disaster. "I can tell you that there is certainly some disappointment that there isn't a third or a fourth or a fifth software title," Lincoln concedes. "But that is going to be changed within a matter of weeks. When you see *Wave Race* and you see *Shadows of the Empire* and you see *Killer Instinct 2*, I think you're going to say to yourself, 'They did it again'."

But even if Nintendo is able to produce the dozen titles it claims will be available for Christmas, it may be squeezed by market forces beyond its control: the cost of manufacturing cartridges for the system dictates that titles sell for $70-80 at retail. Sony and Sega can drive retail price-points down significantly by reducing licensing fees (currently about $7 per game). A CD itself in a package costs just $3 to manufacture, versus about $30 for an N64 cart. Many in the games industry have predicted a massive software price war this Christmas — and this is a battle that even the mighty Nintendo will have a hard time winning.

Ironically, Nintendo has painted itself into this corner because the vast majority of the company's profits have traditionally come from manufacturing cartridges for third parties, and it may be very difficult for Nintendo to change this corporate mentality. 64DD, the promised "bulky drive" peripheral is yet another proprietary device, and it will be difficult for the price of its media to approach the sixty cent cost of pressing a CD. But then again, it's rumored that it will come bundled with a version of *Zelda* for a price of $99 that just might make **Next Generation** eat its words regarding *Super Mario 64*. And how many of those Playstation and Saturn titles will earn five stars in these pages?

"Let's face it," says Lincoln, "Sony and Sega, these guys put on their shoes one at a time. They take *Super Mario 64* home and they're playing it. You know what I think they're saying to themselves? They're saying: 'God Damn it! I wish to hell our companies had made a product like that'."

And despite all of Nintendo 64's problems — he's probably right.

In the studio

Games in development around the world



LucasArts is set to release another addition to its *Secret of Monkey Island*, comedy graphic adventure series. The first two games were blockbusters on the PC and the Amiga throughout Europe, although they never matched this level of success in the U.S. LucasArts hopes, however, that *The Curse of Monkey Island* may buck this trend when it is released in the U.S. in, "the first half of 1997."

According to reports in Japan, Namco is to publish games for the Nintendo 64. Apparently, both companies hope that *Rave Racer* will replace the three-year-old *Cruis'n USA* as Nintendo 64's flagship driving game. Quite how enthusiastic Sony is about this news remains unclear at this time...

EA has inked a deal with Blizzard for the exclusive worldwide rights to develop, publish and distribute console versions of *WarCraft II* and *Diablo*. "Our agreement with Blizzard exemplifies our commitment to seek out and partner with industry leaders and top creative talent," predictably droned EA's CEO Larry Probst.

Still, the games should be exciting.

Heart of Darkness has been delayed once again. Amazing Studios' epic is best known for its stunning visuals and has been in development for nearly four years. It was set to appear on PC and Saturn late this year. However, Virgin — the game's publishers — has stated that it definitely won't be ready until late 1997.

Konami is to launch a "top-shelf" version of its hit shooter *Parodius*. *Sexy Parodius* will essentially be the same as the original side-ways scrolling *Parodius* (which itself was a spoof of *Gradius*) except with graphics appropriate to such a title. It will only be available in Japan.



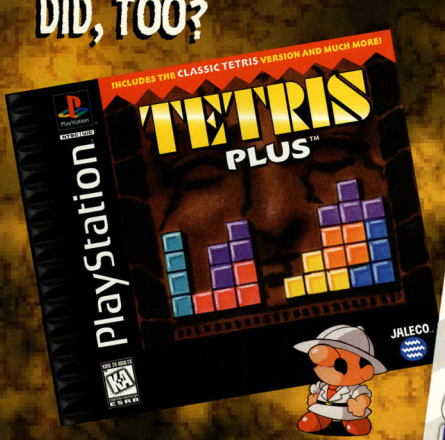
Mindscape has confirmed that its planned Nintendo 64 title, *Monster Dunk* has been canned. Sources at Mindscape say that the development team "just wasn't behind the concept" (whatever that might mean). Suffice to say that Mindscape has decided to cease development on the project. It has, however, confirmed that a new Nintendo 64 title will begin development shortly.

Team 17, the small company responsible for *Worms*, is working on *Project X2* for PlayStation, a sequel to its Amiga shooter from a few years ago. While the original *Project X* didn't enjoy massive success in the U.S., Europeans were delirious over the fast paced 16-bit shooter — and will probably go a bundle on this one, too.



In a move which will shock many in the game industry, Sega has canned development of Saturn's *Sonic X-treme*. The game, which was due to be released late this year, has been "indefinitely postponed." Evidently, the title, which was being developed in the U.S., was inspected by executives at Sega who did not feel that it would stand up effectively in the hostile 32-bit market. Clearly, Sega's reputation would have taken a severe blow if Sonic X-treme had been released and had not compared well with *Mario 64* or *Crash Bandicoot*. Clearly, the game wasn't going to.

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"Sega City" nears online launch

Saturn's NetLink peripheral readies for launch. But so far, the one thing missing is the games...

Sega's most sophisticated peripheral to date, the Saturn NetLink, is falling into place for an October 30 launch. At press time, the pack-in browser developed by PlanetWeb was operational, and the NetLink's homepage, code named "Sega City" was well under construction.











With a funky cityscape design, Sega City will offer special interest areas and services for NetLink user

According to Sega spokesperson Dan Stevens, Sega City was designed in cooperation with Ark Interface, and will offer "an AOL-like community, with services such as being able to purchase concert tickets online." More importantly for gamers, it will eventually provide the interface for online Saturn gaming. Stevens was vague on a date for U.S. NetLink gaming, saying only that it would be available "shortly after" the NetLink launches, and that Sega plans to make an announcement regarding the use of XBand technology.

NetLink gaming is already up and running in Japan, so there shouldn't be too many problems bringing a similar gaming service to the U.S. Until that time, Sega City users can browse the WWW, as well as checking out hobbyist areas, ranging in scope from books to fashion. With over 100 participating companies, the city offers a diverse array of sites, including Crayola, Vans footwear, *Car and Driver* magazine, and MCA music.

While Sega may hope the NetLink will boost Saturn's appeal, Sony and Nintendo are still holding back any plans to introduce a similar modem-based peripheral.

"We're focused on developing the best games for our platform right now," says Jeff Fox, Sony's Senior Director of Public Relations and Promotions. "The R&D department is constantly exploring various advances in technology, and while an Internet browser is technically possible at this time, we don't have a business plan for one."

To access the WWW from Sega City, NetLink users will employ a browser designed for Sega by PlanetWeb. Oddly enough, this product was not nailed down as the pack-in browser until after the NetLink debuted at E3, where demos were given using Japan's Aplix browser.

According to Ken Soohoo, founder of PlanetWeb and the former VP of Engineering at Digital Pictures, his browser was written in C language by a crew of game programmers, and subsequently runs on a lean 570K as opposed to a PC browser which averages about 6MB. The initial browser supports HTML 2.0 with most 3.0 extensions, and loads via the CD drive. While Sega would not announce how many units it plans to ship by year's end, Soohoo projected 100,000 copies of his browser would be sold during the holiday season.



Surfing the Web NetLink-style

The browser cleanly reproduces WWW images on a television screen, with only some fuzzing of bright reds. Using what Soohoo called "anti-aliased fonts," 60 characters of text per line are cleanly reconstructed with minimal flicker. Because of the Saturn's lack of RAM, the browser only downloads one page at a time, but it does so quickly. Without a hard drive cache, however, repeated visits to the same site are naturally more time-consuming. To keep up with evolving WWW technology, PlanetWeb subscribers will receive browser CD upgrades.

Let's hope Sega brings the gaming features online ASAP.

Crib sheet

Stuff every gamer should know. This month, gaming's bleakest hour:

No. 5 *Myst*

So what is it? Yawn. One of the top selling "games" of all time. **You don't sound impressed.** Nope. **But it's so beautiful.** Who cares? Every screen is static. You might as well watch a slide show. Pretty? Yes. Boring? Totally. **Boring? There's so much to do.** No, there isn't. Lots of levers and buttons hardly counts as interaction. The puzzles are based exclusively on trial and error: the epitome of poor game design. **But it sold 7 million copies. That must mean something.** Not really. Its technical simplicity meant it was one of the first CD products that reliably worked. Many early "multimedia" PCs had it packed in, and early buyers, few of whom were gamers, had little else to show off with. *Myst* got lucky. **That can't be the only reason.** True. The designers were good at creating a facade of mystical nonsense: you weren't stuck because the game was bad, but because you just didn't "get it." **How do you know it's nonsense?** Simple: the ending isn't an ending, it just cynically sets up a sequel — which hasn't materialized because they're busy with book and movie deals. Real gamers. **Why the grudge?** *Myst* led many publishers to believe that pretty screens meant more than pace and logic. We're still recovering.



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All the latest arcade and coin-op news

Street Fighter 3 In December

Reliable sources in Japan say that Capcom will launch the long-awaited *Street Fighter 3* in December, at least to the Japanese market. Look for it by February of '97 (at the latest) in the U.S.

SFIII will be the second game to utilize the new Capcom System III (CPS-III) hardware, which will reportedly consist of a main board containing a 32-bit CPU and flush memory, plus a software case with CD-ROM player and a sub-CPU.

Reliable sources say that *SF3* and other early games on System III will not offer advanced CG (computer graphics) images along the lines of the best Sony PlayStation games, such as Capcom's own *Star Gladiator*. Capcom tried to incorporate CG but just wasn't satisfied with the quality. So, although CPS-III can process four times as much data per second as its predecessor, with 16 times as many colors on screen at once, they'll stick with more conventional-type graphics "until CG quality improves."

A game called *Wizards* will be the initial release for the new system.

WMS To Use "**NANI**"; The Modem Race Is On!

Chicago-based Williams/Bally-Midway, makers of the *Mortal Kombat* series and other top arcade hits, has confirmed that it will use modem-based technology from the National Amusement Network, Inc. (NANI) in a new arcade video game this fall. NANI President Gene Urso says the latest version of its technology incorporates some Microsoft product and has the capability to download games from the factory to hardware in arcades, via phone lines.

In addition, Williams is gearing up to expand the ongoing field test of its own proprietary network system, called the "Williams Action Video Entertainment Network" or "Wavenet." The WMS network has capabilities for downloading and for remote interactive gameplay (you can enter an arcade in New York and compete in realtime against a pal in California, for example).

Meanwhile, Incredible Technologies (another Chicago videogame factory) is blazing ahead with production shipments of its modem-equipped game *Peter Jacobsen's Golden Tee 3D Golf*. I.T. has been running a series of very successful cash tournaments across several states.

Besides WMS, I.T. and NANI, we have heard official confirmations in recent months from Sega and Konami that these factories are working on similar projects for downloading, networked tournaments and/or remote interactive gameplay. No doubt some other "majors" are doing likewise; they just haven't admitted it publically — yet.

Microsoft Seeks "Coin-op Revolution"

Microsoft is committed to getting the arcade videogame industry to adopt an open, Windows PC-based standard over the course of five years. By fall — perhaps even at this month's AMOA International Expo — Microsoft is expected to announce its partners in the effort and more specific plans. Sources tell us that up to 30 home videogame creators may begin using Microsoft's Windows NT client/server workstation operating system to offer advanced games to arcades.

Bold **Internet/Coin-op** ventures planned

A growing number of companies are offering Internet-based videogame products, or planning to do so soon.

The CyberCade universal videogame platform uses the Internet to deliver remote interactive, multi-player games. Modems, PC architecture and Microsoft Windows 95 are included in a stainless steel cabinet with bill acceptor and CD player. The firm also makes an Internet product to vend business services. Machines were created by Public Access International Corp.

And, Nintendo is joining forces with Microsoft Japan and with the giant Japanese trading company Nomura to create an Internet information and entertainment service for the home, using PCs and special modems to receive digital satellite broadcasts (no phone line connections) by June 1997. Satellite Digital Audio Broadcasting will be part of the venture.

Sneak Peak at **Steven Spielberg**'s Arcade

As reported in earlier editions of this column, Sega GameWorks is designing a new type of arcade with heavy input from partner Steven Spielberg. The first one, slated to open in or around Seattle on February 1, 1997, will have different rooms, each geared to a different demographic slice, with a variety of equipment, theming and even different music in each room to appeal to the broadest possible range of customers. Equipment will range from pool tables to advanced video simulators, virtual reality and sitdown videogame versions of theme park rides.

Ratings **Inspected**

For several years, the leading voice in Congress calling for less violence and more ratings on videogames has been Senator Joseph Lieberman (D.-Conn.). A top Lieberman aide visited three Washington, D.C.-area arcades on August 20, accompanied by game industry representatives.

In all three arcades combined, the group found a total of only three games with any ratings whatsoever. Most kids were reportedly crowded around the more-violent games, too. Lieberman's aide reportedly thinks this is a great "family values" issue for his boss to flog, so look for more pressure on the videogame industry.

Washington wants ratings symbols to show up on the monitor in the attract mode — and some parents would like ratings symbols to flash on and off every few seconds during actual gameplay, too.

by **Marcus Webb**

Marcus Webb is the editor-in-chief of *RePlay* magazine, the US' leading trade amusement magazine



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There are two kinds of people in the world. Those who wear pink. And those who see red. If you're in the second category, you know other racing games just aren't up to speed. So hit the Burning Road.



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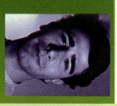
Generator

The issues affecting the way games are made

You see games. You hear games. Why can't you *feel* games?

by George Zachary

George Zachary, who, when working with Silicon Graphics, was interviewed in NG 14, is now a partner at Mohr Davidow Ventures, a technology venture capital firm. To contact George, try sending email to him at gzachary@mdv.com



Videogames have traditionally involved visual and auditory feedback — the game emits sounds and shows pictures on a TV screen. "Haptic" feedback, however, remains largely unexplored.

Haptic feedback is the information transmitted to the brain from pressure on a person's physical body (including the skin, muscles, or skeletal system) and it comes in two main forms. "Tactile" feedback is interaction with a local patch of skin (sensing the temperature, contours, or texture of a surface with your fingertips, for example). If there is enough force, this interaction also affects the surrounding muscular and skeletal systems, in which case it is called "force" feedback.

We'll examine force feedback in more detail next month.

Tactile feedback

usually involves pressure on the fingertips. In the world of gaming, tactile feedback could be used to search through dark corridors for secret doors in adventure games, to feel the grip on a baseball or football in a sports game, or let you know that you've picked up a power-up.

Up until the 1980s, tactile feedback research occurred almost exclusively at universities and government think-tanks. This research was focused on industrial and defense projects, like controlling remote nuclear plant cleanup robots.

At the end of the '80s, two companies offered the first commercial tactile feedback products. The first was VPL Research, which developed and marketed the DataGlove — a mechanical glove that calculated the position and orientation of the user's hands and fingers. This data could then be input into a computer and be used to manipulate visual objects on a TV screen; like a virtual hand, for example. It was a novel input device, but it didn't offer anything in the way of feedback — essentially, it was just a new type of joystick.

Mattel released the PowerGlove, a stripped-down version of the DataGlove for the NES. But despite sales of almost one million, it sank quickly with no software support.

Soon after, a few garage-initiated companies developed pneumatic air bladders and metallic alloys that would work with products like the DataGlove. The idea was to use moving parts within the glove to provide tactile feedback.

The pneumatic

air bladders, when placed in the glove next to the fingertips, would inflate and deflate to simulate the fingers touching a virtual object. They could crudely simulate tactile pressure, but took too long inflating and deflating, which created the perception that most objects were rounded. The metallic alloys also created the perception of tactile pressure by bending from an "off" to "on" position when electrically signaled.

While both of these technologies created a crude impression, they were not ready for the prime-time consumer market: The air bladders had tubes going to and from the glove, and had to be attached to an air compressor; The metallic alloys were lighter weight, but delivered electricity to areas near your hand — and this didn't inspire visions of consumer safety.

Most difficult, though, was the software development process. In order for tactile feedback to play a role, someone would have to geometrically model 3D objects and perform real-time processing of when your fingers had potential contact with virtual objects. But few in the gaming field were skilled at this 3D modeling at the time.

More importantly, the processing muscle necessary for a PC or game console to perform these tasks was gargantuan (and still is today). Plus, the less flat an object's surface, the more calculations are required to accurately create the virtual object's surfaces. It's a real power hog.

Additionally, users weren't motivated by the quality of the experience to want to put on a glove every time they wanted to play. It was too much hassle for little gain.

Currently, no

commercial or research activity shows any sign of finding the right mix of price point, technologies, and interface that can bring tactile feedback to gaming. Essentially, the world of tactile feedback is one of science fiction.

There is good news, however. "Hold on" till next month to hear about *force* feedback...

NG Online update

http://www.next-generation.com/

Next Generation Online is the world's leading videogame website. It's updated each weekday with news, demos, previews, special reports, interactive forums, and more.

Let's talk

As a part of our service, we offer you the chance to chat live with some of the people who shape the game industry. All you have to do is download the *Palace* software from our site (it's free) and show up at the appropriate time. Here is the current schedule of conferences:

- **Oct 22**: Next Generation staff
- **Oct 29**: Psygnosis
- **Nov 12**: Sega

All conferences begin at 6pm Pacific. We hope to see you there.

Demos

The latest demos are always available at *Next Generation Online* first. Here are some of the latest additions:

- *Abuse* (Mac), Bungie
- *Bug!* (PC), Sega
- *Deadlock* (PC), Accolade
- *Diablo* (PC), Blizzard
- *Flight Unlimited* (Mac), Looking Glass
- *Monster Truck Madness* (PC), Microsoft
- *Road Rash* (PC), Electronic Arts
- *Triple Play '97* (PC), Electronic Arts
- *WarCraft II* (Mac), Blizzard
- *War Wind* (PC), SSI
- *Z* (PC), Virgin

Be sure to check out what's happening at *Next Generation Online* every day at:

http://www.next-generation.com/

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The business news that affects the games you play

by **Christian Svensson**

Christian Svensson is the assistant editor and webmaster at Next Generation Online which can be found at http://www.next-generation.com/



PSYGNOSIS BIDDING HITS $300 MILLION

NEWSLINE: Bidding has begun on the rights to buy Psygnosis from Sony. Already, extremely large numbers are already being discussed with the minimum initial bid at $200 million. It is rumored that a $300 million bid is already on the table.

BOTTOMLINE: Sony bought Psygnosis in May 1993 for less than $30 million, and is now set to make a massive profit. Wallet-waving parties are said to include Acclaim, Electronic Arts and GT Interactive. Viacom has also been linked with the deal.

The acquisition of Psygnosis by a company already involved in the game industry would certainly make one of those companies the clear market-leader. However, some believe an outsider will win the bidding. Communications companies are hovering as well as blue sky technology firms with plenty of ready cash.

Psygnosis' worth has risen immensely during the development and launch of PlayStation. The company has given Sony guidance and excellent product — albeit with a few headaches. More profit potential is being sensed as the next-generation market continues to bloom and Internet gaming arrives. Also, Psygnosis has only just begun to make its presence known in Japan and the rest of Asia as well as on non-PlayStation console platforms such as Sega Saturn.

SMALL PUBLISHERS FEEL PINCH

NEWSLINE: Gametek has scaled down its publishing activities and handed much of the job over to Philips. Rocket Science has decided to let Segasoft market and publish its promising new batch of products.

BOTTOMLINE: The continued focusing of the game industry into a core of half a dozen publishing giants continues apace. Although there are far more publishers than six right now, their numbers diminish every week as small companies are attracted to larger, larger, and even larger corporate "partners" with which to ally.

NOLAN BUSHNELL IS BACK!

NEWSLINE: Aristo in association with Nolan Bushnell is readying the launch of a range of net-based arcade machines which will be targeted towards adults of both genders.

The TeamNet range will be the first coin-ops to enable two teams of up to four players each to compete against each other in sports or other games. Both teams may be physically present in the same location, or in separate locations competing over the Internet. TeamNet has been specifically designed to support tournament play.

BOTTOMLINE: Bushnell says coin-op manufacturers are too narrow-minded and are ignoring adult men and women in favor of the core-market of teenage boys and young men.

Bushnell believes his style of gameplay will appeal to an audience which sees little fun in playing against a computer AI. He says: "Adults have more fun with other adults than they do with games and we've created an online environment that resembles the old-time party lines, where there's a little mystery involved," he said. The online games also incorporate chat facilities: "Chat is in some ways more important than the games themselves."

PUBLISHER FIGHT FEST ERUPTS

NEWSLINE: After a period of relative peace, legal scraps have been breaking out all over among publishers. Acclaim has been battling it out with MicroProse over who owns what in their respective *Magic: The Gathering* licences. GT has been attempting to block MicroStar launching a compilation of *Duke Nukem* levels. And everyone in the first-person-*Doom*-style market has been levelling shots at competitors.

BOTTOMLINE: You can blame the inevitably hot-headed and youthful nature of the game industry. You can blame the large sums of money floating around. You can even blame the weather. Either way, when it comes to the much touted impending maturity of this industry, it seems like we're in for a long wait.

SPIRIT OF ATARI LEAVES

NEWSLINE: Don Thomas, considered by many to be "the spirit and voice of Atari" has finally left the company. For years, Don Thomas banged the drum enthusiastically for Jaguar. Thomas has finally left Atari (which has recently completed its merger with JTS) and will be taking a job at Sony.

BOTTOMLINE: There's this fat lady, see. And she's making an awful of noise...

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NOW PLAYING

Gaming on the Internet

Play games on the Internet for free? As in, *no charge*?

The world of online and Internet gaming is the game industry's Wild West right now. It's a huge, unchartered territory. No one knows for sure what risks or rewards await those who explore and conquer it, but there are plenty of people setting out on expeditions.

Even as Mpath's Mplayer service rolls on towards public release, and AOL's newly-acquired ImagiNation Network (bought from AT&T at a mere fraction of the price AT&T paid Sierra for it two years ago) gets a relaunch, other companies are launching some pretty ambitious Internet gaming plans with some pretty ambitious titles.

Two companies with megahits on their hands are Blizzard and Activision. Blizzard, in case you've been playing games on an Atari 2600 this past year, wowed everyone with *WarCraft II*, a real-time strategy game. Its latest games are *Diablo* and *StarCraft*, due later this year.

Diablo is a role playing game, and like Origin's *Crusader: No Remorse*, it offers an overhead, isometric view of the action in SVGA. Players pick a class from warrior, rogue, or sorcerer, and set off into the landscape. As a stand-alone game, *Diablo* is top-notch. The graphics are beautiful, and some of the scenes of gore — check out the Butcher's lair — are as creepy as anything in *Resident Evil*.

StarCraft is a new game, similar in concept to *WarCraft II* — a real time strategy game — but set in the far future. Humans and two alien races, the Protoss and Zurg all vie for cosmic supremacy. But the game is far more than *WarCraft II* in space — the graphic engine and AI have both been tweaked, and the three different races are all distinct: The Protoss use heavily armed and armored ships, which are slow to produce; the Zurg use the swarming strategy and can churn out weak units in quantity; Humans are somewhere in the middle, using familiar technologies of the genre, like powered battle armor and Mechs.

Play all three races and see the war from different, valid perspectives. Research technology, develop resources, and even undertake real-time *X-Com* or *Jagged Alliance*-style squad missions to rescue prisoners (as in the expansion disk for *WarCraft II*).

But what makes these games unique is not their great standalone play, or the almost de-rigeur LAN play, it's that these games will be playable over the Internet, for free. Blizzard's new web site, battle.net, will be an online place to meet and play opponents; Blizzard hopes that this added value will make the game even more desirable.

Activision is taking a similar tact with two games, *MechWarrior 2: Mercenaries*, and *Interstate '76*.

Mercenaries features more texture maps, improved AI, and a rigorous adherence to BattleTech specs. The game will look and play better than previous *Mech* games, and an element of resource management (a la the original *MechWarrior*) makes the game even more addicting.

Interstate '76 (see page 147) uses the *MechWarrior 2* 3D technology in a driving combat game.

Both games will ship with Internet drivers, to allow free play over the Internet. All players need is an ISP with Winsock compatibility, and you'll be able to run your Rakshasa against your friend's Timber Wolf, perhaps to be rudely interrupted by someone you've never met — and her Atlas. All you'll pay is your ISP subscription fee.

Game companies like EA think that 20% of their revenues will be derived from some online factor by the year 2000. So they're making their products Internet-ready today.

Now, Blizzard's battle.net and Activision's Internet play won't offer the same amenities as Mpath (like managed network traffic for the lowest latency, other supported games, a slick front end, and an instant gaming community) but, hey — it's free.

It'll be like network TV (for free) versus cable or pay-per-view for premium content. So if you don't mind the blemishes, it's a great time to play on the Internet. And as the industry gets its bearings in cyberspace, most of the new online gaming is free while in beta test stage. Even many games that were once only on commercial online services (like GEnie) are free for now. Let's hope it stays this way. ng

by **Bernard Yee**

Bernard Yee has contributed to *USA Today* and writes regularly for *PC Gamer*, *PC Magazine*, and has authored several books on gaming.



Data stream

The number of handheld computers sold last year: **773,000**

Penguin Books' profit last year: **$51 million**

According to the book *Open Skies, Closed Minds*, by Nick Pope, the number of U.S. citizens who have taken out in insurance against alien abduction: **35,000**

Number of cigarettes smoked every day: **15 billion**

Time it would take the **Next Generation** team to smoke 15 billion cigarettes, given its current consumption level: **456,621 years**

Number of Porsche 911s that could be bought per day with this money, instead of cigarettes: **300,000**

Proportion of world population that could be fed and clothed per day with this money, instead of spending it on cigarettes: **100%**

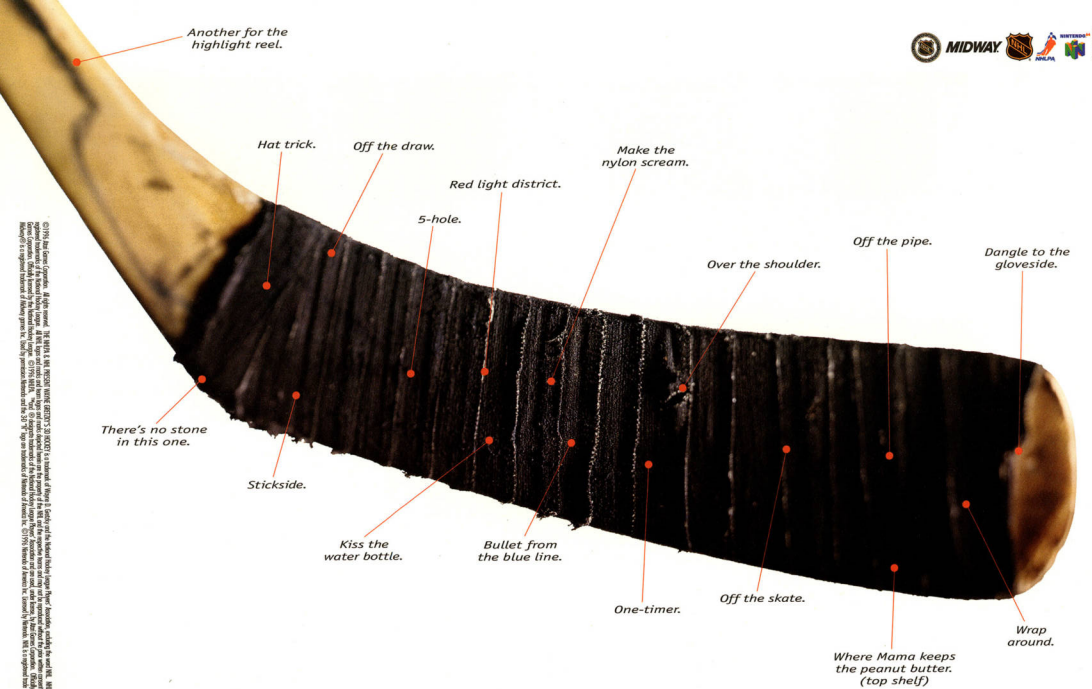
Number of Nintendo 64s sold in Japan after just nine weeks on sale: **800,000**

U.S. cost of cold war (1948 – 1991): **$12,800 billion**

According to the *Cosmopolitan Guide to Working in Retail*, the proportion of McDonald's junior management positions held by women: **31%**

Number of vacuum tubes in the U.S. War Department's 1946 Electronic Numerical Integrator — an early forerunner of the computer: **18,000**

Number of failed or surplus diskettes thrown away by computer users every day: **3 million**



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Datebook

October

The **7th Annual Fun Expo**, known as the layman's "Fun Center Show" because of its focus on small- to medium-sized Family Entertainment Centers (FECs) and Location-Based Entertainment Centers (LBECs), will be held at The Sands' Exposition and Convention Center, Las Vegas, NV, from October 9 to 12. Open to the trade only, not to the public. There will be more than 1,000 booths, amusement equipment, virtual reality equipment, arcade and redemption games, motion simulators, and more than 40 seminars on running FECs and LBECs. Call Rich Regan for booth information and or Bailey Beeken for questions concerning hotels (Treasure Island, Mirage, and Harrah's are offering special deals) or attendance information. Call (914) 933 9200, or FAX (914) 993 9210, or email at funexpo@aol.com.

November

IAPPA the **International Association of Amusements and Attractions**, is like a big arcade show except for the simulators, rides, and amusement attractions for which it's famous. Closed to the public, it is held from November 20 to 23 in New Orleans, LA, at the New Orleans Convention Center. Call (703) 236 4800 for more information or accommodation enquires.

Comdex will take place in Las Vegas, NV, November 17 to 21, and is open to the public. For more information, call (617) 449 6600.

Nintendo Corporate Limited's **Shoshinkai** will be the place for all the world game industry interested in finding out more about the 64DD add-on for Nintendo 64. It will also see the unveiling of *Zelda 64*, and whatever other software Nintendo manages to get ready in time. Not open to the public. For more information contact Nintendo at (213) 623 4200.

December

Fall Internet World will happen December 10 to 13 at the Javits Convention Center, NY. Call Mecklermedia at (203) 341 2855.

May

Multimedia 97 Exposition and Forum will take place May 6 to 9 at the Metropolitan Toronto Convention Center, Toronto, Canada. The show features five major components: Multimedia Communications; Virtual Reality World; VICOM; Showcase On Production, and Electronic Design. For more information telephone (905) 660 2491, or FAX (905) 660 2492, or email to moreinfo@multimedia.ca. Official WWW-site: http://multimedia.magic.ca

June

The one and only **Electronic Entertainment Exposition** (aka **E3**) kicks off in Atlanta on June 6. Open to the public for one day.

SHOW ORGANIZERS: If your show isn't listed here it's because we don't know about it. FAX us on (415) 468-4686; E-mail us at ngonline@imagine-inc.com; or write us at Date Book, **Next Generation**, 150 North Hill Drive, Brisbane, CA 94005. See? Easy

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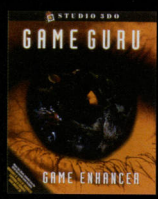
Price: $3199
Manufacturer: Compaq
System: PC



In the past two months, Sony, NEC, and even IBM have announced new PC machines dedicated to high-end gaming. First up, however, is Compaq with its Presario 8000 line. We evaluated the 8712, a P200-based machine with 512k cache, 32MB EDO RAM, 3.8 GB hard drive, 8X CD-ROM, PowerVR 3D accelerator, Interwave sound card, 33.3Kbs modem, Presario 1725 17-inch monitor, JBL Premium Pro speakers with subwoofer, and a Thrustmaster Phazer game pad designed specifically for Compaq.

The system also boasts a number of "neat-o" features, like buttons for controlling the CD player right on the front of the machine, a volume control knob for the speakers located on the monitor, and even a "sleep" switch for powering down the system without having to shut it off.

There were some initial glitches with the Interwave sound card running under DOS, but updated drivers (which will ship with the final model) eliminated the problem. It benchmarked impressively, at least as well as other P200s, even 10% better than the old standby Gateway, and for the price you can't beat it. However, like many Compaqs, it's not terribly flexible. The SVGA adapter runs off the motherboard, so if 2MB VRAM isn't enough for you, you're apparently stuck — experiments with installing a beefier graphics card proved fruitless, as it continually tried to revert to the motherboard. Depending on if, and how, you plan to upgrade in the future, you could find some of your options limited. The bottom line is that the 8712 is a serious piece of hardware, easy to use (support is excellent), more than competitively priced, and right out of the box, man, can it play games, but you get exactly what you pay for.



Game Guru

Price: $24.95
Manufacturer: 3DO
System: PC

There was a Game Guru for for the 3DO multiplayer, but now that The 3DO Company is spreading its wings into PC gaming, so why not make a Guru for PC?

For the most part, the Guru is a nigh-comprehensive database of codes and patches for hundreds of PC titles, which would make it a must-have in any case However, for the hard core game addict, the Guru also includes a programming module for digging out your own codes and patches. No serious gamer should be without one.



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Web Site

Next Generation Online is a unique Internet experience that provides updated industry news, every working day. It's an essential bookmark for those who are serious about gaming and the environment surrounding it.

http://www.next-generation.com

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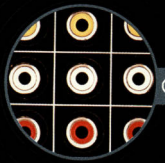
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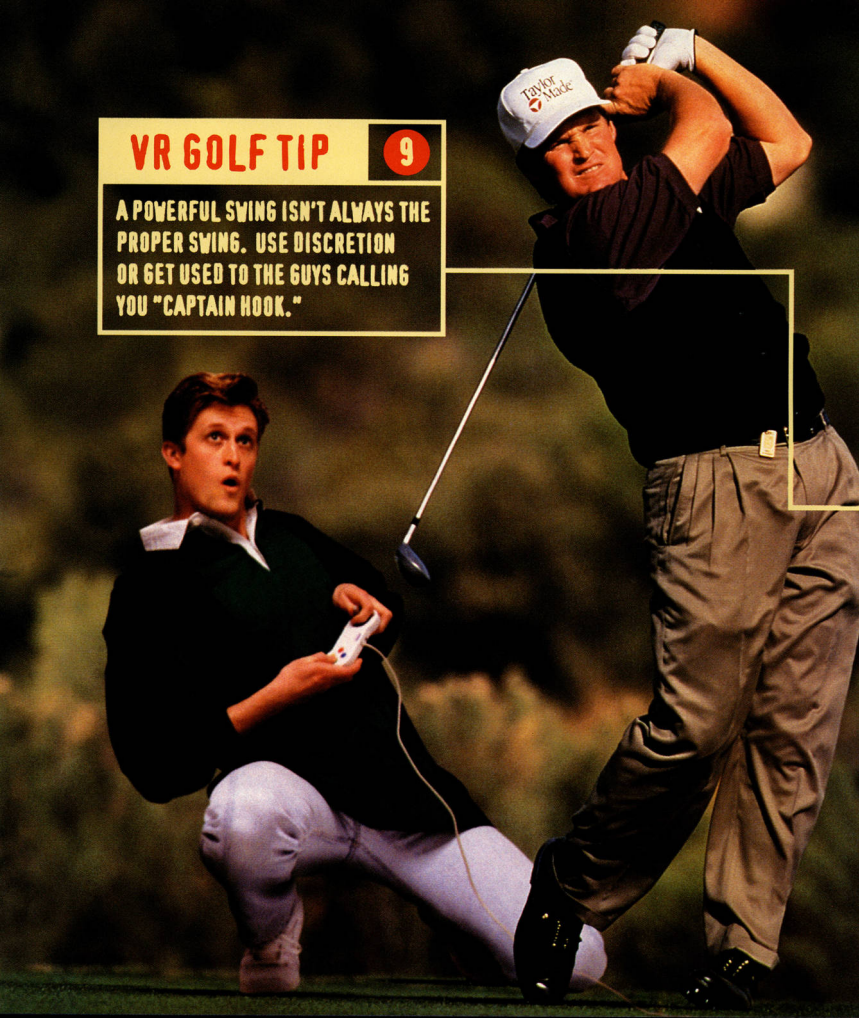


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the future of data storage

Without RAM, hard disks and CD-ROMs, the videogames of today would not exist. **Next Generation** documents the history of data storage, finds out why console manufacturers are cheating — yes, cheating — gameplayers, and predicts future developments



The Saturn's memory expansion slot enables future games to utilise extra ROM. So far, only SNK has taken advantage of this

When the ZX80 "home computer" was launched by U.K. inventor Clive Sinclair in 1979, the promotional material surrounding it suggested it was so powerful it could run a nuclear power station. In reality, it contained just 1K of RAM and used standard audio-cassette tape for auxiliary storage. Apple's Pippin, recently launched in Japan, will have 6Mb RAM and utilize now commonplace CD-ROMs containing up to 650Mb a disc for auxiliary storage. The Nintendo 64, meanwhile, is capable of shunting over 500Mb of data around its system per second and will have a read/writable magneto-optical drive. And in the PC market, gigabyte hard drives have fast become the norm.

However, none of these orders of magnitude improvements have yet managed to narrow the input/output (I/O) gap, and the real problem has become not crunching the numbers, but getting the numbers to the cruncher on time. This is a discrepancy resulting from storage technology improving at a slower rate than that of microprocessors.

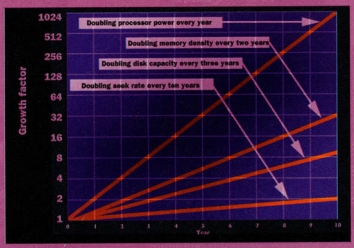
In many ways, the computer industry is engaged in a race between two axioms: Moore's Law and Parkinson's Law of Data Storage.

In the early 1960s, Gordon Moore first noticed a trend that still holds: the amount of information storable on a given amount of silicon has roughly doubled every year since the technology was invented. Parkinson's Law, meanwhile, states that "Data expands to fill the space available for storage." Fortunately, the latter tends to double every 18 months, the former every 12. That it will continue this way indefinitely, though, is highly unlikely.

In the games industry the problem is compounded by a volatile market demanding ever-increasing graphic realism. The escalated use of 3D graphics has made bandwidth a real issue along with RAM size and the capacity of auxiliary storage. The difficulty comes in designing future platforms and, while the PC's architecture is largely (though messily) upgradeable, dedicated hardware manufacturers are really struggling to keep up.

The increased use of 3D graphics has made bandwidth a real issue in game development, along with RAM size and storage

Sega has already upgraded the Saturn's memory capability for specific games with a ROM expansion cartridge that plugs into the slot on top of the console. Nintendo, meanwhile, would probably like to have delayed news of the DD64



This graph shows the hypothetical effects of dissimilar doubling rates over a decade. Clearly, advances in processor speeds exceed all other factors, merely perpetuating the disparities

magneto-optical drive and certainly news of its RAM expansion packs for as long as possible.

"This is probably the biggest problem for a hardware manufacturer, as programmers are impossible to please," reckons Shiny Entertainment's Dave Perry. "So they make a stab in the dark hoping that they supply just enough RAM to get the job done — and this helps keep the price as low as possible. But the problem is that RAM upgrades offered down the road rarely work," Perry continues. "We cannot rely on everyone buying them unless they are fitted as standard from the beginning. There are exceptions to this rule, like the 16K RAM Pack for the ZX81, the release of the 48K Spectrum, and the slow move from 512K to 1Mb on the Amiga 500. But, basically, to really succeed a RAM expansion requires 'must-have' killer games that make everyone buy the RAM to play the game. That's why it's safer just to put the RAM in from scratch."

But RAM costs (DRAM is currently around $30 per Mb) and the price is notoriously volatile and almost impossible to predict, especially given the lengthy time for hardware development. Manufacturers have to try and anticipate the silicon market, riding a fine line between price and capability. And the amount of RAM can be the difference between a machine arriving at an attractive price point or not.

Toby Ferrand is in charge of M2's development in the U.S. and has definite, though perhaps slightly biased, opinions on the subject. "RAM size is of growing importance because users' expectations for quality, interactivity, and gameplay complexity are increasing rapidly," he explains. "The Sony PlayStation has 3.5Mb of memory and the Sega Saturn has 4.5Mb. For these machines, the limited amount of memory is definitely a key constraint for title development," Ferrand continues. "Since these machines aren't true 3D machines — they lack z-buffering, MIP-Mapping and hardware Gouraud shading — their memory is really sized to provide for adequate 2D performance. While Matsushita has not stated publicly how much memory is in M2, suffice it to say that it will be adequate for both 2D and 3D games."

Expect that to be 4Mb, an important figure when considering ports from the PC. Developers aiming for the PC market can pretty much assume the machine will have 4Mb RAM, and probably now 8Mb, mainly because Microsoft has those requirements for Windows and Windows 95. Developers — who en masse are capable of exerting tremendous influence on a platform's ultimate specification — always push for as much RAM and VRAM as they can get ("A gas will always expand to fill a room. Code will always expand to fill the RAM," comments Perry).

To really succeed a RAM "must-have" killer games that make everyone buy expansion requires the RAM to play the game

While the statistics may point to a vast increase in RAM over the past 15 years, Bullfrog's Peter Molyneux argues that in real terms levels have remained almost static. "As a console games developer the actual amount of RAM available hasn't really changed that much since the early days of the NES or Sega Master System, since so much more memory is needed for graphics and sound effects which seem to just gobble it up. So, at first, when you hear about a new console, you think, 'Oh wow, how amazing,' but once you take away all the memory you're going to need for those great graphics and fabulous sound effects, the net gain in memory is relatively small."

Molyneux illustrates this by



Matsushita's M2 has a unified memory system. Once one operation is finished, the memory used by that can be freed for another use

pointing out that in *Populous* a character took up 48 bytes while the characters in *Dungeon Keeper* require 2000 bytes. To keep up with these increasing demands for memory, the trick from the hardware side is to keep as much of the architecture as scalable as possible, enabling commitment to a final spec very late in the day, as was the case with both the PlayStation and the Saturn.

According to some, though, Nintendo's volte-face with the DD64 is an illustration of how badly it can all go wrong. One industry source, who wishes to remain anonymous, said: "The DD64 is mainly necessary because Nintendo was let down by technology. It gambled in the design stages that the slow, high-density ROM needed for carts would be cheap enough by the time it launched. For various reasons the market didn't go as well as expected."

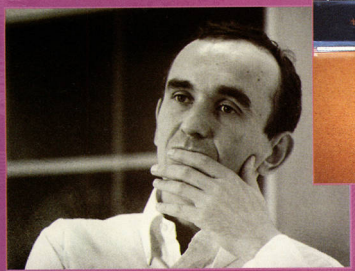
Nintendo underestimated the switch to CD-ROM within the development community, and thus, the need for more storage

Indeed, Nintendo's DD64 drive unit is currently at the hub of speculation and rumours that it won't be a standard magneto-optical drive, but rather some obscure hybrid of read-only and magnetic-writable media. Certainly, Nintendo underestimated the extent of the switch to CD-ROM within the development community and thus it now faces a need for more storage, but — apart from in Nintendo's own unique case — storage isn't really an issue for developers any more.

Both capacity and access time have increased drastically since the days of magnetic tape, handicapped as it was by having to search for data blocks sequentially.

In the PC market the steady diffusion of floating-head magnetic disk drives (often referred to by their informal generic name, Winchester) in which the read-write head planes over the disk surface on an air cushion, has taken access time down to 28 milliseconds and vastly bumped up domestic capacity. For games specifically, both 1.4Mb diskettes and ROM carts have found themselves being superseded by CD-ROM, which easily accommodates most data requirements at present. It's a trend set to continue with the imminent onset of DVD and its 4.7Gb capacity looming on the horizon. There is, however, a potential fly in the ointment.

DVD's passage from concept to standard hasn't been a particularly smooth one and the latest twist involves the Hollywood faction's insistence on regional coding. Hollywood can, at present, regulate the release of films on video in different territories indirectly via the NTSC/PAL standards, and its current push is to extend that control with the creation of eight distinct territories for DVD. While initially this might seem to only affect the DVD video market, the same discs are designed to play on DVD-



According to Peter Molyneux, modern games use RAM for graphics and sound, so gameplay still has to be squeezed into a small memory area



Digital Video Disc, while still seeking a final standard specification, offers a 4.7 gigabyte storage capacity on each disc. More FMV, then?

History of RAM

Though the giant ENIAC built at the University of Pennsylvania, using 18,000 vacuum tubes and covering 1,800 square feet of floor space, is widely considered to be the first modern computer, it wasn't until the theories of Hungarian mathematician John Von Neumann were implemented that computers became recognisable in a modern context. The Von Neumann architecture proposed that programs and data should be stored in a slow access storage medium and worked on in a fast access, volatile medium. Thus, the concept of RAM was born.

The first computer based on this architecture was EDVAC (Electronic Discrete Variable Automatic Computer) and, unlike ENIAC, returned to the system of binary notation that the pre-electronic computers had used. This enabled them to use mercury delay lines, a memory system based on simple on/off switches. An electronic pulse was "trapped" in a tube of mercury and could therefore be retrieved at will. Typically, a sensed pulse yielded a "0" and no pulse "1."

The second generation of computers moved on to using ferrite core memory, a system using magnetic loop toroids first proposed by Jay Forrester in 1950. A 3D array of toroids was constructed with each row and column having a common wire running through its centre. When data from a certain address was required, at the intersection of horizontal and vertical wires current would pass a threshold level and remenance (the residual magnetic flux) would be switched. This would be detected via a characteristic signal in a sense line and, depending on the polarity of the original magnetic field, a "0" or a "1" detected. However, even though it was non-volatile and the toroids would stay magnetised until read, it was a destructive readout and the memory cell had to be rewritten after every sensing.

Core memory was still being used in the early seventies but the advent of CMOS' semiconductor technology made it rapidly obsolete. The first commercially available dynamic random access memory (DRAM) chip, the Intel 1103, was introduced and DRAM's dominance was rapidly established.

Coupling low production cost, a small memory cell and low power consumption, DRAM still has a commanding share of the current RAM market. Consisting of a single transistor and a capacitor, a bit is stored in the capacitor as a charge (typically five volts for "1" and zero volts for "0") which can be read when capacitor discharge is triggered by accessing the transistor at the memory address. Again this is a destructive process and the data has to be rewritten, but DRAM is additionally handicapped by leakage from the capacitor. Therefore all rows have to be periodically read, sensed and rewritten with most DRAMs since 1970 refreshing a single row every 15.625 microseconds.

With density quadrupling every three year generation, the structure of the memory cell itself has remained unchanged. There are many different varieties, though, which have modified the way RAM chips interface with the main system. EDO-RAM, effective in systems such as the Pentium, leads to a 20% performance increase; and Video RAM, with an additional long shift register, enables parallel operation with the normal interface and therefore simultaneous reading/writing.

Static RAM (SRAM), which overcomes the capacitor leakage problem by using cross-coupled inverters, is still volatile, but has the advantage that the lack of a refresh cycle leads to greatly increased performance due to the overall decrease in cycle time. The necessity for more components leads to a higher cost and a quadrupled size of cell, both of which have limited SRAM usage to small areas where their speed is vital, such as on-chip caches.



The Nintendo 64, shifting over 500Mb of data per second, doesn't segment RAM, meaning memory restrictions are less of a problem

hen the ZX80 "home computer" was launched by U.K. inventor Clive Sinclair in 1979, the promotional material surrounding it suggested it was so powerful it could run a nuclear power station. In reality, it contained just 1K of RAM and used standard audio-cassette tape for auxiliary storage. Apple's Pippin, recently launched in Japan, will have 6Mb RAM and utilize now commonplace CD-ROMs containing up to 650Mb a disc for auxiliary storage. The Nintendo 64, meanwhile, is capable of shunting over 500Mb of data around its system per second and will have a read/writable magneto-optical drive. And in the PC market, gigabyte hard drives have fast become the norm.

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you can shift memory around," Hinsley argues. "Solutions are better caches, faster RAM, paged RAM, new RAM technologies — banked split access RAMs and so forth. But most game programmers will just live with what they're given and find the best way to take advantage of each console's memory system. Personally," Hinsley concludes, "I think a unified large-cache RAMBUS-style approach is the best. All this mucking about with separate areas of memory for the sprite screen, the background screen, textures, the game code, etc, is a real pain in the ass."

All this mucking about with separate areas of memory for the sprite screen, background screen, textures, game code, etc, is just a pain in the arse

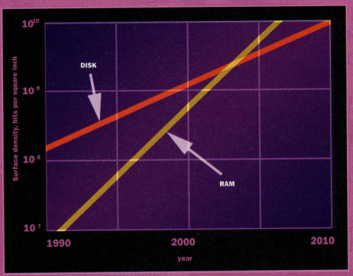
In designing the hardware architecture, there are two basic routes that can be followed in an attempt to solve the bandwidth problem. The first, and most popular amongst the current crop of consoles, is to dedicate multiple slow memories to specific tasks. This is not only easy to design, but also can be implemented with older, proven RAM technologies. It has disadvantages, though.

3DO's Toby Ferrand: "There are several disadvantages. First, a distributed memory architecture is not very flexible. If a half-megabyte of memory is dedicated to audio, for example, and if a title doesn't actually need that much memory for audio, then effectively the machine has less useful memory than the specifications would imply. A second problem is that as DRAM densities increase, the distributed memory architecture can't take advantage of the latest, cheapest memory," Ferrand continues. "Today, the cheapest memory comes in 16Mb chips. So if you have a half-megabyte of memory dedicated to audio, that memory must always be implemented with the less dense, more expensive memory. Finally, there are occasions where one process or another — 3D graphics for example — could benefit from the maximum possible memory bandwidth. If the aggregate memory bandwidth of a system like the PlayStation is, say, 100Mb/sec, but a substantial portion of that bandwidth is dedicated to audio and another portion to the CPU, then at any one time the graphics-rendering engine might be limited to no more than a few tens of megabytes per second. This inherently becomes the bottleneck for the system."

The current trend now, with both the M2 and N64, is back towards a unified memory system. M2's unified memory uses 16Mbit SDRAM chips which, according to Ferrand, give the machine an aggregate bandwidth of over 500Mb/sec, meaning that if the software running suddenly needs memory for a certain subroutine, it should be there. Conversely, memory doesn't have to be left idle.

"If a title needs 2Mb for audio, it can have it, or if none is needed then the memory is completely freed up for other tasks at the discretion of the title programmer" says Ferrand. "When MPEG is being decompressed by M2, then a few hundred kilobytes of memory are allocated. When the MPEG sequence finishes, the memory is freed up and can be used for textures or anything else the programmer wants. Such an architecture enables the use of the cheapest memory, provides the best memory bandwidth, and is the most flexible for the developer to use."

Bullfrog's Molyneux also argues the case for unified memory: "Potentially we don't have to worry about different areas of memory running at different speeds, and theoretically if we, say, needed more memory for sound than graphics, we could do it. As developers it means we are less constrained by the



A comparison of RAM technology and disk technology. By the year 2003, RAM will be a more efficient method of storage than hard disks — at least, this is the current prediction

system's architecture."

Chris Hinsley: "Separate areas are just a bloody pain. You can have more textures, double-buffered screen building and loads more besides if you have a single main RAM area, and the custom graphics chips can access all of it, both for screen, drawing and data storage functions. Just have a single area of general-purpose RAM and stick a sodding great cache on all the chips that read from it — lovely."

If forthcoming machines are going to rectify the problem in the console market, for the PC it's a different matter. Video bandwidth has been a huge drawback and while video cards have eased the problem somewhat, the arrival of 3D-accelerated consoles has resurrected it again for anyone designing cross-platform software.

Peter Molyneux: "The bandwidth constraints presented by the PC are both good and bad. As PC architecture has evolved over the past 15 years it is very, very familiar, but chips manufactured for the base architecture must be conservative — hardware and graphics accelerators all have different ways of optimising access and so must be dealt with by us. Win95 has tried to establish an interface standard with DirectX, but it's a Herculean task and will take time to perfect."

Dave Perry is less understanding. "The PC is really messy inside. Hopefully when Microsoft controls the planet it will release a new PC with a new, 'clean' architecture. This will dramatically drop the price of all of the fixes that companies are having to create to keep moving forward."

Until then, though, fixes will be what is required, and the latest of them to excite interest is NEC and VideoLogic's PowerVR chipset. Targeted from the beginning at reducing both memory requirement and memory bandwidth requirement, it dispenses with conventional z-buffering and handles hidden surface removal through its own Image Synthesis Processor (ISP). It also contains an integral texture and shading processor that only deals with visible pixels, reducing memory traffic, so VideoLogic claims, by between three and ten times.

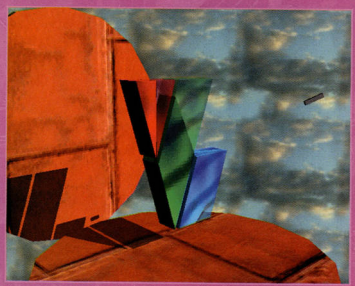
The PC is really messy inside. Hopefully when Microsoft takes over the planet it will release a new PC with a new, "clean" architecture

The drawbacks are that it relies on the host CPU as a geometry transformation engine (GTE) and it will thus only realistically achieve improved performance on a P150 upwards. Also, the ISP chips are expensive.

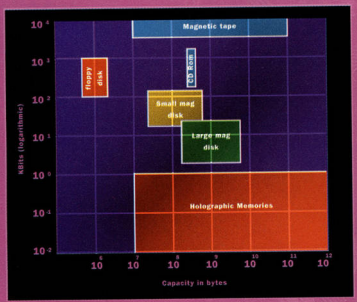
Chris Hinsley, in particular, is sceptical. "I don't believe that boards like the VideoLogic or others really help," he argues, "other than to allow acceleration of drawing polygons — providing, that is, you have enough texture RAM on the graphics card. Again I don't like this approach of having a separate area of memory for the textures and so on. I believe Apple has got it right with its QuickDraw 3D Accelerator Card. It can have the screen and textures in main PCI memory and can freely draw from and to any address region."

According to a NASA research document on storage technology in the 21st century, there are three important trends to consider in the future development of the field. The first is the negative effect the I/O gap has had on computer evolution. Another is that magnetic storage has, despite predictions to the contrary, been able to keep pace with optical storage. The third is that solid-state storage media are approaching the density and even the cost of the magnetic ones.

It's highly likely that the future of storage lies in RAM, with a price and capacity similar to current hard discs, though with the advantage of a



VideoLogic's PowerVR 3D accelerator card dispenses with conventional z-buffering and handles hidden-surface removal itself



A comparison of secondary storage technologies. Note how holographic memory can store the most data and is also the quickest to access — coming to game machines soon?

much faster access time. Current projections estimate that 1Gb RAM chips will be a reality by the start of the next century, but the immediate future is likely to be one of incremental improvements to both the standard PC specification and the next generations of consoles.

DVD, despite its current difficulties, is a certainty. "DVD will be the next big step," says Perry. "Mass storage on a CD-ROM which is already 'user friendly' and accepted cannot fail."

Elsewhere, simply extrapolating from current trends leads to the conclusion that more RAM and improved 3D graphics cards for the PC will soon become the norm. Peter Molyneux points out that, at current rates, by the year 2000 the base-spec RAM for the PC will be 32Mb, and Hinsley predicts an industry-wide move to a single RAM area. Meanwhile, RAMBUSes, as implemented in the N64, which interface RAM directly to the CPU and eliminate the need for caches, show much promise and potential.

While the I/O gap is expected to shrink rapidly, the technology is developing fast. Indeed, in the one area of memory in which development is probably accelerating, the unfortunate corollary is that redundancy is, too. "Faster, more bits, all that good stuff…" Perry forecasts, " are also more reasons to feel bad about your purchase six months or so down the line...

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Future developments

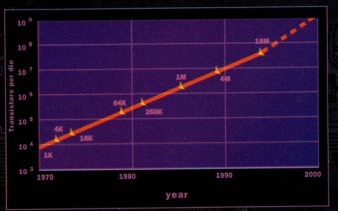
The future of memory storage beyond the next ten years is a cloudy one. While the proposed introduction of hard discs utilising giant magneto-restistance by the end of the century might take data density from the current maximum of 75Mb/square centimetre to 1.5Gb/square centimetre, current predictions hold that solid state memory technology will eventually start to take over from the more traditional moving media.

RAM storage density averages a 60% improvement each year and while that parallels the growth in density of CPUs, the speed has lagged way behind. The fastest RAM chips, SRAM, have only improved at 40% per year while the more widespread DRAM chips have improved at an even slower rate. Main memory performance, in fact, has only been able to keep in sight of CPU development due to the use of SRAM cache memory operating as a temporary high-speed buffer in front of a larger but slower DRAM array.

However, RAM is still much faster than any current moving media and the development of silicon carbide semiconductors might speed it up further. Able to tolerate higher temperatures than current DRAM and therefore operate at higher clock speeds, individual cells can also be made three times smaller, and current leakage 10,000 times less. Other techniques also under investigation include magneto-resistive RAM and ferro-electric RAM, where the conventional DRAM capacitor is replaced with a 'leakproof' one, thus eliminating the need for a refresh cycle.

Away from RAM there is a bewildering array of different technologies being developed as future storage media ranging from molecular biological devices (where the switching speeds for molecular gates are in the region of three picoseconds) and spectral hole burning (which produces tell-tale features in the fluorescence spectra of a storage media) to the use of scanning, tunnelling microscopes to pit a conducting media with pit spacing being measured on the atomic scale and therefore providing an extremely high storage density.

Holographic memory, though, where information is stored by recording wave interference patterns, is the technology with probably the most immediate potential. Two separately focused laser beams are intersected within a storage media with the first beam containing the image. The second beam produces an interference pattern which is recorded by the media and shining this reference beam alone retrieves the data from that location. It's advantages are speed, potential high density and the facility for both parallel search and retrieval. It's only a matter of time until it is incorporated in a videogame system.



By the year 2000 the density of dynamic RAM (DRAM) should be around the 1Gb mark. Which can only be good news for gamers



THE HIDEOUS SM

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Art: Nicola Hanley

Artificial Life

Games that actually *live*? Computers that learn from their mistakes? Digital creatures that reproduce? **Next Generation** finds life, but not as we know it...

The most important advance in gameplay over the next ten years will not be in graphics or processing power — it will be in how computer-controlled enemies, allies, environments, and more behave. The technology that will be bringing these advances? Artificial life.

The appeal of *Mario* is not the ability to make a cutesy plumber jump on the head of cutesy bad guys. No, it is the feeling of exploration, of discovering the unknown that makes *Mario's* adventures so successful. The real thrill of *Quake* or *Duke Nukem* comes not from fighting wave upon wave of similar acting demons, but from killing unpredictably-acting, human opponents. Solving an adventure game is only fun the first time — because after that, you know what to expect.

Now imagine a technology that promises to add a previously unknown degree of customization and unpredictability to video and computer games, with worlds as in-depth and complex as our own, enemies whose patterns cannot be memorized because they're always changing, and RPG characters that act as real as you.

Welcome to the world promised by a relatively new technology known as Artificial life (otherwise known as AL).

But before we begin to look at the immense possibilities for games presented by Artificial Life, it is important to have a grasp of its better-known predecessor, artificial intelligence (AI). AI in an academic sense is, according to Marvin Minsky (as quoted in Margaret Boden's book, *Artificial Intelligence and Natural Man*), "the science of making machines do things that would require intelligence if done by men." In games, AI is usually the code routines that computer-controlled enemies follow during a game in their attempt to act like a human-controlled, or otherwise "intelligent" character.

Much has been made of recent attempts to increase the complexity and depth of game AI (**NG 11**; also available on *Next Generation Online*), but what may actually be more exciting to gamers is not advances in AI, but rather the rise of Artificial Life as a means of empowering computer-controlled players.

So what's the difference between AI and AL? Despite the similarities in name, the two are dramatically different in nature. AI attempts to mimic intelligence by using a "top down," reductionist approach — the computer program attempts to reduce the possible reactions of an intelligent being to a series of rules. An input is received — for example, a command to "attack" — and then run through what may be an incredibly complex series of rules ("if enemy is within certain distance, move towards enemy," or "if enemy is firing weapon, start firing own weapon," for example).

Anark's Galapagos

Anark knows all about artificial life. Its first game is *Galapagos*, in which players must breed a new type hero

Anark's *Galapagos* is not only an example of leading edge artificial life technology, it is also one of the most impressive new game concepts Next Generation has seen.

Basically, *Galapagos* is a puzzle/action game in which players need to guide a character, Mendel, through a series of levels filled with various dangers — lava pools, lasers, pits, knives, and so on.

What makes the game unique is that Mendel is a fully realized Artificial Life construct. The technology that controls Mendel is called NERM (Non-stationary Entropic Reduction Mapping). Enabling self-organizing mappings between inputs and outputs, NERM is a technology that is comparable in its results to a neural network or genetic algorithms (although the actual technology behind NERM is a trade secret, which Anark is unwilling to discuss).

NERM is actually quite different from more traditional artificial life approaches, as Anark's Steve Collins explains: "Neural networks have a number of limitations that NERM controllers overcome. For example, neural networks are primarily limited to mappings that are one-to-one: In other words, for any given set of inputs for any time there is a single set of outputs. But with NERMS," Collins reveals, "you can create much much more complex mapping between inputs and outputs."

This gives NERM-controlled Mendel a greater range of possibilities than a neural-network controlled system.

The NERM technology could (and if Anark's plans reach fruition, will) be applied to any number of problems that require complex solutions. For example, it could be used to control the fuel injector of a car to always provide the optimum stream of fuel for a given situation, or let the stop-light grid of a city arrange itself into the pattern that enables traffic to flow the smoothest.

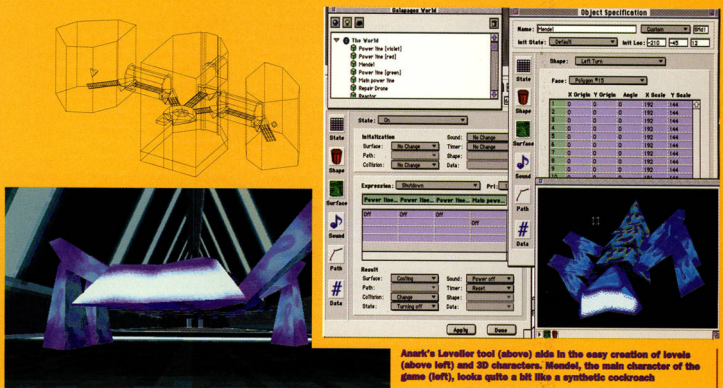
So how does NERM work with Mendel and *Galapagos*?

Mendel can sense two things, infrared light and acoustics, which are the inputs for his NERM controllers. The outputs are to simulated servo-motors which can then produce realistic body movements.

Continues Collins, "all the things that Mendel does are totally a product of those NERM controllers and how they organize the data they receive. What you get out of that is a creature that acts and learns and moves like a real thing."

When the game starts, Mendel is totally helpless — he can't even walk until the NERM controllers organize to the point that he learns how to use his legs. The only thing he has is an awareness that death is a bad thing. The user must then attempt to guide Mendel through the world, teaching him the rules of survival along the way. For example, if Mendel was walking towards a cliff, you could let him fall off. This would reset the level and give you a new version of Mendel that was more adverse to walking off cliffs. Or, as he approached the cliff, you could yell "No!" (assuming you have a microphone attached to your Mac or PC), and he would turn away, again with a new aversion to walking towards cliffs. Or maybe he walked away from the cliff to begin with, and you yelled at him till he jumped off — that would reset the level and give you a new version of Mendel that was less likely to walk off cliffs — and less likely to listen to you.

The look of the game is futuristic and largely abstract, which was entirely

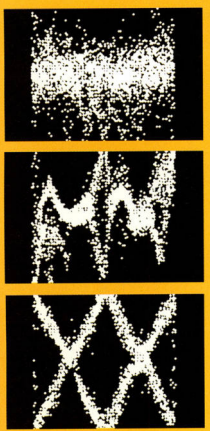


Anark's Leveller tool (above) aids in the easy creation of levels (above left) and 3D characters. Mendel, the main character of the game (left), looks quite a bit like a synthetic cockroach

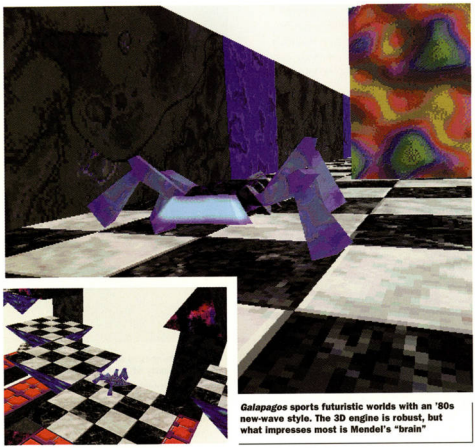
intentional on the part of the designers at Anark — one of the gameplay elements is figuring out exactly how each game world works. Mendel himself is also fairly unfamiliar looking, which, again, was intentional. The designers felt that if they made Mendel look too much like an actual animal, a cat or a gerbil, say, people would have too many preconceptions about how he should act and what he would be capable of.

And the gameplay? "In the game the excitement is to figure out how these Escher-like worlds work," says Collins, "while this completely autonomous creature, who has no idea you exist, goes about his life. He is totally unpredictable in that he obeys his own laws — not like the monsters in *Doom*."

Collins continues: "What you end up doing is trying to psychoanalyze what he is going to do in a given scenario. It's a new genre of extremely subtle gameplay." Next Generation agrees, and won't be surprised if in years to come, Galapagos is remembered with the same reverence as *Pong*... ng



A graphic representation of a NERM controller from chaos (top) to a solution with multiple outputs per input (above)



Galapagos sports futuristic worlds with an '80s new-wave style. The 3D engine is robust, but what impresses most is Mendel's "brain"

By applying the rules to the input, output is generated. Any complex AI system has to attempt to allow for every possible input in a system — a task few are up to, except in limited, toy worlds (like games). Even then, AI systems almost never act as intelligently as the humans they are attempting to mimic and are often given to extremely repetitive behavior patterns that can eventually be discerned and then beaten by human players.

Artificial Life systems start with a simple set of rules and allows complex, organic-seeming behavior to emerge from them.

Artificial Life, on the other hand, takes a radically different "bottom-up," constructionist approach. Instead of starting with a massive series of rules, Artificial Life systems start with a simple set of rules with a view to complex, organic-seeming behavior emerging from them. The immediate advantage of this approach is that because the interactions of even simple rules in simple systems can lead to exceedingly complex behavior patterns, it is generally impossible to use a reductionist approach (artificial intelligence) when trying to create organic-seeming systems on a computer.

But the difference between AI and Artificial Life is more than one of approach. While an immensely successful AI system might act truly intelligent, it could do so without ever seeming "alive" or mimicking the behavior of a living creature. An equally successful Artificial Life system, however, might display the exceptionally complex, organic behavior of a living organism without ever displaying, or possessing, the intelligence of anything much advanced beyond a virus, or possibly in the near future, an ant.

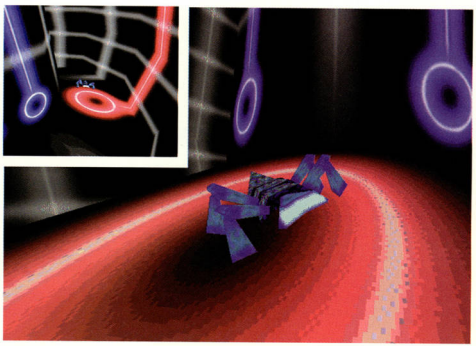
The difference between AI and AL is the same as the difference between "giving a man a fish (and feeding him for a day), and *teaching* a man to fish (and feeding him for a lifetime)." Except that, of course, as this early stage of Artificial Life's development, we haven't got near the river yet, let alone dangled a line in.

Few researchers would claim that Artificial Life organisms are truly alive, but

the best ones exhibit the same sort of complex behaviors found in naturally occurring organisms and give scientists (and game developers) a relatively easy way to examine the complex interactions found in living systems.

Although AL as a science is only about 10 years old, the first serious demonstrations of complex, organic-seeming behavior in a game came in 1968 with John Conway's landmark game, *Life*. *Life* is grid of cells that can be either on (black) or off (white). The state of a given cell is determined by that of its eight neighboring cells. If a cell has less than two neighbors alive, it will be dead (of "exposure") in the next round. If it has three or four alive neighbors, it will stay alive. If it has more than four, it will die of "overcrowding." If it is dead, and it has exactly three live neighbors, it will come to life in the next generation. Although very simple, populating the set-up screen with various patterns can eventually — after the program has had a chance to run through many rounds — breed a state of equilibrium in which the cell population seems to be self-sustaining, and the resulting pattern often mimics one of the recurring patterns seen in natural life.

Despite the name, *Life* is not alive — it's not even what we would consider today to be Artificial Life. It's a cellular autonoma (CA), a construct invented by John Von Neumann (with help from mathematician Stanislaw Ulam), whose vision of a complex, self-replicating CA that was also a Turing machine (what we know of today as a computer), was the first predecessor to all future Artificial Life



Anark's *Galapagos* stars Mendel (and yes, Anark assures us that it is a he). It is indicative of the complexity of artificial life that such low-level "organisms" represent the state of the art

work. The most important thing about *Life* was not simply that it existed and created complex, organic-seeming results, but rather that it did it with such simple rules (Von Neumann's CA had nearly five dozen cell states and pages of rules).

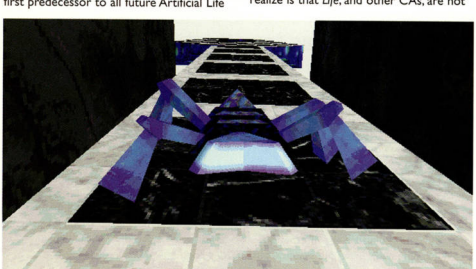
"Artificial life as a paradigm is being grossly overused. It's just a popular term"

Steve Collins, Anark, Creators of *Galapagos*

The rules that governed *Life* could be used to create an (albeit unwieldy) Turing machine, too. It is equally important to realize is that *Life*, and other CAs, are not simulations of a complex system; they are complex systems in their own right, and it is sometimes hard to believe that CAs, which generate such life-like results, are not somehow truly reflecting the processes which occur in nature.

Despite the promise of CAs, research into them was extremely limited until the mid-1970s when cheap, powerful (for the time) computers enabled many people to create CA and rule-based programs that had previously been possible only as hypothetical experiments. Creating working versions of Von Neumann's self-replicating computer, realistic-seeming models of bird-flocking behavior, and virtual ants, a small core of researchers pressed the science forward. Although the entire story is beyond the scope of this article (see Essential Reading on page 59) for more information), by the mid 1980s, a true science for creating Artificial Life had developed, using such techniques as neural networks and genetic algorithms.

Neural networks operate and "learn" from their environment similarly to the way biological neural networks — brains — do. In genetic algorithms, multiple algorithms are tried for solving a problem, and the algorithms which work best are



***Galapagos* incorporates a number of different camera angles, many of which are user selectable. In fact, using the correct camera angle is essential to solving some puzzles**

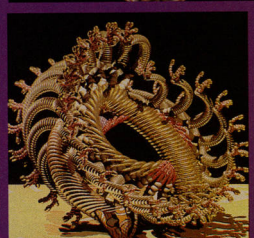
Computer Artworks

The principles behind artificial life are already extensively used in the creation of graphics and art









William Latham's company, Computer Artworks, uses artificial life routines in its Mutator Engine (left). Genetic modeling algorithms are incorporated in the Engine code to provide the 3D models with organic characteristics. The company's attempts at breeding artificial lifeforms are extremely interesting to observe (breeding mutation, top left) and resemble the organic artwork of Alien designer, HR Giger. Its Organic Art screensaver mutates and 'breeds' in realtime (above right). Great art, but will anyone be able to make a game out of it? Computer Artworks hopes so

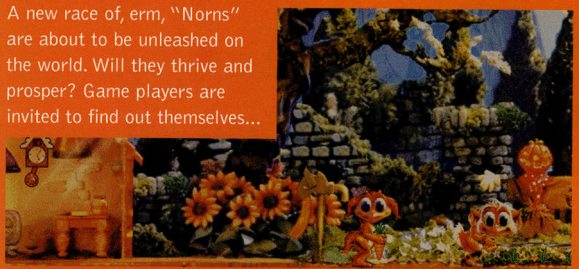
William Latham's Computer Artworks is busily engaged in turning its genetically modeled Mutator engine into the basis of a computer game. According to Latham, "Computer Artworks can now be thought of as a games developer," rather than just a producer of pretty works of digital art. The reason for this is that Latham and his colleagues are grappling with the intricacies of creating a full-blown Artificial Life computer game. The game will be based on Computer Artworks' Mutator Engine, which uses genetic modeling not to create digital organisms but to create new shapes and forms with an oddly organic look.

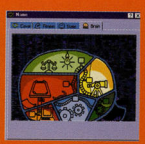
Like the Artificial Life engines behind *Creatures* or *Galapagos*, Computer Artworks' Mutator Engine can be used for all manner of other applications (financial analysis, for example) but Latham, who is essentially an artist, is more concerned with using it for exercises such as predicting the shape of the house of the future. It is likely, therefore, that any game based on the Mutator Engine will be angled more towards creating strange, futuristic worlds rather than creatures which socially interact.

At the time of writing, Computer Artworks has embarked on a pilot scheme for the game which will be ready for delivery next March, by which time Latham hopes that the initial interest shown by game publishers has not waned. ng

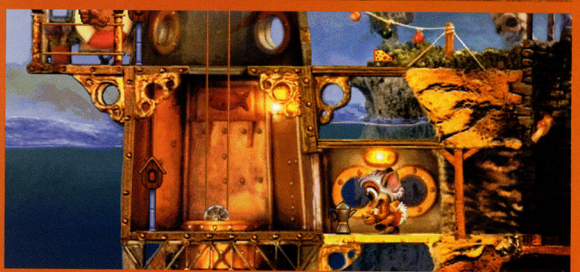
Millenium Interactive

A new race of, erm, "Norns" are about to be unleashed on the world. Will they thrive and prosper? Game players are invited to find out themselves...









Millenium's *Creatures* is certainly cuter than *Galapagos*, and it takes place on a 2D plane. Players can track the stats of their Norns through the generations (above), as well as provide them with balls and other playthings to keep them interested. Is *Creatures* the ultimate version of *Little Computer People*? Time will tell, but the game is certainly as fascinating to watch. And these little computer organisms have the capability to learn, grow and evolve. (But don't get too attached — the Norns have a 40 hour life span)

One of the leading developers, along with Anark, in consumer level Artificial Life is Cambridge, U.K.-based Millennium Interactive, whose soon-to-be-released *Creatures* game for the PC will be the one of first readily available, tangible manifestation of Artificial Life. The world of games, previously home to all that is frivolous and justified by nothing more sophisticated than pure, unadulterated entertainment value, has, through Artificial Life, made an evolutionary jump into a scientific test-bed.

Millennium's interest in Artificial Life grew from a project undertaken by *Creature*'s chief architect, Steve Grand, involving connecting a neural network up to a grid of flashing lights, rather than a computer screen. The company took an overall interest in the technology, but before sinking money into it, had to be sure of some sort of financial return, so it took the obvious step of turning the technology into a computer game.

If *Creatures* hits, this will pay off. According to Millennium's Michael Hayward, "The next stage is to develop partnerships, which would enable us to exploit the underlying technology of *Creatures* before anyone else does." But so much attention has surrounded the game, and indeed, the game itself is looking so compelling (it is in the final stages of debugging at the time of writing) that it may be some time before Millennium is able to explore the possibilities of its Artificial Life engine.

On paper, these possibilities are astounding. By digitally modeling organic life processes, such as a genome set (which, like all sets of genes, can handle a level of mutation) which governs digitally modeled versions of the chemical reactions which take place in the bodies of living organisms, and a brain whose synapses connect according to external stimuli much as in a living organism, Millennium believes it has created a system which, in Michael Hayward's words, "Is like a heterogeneous neural network that modifies itself, without anyone having to say yes or no to it." Millennium is hoping that, when applied to its digital "Norns" (*Creatures*', erm, creatures), it will enable the Norns to develop organic instincts for survival and self-propagation. And this looks to be an attainable aim.

Millennium's Toby Simpson is excited by the behavior exhibited by one Norn during the final fine-tuning exercise devised by Millennium, aimed at breeding Norns with interesting behavior patterns: "One of the Norns worked out all by itself that if it picked up eggs and threw them in the incubator, out would pop a friend. So it spent a lot of time scouring its habitat for eggs.

This was unbeknown to my colleague who went to lunch and got back to find a room full of Norns squabbling with each other. He couldn't work out where they came from until the first Norn brought another egg into the room."

The Norns will have objects like teleport machines, submarines with viewing ports, desert islands, bees' nests containing honey, jack-in-the-boxes, rubber balls, and so on at their disposal, and the interest lies not in seeing whether they can merely survive but in seeing how they can develop by learning from visual and tactile stimuli (coming from both found objects and humans playing the game). It will also be interesting to note how groups of Norns can learn to interact with each other, and most important of all, how that interaction alters down generations of Norns.

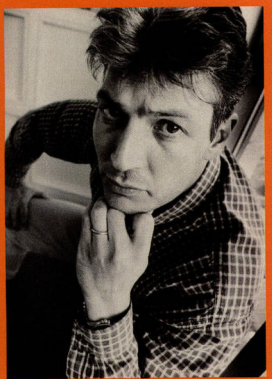
Not even Millennium knows what is going to happen in any of these respects, so everyone who becomes an early *Creatures* adopter will be engaging in a fascinating experiment in digital genetics. Of course, Millennium might not have got things quite right, so this experiment may prove a huge flop. At least Norns only have a life-span of roughly 40 hours, so it will take much less time for *Creatures* adherents to see the effects of evolution than it does in the natural world. Indeed, one of the most startling aspects of Millennium's *Creatures* is its potential as an experiment in digital social engineering. This is something which Millennium hopes to monitor carefully using the WWW.

To understand what is meant by digital social engineering, imagine the organic analogue: an entire new species, perhaps as the result of a major genetic mutation, springs into existence. How will this new species evolve? How will it cope with differing environmental conditions? How will different races of the species evolve in isolation in different parts of the world? And what will happen when these races cross-breed? The structure of *Creatures*, at least on paper, should enable us to observe these phenomena in the digital world.

Each *Creatures* owner will take delivery of a set of eggs, on disk, which have different genetic characteristics to all other copies of *Creatures* — or so Millennium assures us. Millennium has built into *Creatures* the ability to manipulate your Norn's genomes, so expert *Creatures* users will be able to perform genetic experiments designed to breed a certain type of Norn. Millennium is hoping that, as copies of *Creatures* find their way around the globe, people in different countries will interact with their Norns in different ways, and manipulate their genomes in different ways, thus breeding different races of Norns with different behavioral patterns and social characteristics.

Norn eggs can be distributed freely. Having bred, say, ten generations of Norns, you could take one of the latest batches of eggs, put it on a disk and hand it to a friend, or post it on the Internet. This raises all sorts of possibilities, which are rather reminiscent of dog-breeding. For example, warrior Norns could be bred, or clown Norns. Even Millennium does not know to what extent this will take place, but let us hope that the basic code it has written is sophisticated enough to enable Norns to develop emphatically through the generations.

Digital life, it seems, has the potential to tell us much about ourselves. How would have ever thought that such a revolutionary social experiment would be sold as a computer game? ng



Millennium Interactive's Michael Haywood predicts the company's CyberLife technology will find uses in traffic control systems and more

mated, creating progeny algorithms that attempt to solve the problem, and so on, through multiple generations until a successful algorithm evolves.

Unfortunately, while the term Artificial Life certainly sounds cool, there are some who question the validity of using the term "life" to describe this new science. "Artificial life as a paradigm is being grossly overused," says Scott Collins of Anark, who's *Galapagos* (see page 52) features an Artificial Life construction, Mendel, as the main character. "There is no language for Artificial Life. From a mathematical standpoint there is just no basis for discussion — 'Artificial Life' is just a popular term, and the distinction between real Artificial Life and AI is being blurred right now."

Collins continues, "We actually prefer to discuss this technology in terms of complexity theory. All the things that are being done in 'Artificial Life' can be better described in terms of complexity theory — neural networks, NERMs, genetic algorithms, and genetic programming."

Complexity theory is basically the study of how complex systems change over time, and the underlying reasons that cause that change. Collins presents the analogy, "Imagine you have a big huge plastic sheet and you toss two handfuls of sand onto it. Then you vibrate and wrinkle the sides of plastic, causing the sand to move around in interesting ways. Now imagine you made the plastic invisible — but you can still see the sand move and you see all these weird interactions and dependency. Complexity theory is a means to let you understand the invisible plastic and how and why the plastic brings about changes in the thing you're observing."

In the real world, complexity theory can be used to demonstrate that very simple inputs — a butterfly flapping its wings in Siberia — can have very real, dramatic consequences in totally unforeseen areas — like a hurricane in the Atlantic. (To continue the plastic sheet analogy, pushing the plastic sheet to raise one grain of sand one millimeter may create a depression elsewhere in the sheet that causes a thousand grains of sand to drop a meter — it's similar to the proverbial straw that broke the camel's back). "You can go from as small as you can imagine to as large as you imagine, and you can find no end to the scale of complexity," says Collins. "It points out to



The "Norns" in Millenium's game *Creatures* can't speak, but word balloons show their approximate (hey, they're Norns) thoughts

you how little we know and how little we can control the world around us. Complexity theory points out how obscenely hard it is to know anything about any system." And yet with a few simple rules, a system that generates an immense amount of realistic-seeming complexity can be generated on a computer as primitive as an Apple II. Collins adds, "I think that complexity theory is the most significant paradigm (mathematical and scientific) that has graced physics, mathematics, and scientific thought since Newton's discoveries. It spells an end to a reductionist view to the world around us."

But how does it relate to games? "You can use complexity theory to create algorithms that exhibit those same adaptive characteristics observed in natural systems — things that exhibit lifelike qualities that are simply not found in rule-based AI systems," Collins explains.

This has two major implications that are likely to bring about a more fundamental change in the way people play — and create — games than any other advance foreseeable in the next decade.

First, expect games that feature Artificial Life creations as the major characters. The first two games to feature Artificial Life in any significant way, Millennium Interactive's *Creatures*, and Anark's *Galapagos*, take this strategy, in which the gameplay revolves largely around interacting with a creature or creatures that act in a life-like manner. Don't confuse this with the toy (but still very enjoyable) life of games like PF Magic's *Dogz* or *Catz*, which use a rule-based AI method to create a simple simulation of living animals.

Mendel, the star of *Galapagos*, comes with no preset behaviors, and is for all practical purposes, a real, independent organism — not a simulation. Norms, the characters in *Creatures*, have a number of behaviors preprogrammed in but still also exhibit much of the unpredictability and self-organizing behavior of Mendel. However, Collins cautions potential players not to accept the claim of every game that boasts of using Artificial Life at face value. "There are a lot of people who I think will try to pull the wool over people's eyes," he warns, " and pass products off as being this or this, making claims that far exceed their actual characteristics."

After playing a racing game for a week, a player could have a fundamentally different game than someone else who purchased the same title

Second, by applying the principles of complexity theory to standard AI routines, new routines that tailor the AI to the way the player reacts can be generated "on-the-fly." After playing a racing game for a week, say, a player could have a fundamentally different game than someone else who purchased the same title. It could have evolved into a game in which the strategy of the computer opponents was to ram your car if it got too far behind, while another copy of the game could have opponents whose strategy it was to simply give up and conserve resources for the next race. Yet another copy may simply ensure that the computer car is tuned the same as yours.

Sound intriguing?

Now imagine that not just the opponent AI, but everything in a game is designed with Artificial Life characteristics — the environment, the NPCs in an RPG, the scenery texture maps, the personalities of your computer-controlled companions, the motivations of the drivers of every tank on a battlefield, everything. The possibilities are literally endless.

Complexity theory works on both a macro and micro scale. Imagine the effects of charting the personality of every worker on the line of every factory and every consumer in a business sim. It literally couldn't be done in a million person hours using conventional programming techniques, but with Artificial Life techniques it's possible. Adds Collins, "What complexity theory-based techniques will offer is a scary, almost surreal, amount of unpredictability that will really bring you into these virtual worlds. As bandwidth increases, and as we create more and more immersive graphics, you're going to find yourself in worlds that are amazing mock-ups of worlds you can't imagine now." Artificial Life will lend a type of spice that will make every virtual experience feel like it's real in its own way. It will change the overall quality of games dramatically.

As in so many other areas, games are turning out to be one of the first practical applications of Artificial Life. But the technology is not limited to games.

Millenium's Michael Hayward is brim-full of examples: "What Artificial Life will be good at is building a knowledge base with no preconceptions. For example, it could be used in Internet search engines, where it could learn the sort of things you like and go and find them. Or, it could cope with 3D database analysis, in which a company like Visa could use it to monitor buying patterns and look for weird stuff. Likewise, it could be

Essential Reading

For more information on Artificial Life and Complexity Theory, Next Generation recommends perusing the following:



Artificial Life Games Homepage

http://gracco.irmkant.rm.cnr.it/luigi/lupa_algames.html#1

Plenty of links and software, but one caveat — these "games" are largely non-interactive demonstrations of a-life technology. While fascinating, don't get your hopes up if you're looking for an a-life based shooter. Lots of the games come with source code.



Artificial Life Online

http://alife.santafe.edu/

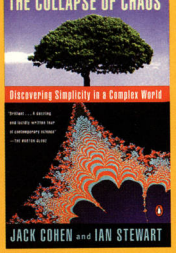
Sponsored by the MIT Press, this page provides lots of links as well as a great deal of content. As a good starting point for learning more about Artificial Life, this site has information on the basics of the science. Much of the material is highly technical in nature, and not for those who shy away from difficult math and physics concepts.



Marco's Maddening Artificial Life Page

http://www.wi.LeidenUniv.nl/home/mvdweg/alife.html

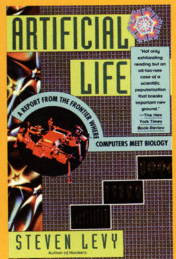
Lots of links, as well as some good local content, including an excellent MPEG movie, and some very interesting papers characterize this page, which is done with a more light-hearted style than most. A-life has become an intriguing hobby for many in academia.



The Collapse of Chaos: Discovering Simplicity in a Complex World

Jack Cohen & Ian Stewart
Penguin, 1994

Although the book assumes you have zero knowledge of science (and thus is a little patronizing in the early chapters), it presents the concepts of Complexity Theory as well as anything we've seen. The first half of the book focuses on what Science knows about Complexity Theory, the second raises questions about what it doesn't, in a very interesting way.



Artificial Life: A Report from the Frontier Where Computers Meet Biology

Steven Levy
Vintage, 1992

The best popular work on Artificial Life, Steven Levy (author of the must-read Hackers) traces the sometimes controversial history of Artificial Life from Von Neumann to the present. Levy also delves into some of the philosophical issues raised by Artificial Life.

used to make stock market predictions.

"Because it has no preconceptions," Hayward continues, "it won't know anything at the start. But it could monitor the stock market over a period of time and on the basis of that predict future trends. Or it could be used on massive phone networks to predict call surges."

These are all areas in which AI-based neural networks have been used to offer oracular predictions, with mixed success, so it would appear that in the same way, Artificial Life has much proving to do.

Hayward points out that AI-based neural networks have preconceptions. This is because they are linear and rule based — one set of inputs fed into a neural net will always produce the same output. This is emphatically not the case with Artificial Life systems, which have an in-built element of unpredictability, which comes from the genetic engine.

One application of Artificial Life currently under investigation is in systems of traffic lights, where each traffic light on a road could talk to its immediate neighbors, and, with the help of rudimentary, automatically generated traffic flow data, learn how to keep traffic flowing as quickly as possible. Other applications of AL include televisions which learn what sort of programs you like to watch and intelligent microwaves which automatically cook, say, a pizza for the right length of time.

If it all sounds very far-fetched, not unlike the grandiose claims of early AI researchers, it shouldn't. Genetic algorithms have already been used in several real-world applications, and unlike AI expert systems, which require massive capital investment for potentially limited returns, Artificial Life-based systems have the potential to be cheap and easily customizable.

Artificial Life is one of the most exciting new fields of scientific research to come along in years. Whereas most players may have experienced what *Zork* author Dave Lebling termed, "the domestication of AI," when they play games, the imminent arrival of *Galapagos* and *Creatures* should give gamers a chance to interact with unfettered technology that is absolutely on the frontiers of scientific discovery. It's going to be very, very cool.



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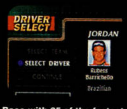


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PlayStation



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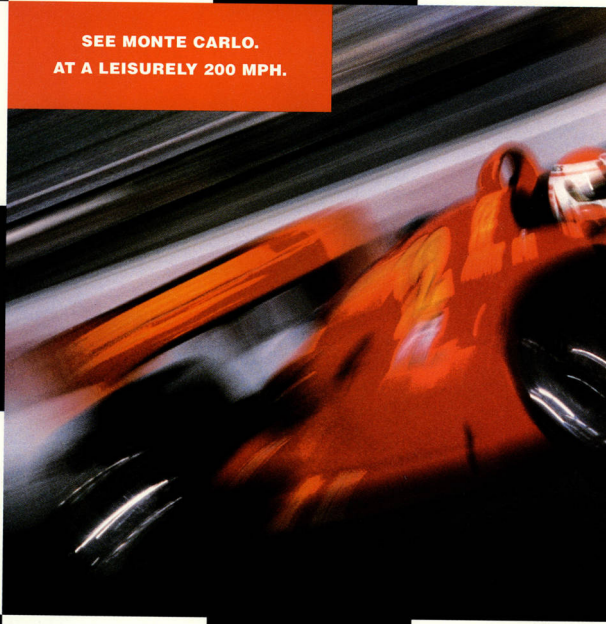


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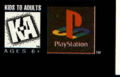


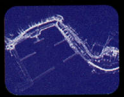
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THE GREAT VIDEOGAME SWINDLE?

Who really invented the videogame? Most people will say Nolan Bushnell with *Pong*. A few may say that Steve Russell's *Computer Space* started it all.

But there's more to this story than meets the eye. Prepare for scandal, intrigue, and wheeling and dealing as Next Generation uncovers the roots of the videogame industry...

Although many gamers will remember Steve Russell's *Space War* as the first computer game, for most people — and for most practical purposes — in the beginning, there was *Pong*.

Certainly, this staggeringly primitive coin-operated arcade game involving two little lines of light gently batting a little square of light across a screen is the accepted starting point for most trawls through the history of the multibillion dollar beast that is today's interactive entertainment industry.

It follows, therefore, that the man widely thought of as the creator of *Pong*, Nolan Bushnell, is hailed as the founding father of videogaming. The product and the man are part of the game market's mythology: the brilliant breakthrough and maverick genius that lit the blue touch paper for the most dramatic cultural and corporate explosions since the birth of rock 'n' roll.

But in reality, *Pong*'s role in the development of the videogame business — while undoubtedly pivotal — may not be as epoch-making as the most accepted accounts suggest. And Bushnell's role in the development of the game is also worthy of close examination. Bushnell openly acknowledges that he was a fan of *Spacewar* and that this was the inspiration for his own work toward the creation of *Pong*. But there is more to this story than a simple technological evolution — in the history of *Pong*, something stinks.

Did Bushnell invent *Pong*, or was it actually created by another one of Atari's employees, while Bushnell wasted time on a more complicated project that would never see the light of day? And then, either way, was *Pong* an Atari creation, or was the idea "borrowed" from Ralph Baer and the ill-fated Magnavox Odyssey? And even if it was, did Baer come up with the game by himself, or did he "borrow" it from Willy Higginbotham, a little-known employee of the U.S. Government's Brookhaven National Laboratory for nuclear research?

***Pong*'s roots can** most usefully be traced to the Massachusetts Institute of Technology at the dawn of the 1960s. The Institute was home to the Tech Model Railroad Club, a high-minded group of students that some would call esoteric and others would call nerds.

Fascinated by technology, they were intrigued by the hulking giants that were

the leading-edge computers of their day, the biggest and best filling entire rooms, running either punch cards or paper tape as software.

In the summer of 1961, Digital Equipment donated its latest computer to MIT, the PDP-1 (Programmed Data Processor-1). Compared to its predecessors, the PDP-1 was of comparatively modest bulk — about the size of a large automobile. It sold for a paltry $120,000, and rather than displaying its information on printed paper, the TX-O came complete with what was then called a computer readout terminal (a monitor, in modern parlance). The TMRC adopted it immediately as its own.

In those days, when computers were as rare as nuclear reactors, hackers wrote programs for the good of the computer-loving community. PDP-1 programs were stored on ticker tapes in a drawer near the computer, where anyone could try them out or even revise them. Creating a new program was considered an impressive hack. So was making a good revision.

Steve Russell, one of the Model Railroaders, decided to make the ultimate hack, an interactive game based on the sci-fi he loved. Initially his progress was slow, frustrating fellow club members who were intrigued by the project and anxious to see some results.

In the end, Alan Kotok, a more senior member of the TMRC, had to push Russell into finishing his work. When Russell confided to Kotok that he needed a sine-cosine routine to get started, Kotok went directly to Digital Equipment to get it.

"Eventually Allen Kotok, came in and said, **'All right, here are the sine-cosine routines, now what's your excuse?' He'd gotten it out of the users library.**

And I had run out of excuses so I sat down and wrote the program to do two space ships on the CRT and allow you to control it from the switches. This is 1961 was the prototype and the finished version was '62."

STEVE RUSSELL

It took Russell nearly six months and 200 man-hours to complete the first version of the game, a simple duel between rocket ships. Using toggle switches built into the PDP-1, players controlled the speed and direction of both ships and fired torpedoes at each other. Russell called his game *Spacewar*.

"It was always a two-person game, there **wasn't enough computing power available to do a decent opponent. I was the first person not to make money on a two-person computer game.**

The rockets were rather crude cartoons. But one of them was curvy like a Buck Rogers 1930's space ship. And the other one was very straight and long and thin like a Redstone rocket. And they were commonly called the Needle and the Wedge.

Except for the pacing, Spacewar was essentially like the game Asteroids. The space ship controls were four switches, four buttons for rotate counterclockwise, rotate clockwise, fire your rocket which gave you thrust, and fire your torpedoes. The basic version used switches on the console, and your elbows got very tired."

STEVE RUSSELL

In typical hacker fashion, TMRC members revised *Spacewar*. Some of these additions improved the game so much, they became integral elements. By the time

Spacewar was finished, Russell's simple game had an accurate map of the stars in the background and a sun with an accurate gravitational field in the foreground.

"I started out with a little prototype **that just flew the space ships around. Pete Sampson added a program called *Expensive Planetarium* which displayed stars as a background. Dan Edwards did some very clever stuff to get enough time so that we could compute the influence of gravity on the space ships. The final version of that was completed in the spring of 1962."**

STEVE RUSSELL

Battles took place around Edward's sun. Players could hook into its gravitational field to swing around and catch opponents. Hovering too close or flying into the sun meant death. Another hacker added a hyperspace button. When trapped by an opponent, players could hit the button and disappear. The risk was that you never knew where your rocket would reappear. You could reappear safely across the screen, or might appear too close to the sun to save your rocket.

Along with creating the first computer game, the members of the TMRC invented another first in electronic entertainment. Tired of having sore elbows, Alan Kotok and Bob Sanders scrounged parts from the Tech Model Railroad Club and assembled remote controllers that could be wired into the computer. These remotes were easier to use than the PDP-1's native controls, they had dedicated switches for every Spacewar function, including hyperspace buttons. This was the forerunner to the joystick.

Despite enjoying acclaim from his peers — and *Spacewar* being a fixture on just about every computer in every university by the mid-'60s — Russell never made a penny from his game. There were no such things as home computers, and the technology was too expensive to adapt for use in arcades.

He should, however, be rightly recognized as the creator of the world's first computer game. Russell made no attempt to copyright his work or try to collect royalties from it. He was a hacker, and he'd created his game to show that it could be done. He also sowed the seeds of everything that is to come...

But what of the first videogame (a dedicated game-playing computer that plugs into a TV)? In trying to trace any kind of technological "family tree," it's very difficult to come up with firm conclusions. There are two main problems: First, there are times when one technological leap inspires another, and there are also times when independent development of similar technologies occurs simultaneously, in genuine isolation of each other (and the only real way to tell the difference between the two is to trust the word of the parties involved). Two, when something is gradually evolving over time, at what point does it actually become something "new"? How does an outside observer jump in and pinpoint the moment when the crucial evolutionary step was made? It's not an exact science and is invariably open to subjective interpretation.

The case of Willy Higinbotham and his "tennis game" is an example of the second problem. The case of Ralph Baer, the Magnavox Odyssey, and whether or not Nolan Bushnell saw this game four months before the "invention" of *Pong* is an example of the first.

In 1958, according to Leonard Herman's book *Phoenix*, Willy Higinbotham was working at the Brookhaven National Laboratory, which was funded by the U.S. Government's nuclear research program. The facility often hosted touring parties of officials and guests, and Higinbotham thought it would be fun to come up with something more interesting than the flashing lights and graphs with which such visitors were normally "entertained." Working with one of the laboratory's oscilloscopes and having read the device's instruction manual, Higinbotham worked on a simple program that enabled two people to play "tennis." A horizontal line on the bottom of the screen represented the ground, and a small vertical line represented the net. Two players could then "bat" the ball between each other, at various trajectories.

In many ways, it wasn't a game. There was no score, the interaction was limited to defining the trajectory of the ball, and players simply continued until the machine was switched off. But in many ways, Higinbotham's creation can be seen as the beginnings of the idea that would eventually become *Pong*.

Higinbotham never had any commercial plans for his "game," and it is widely believed that it never actually got any further than the Brookhaven labs. Had Higinbotham considered marketing the game and applied for a patent, the rights would belong to the U.S. Government (it was developed on government equipment in government time by a government employee) which would make the videogaming world of 1996 a very different place. But it was never positioned as a way to make money — or indeed as a serious recreational device — yet whether by

coincidence or not, a very similar game would be developed in the years to come that would spawn a multibillion dollar industry.

"August 1966. I'm sitting around in New York **on a business trip at the East Side Bus Terminal, thinking about what to do with a TV set other than tuning in channels you don't want. And I came up with the concept of doing games,** building something for $19.95.

Now you got to remember, I'm a division manager. I run 200 people. I have a seven or eight million direct labor payroll. I can put a couple of guys on the bench who can work on something. Nobody needs to know. Doesn't even ripple my overhead. And that's how I started."

RALPH BAER

And so another branch of this evolutionary tree begins at Sanders Associates, a New Hampshire-based defense contractor in the late 1960s. Like many large contractors, Sanders had its share of sensitive and top secret activities; but in 1967, no one would have guessed what was going on in one of the labs.

Sanders Equipment Design Division was led by a stern and meticulous engineer named Ralph Baer, a man with a background in radio and television design who had been with the company for more than 10 years. Among Baer's best attributes as an engineer was his methodical recording of every step of the inventing process. From the moment he began fleshing out new designs, Baer would record the entire process, date it , and file it away. For that reason, he can tell you the exact date and location where he first got the idea to make television games.

Baer and his team created prototype videogames using a crude mechanism for transferring material to the television screen. The one thing they all lacked was a sense of fun (they made toys like a lever which players pumped furiously to change the color of a box on a television screen). Though Baer would later prove to be an excellent electronic toy and game designer, in the beginning he thought too much like an uptight engineer.

When he first presented an early light gun invention to the executive board, including the company founder, Royden Sanders, most of the executives felt that Baer was wasting the company's time. Some suggested Baer abandon the project, others simply wanted to pull the plug.

"The IR & D director came up and played **with our rifle — we had a plastic rifle by then. And he used to shoot at the target spot [on a television screen] from the hip. He was pretty good at it, and that kind of got his attention. We got more friendly. And it kept the project alive."**

RALPH BAER

Not only did it keep the project alive, but it also enabled Baer to allocate some extra resources to his "toys."

"Bill Rusch was **an engineer who worked for Herb Campman, the corporate IR&D director. I needed an engineer, and Rusch came mostly because his boss decided he didn't want him.**

My biggest problem that summer was motivating Rusch. He'd come in at 10:00 or 11:00 am and spend an hour talking, 'cause he was lazy and frustrating as hell. Rusch was an extremely creative and extremely lazy, hard to motivate guy. Brilliant. Also, he played really hip guitar.

But it's a good thing we had him because he helped put us on the map."

RALPH BAER

ng special

And so, in 1967, Baer added another member to the team, a man named Bill Rusch who brought some needed understanding of fun and games. With Rusch on board, the games began to take shape. He made a game where one player chases another player through a maze.

The first games were all two-player games in which players controlled every object on the screen. In September 1967, Rusch suggested a new game in which a hardwired logic circuit projected a spot flying across the screen. Originally, the object of the game was for players to catch the spot with manually controlled dots. Over time, the players' dots evolved into paddles and the game became Ping-Pong.

"So here we had a respectable **Ping-Pong game going, and it wasn't long before we called it a hockey game. Remove the center bar, which we put up there to emulate the net, and now it's a hockey game. So we put a blue overlay for blue ice on top of the screen so it looked more like hockey. We later added a chrome signal to generate the blue background electronically.**

We always had 3 controls. A vertical control for moving the paddles up and down, a horizontal control for moving them from left to right, so you could move close to the net if you wanted to, and what we called an "English control" which allowed us to put English on the ball while it's in flight."

RALPH BAER

As a military contractor, Sanders couldn't suddenly go into the toy business, so Baer had to try and find a customer for his game machine. He urged his bosses to notify television manufacturers about the project.

He'd come up with the right audience. General Electric, the first TV manufacturer to evaluate Baer's toy, showed some interest. Next came Zenith, then Sylvania. Both GE and Sylvania returned for second evaluations. RCA almost bought into the project and contract papers were written but never signed.

In 1971, Magnavox hired a member of the RCA team that nearly purchased the project. He told other Magnavox executives about the television game he'd seen at Sanders. Magnavox arranged for a demonstration of the television game and immediately saw merit in the idea. A contract was signed in 1971, production started in the Fall, and early units were shown at Magnavox dealerships in May 1972. It was called the Odyssey 100.

"Magnavox did a really lousy engineering job. They over-engineered the **machine and upped the price phenomenally. So the damn thing sold for $100. Here's this thing I wanted to sell for $19.95 coming out at $100. Then they began their advertising towards Christmas in the fall of '72, and they showed it hooked up to Magnavox TV sets and gave everyone the impression that this thing works in the Magnavox TV set only."**

RALPH BAER

Ralph Baer and Steve Russell never met socially. They would, however, meet on opposite sides of some very important litigation. (continued on page 211)

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3. HERE'S ME WITH SOME OF THE GALS AT SEATTLE SLIM'S.

MY GAME →











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31 new games previewed — it's a monster

Don't expect any sort of coherent theme this month — just the heart and soul of the largest issue **Next Generation** has ever put together. On the following pages you'll find some of the best games the world's software publishers have planned for you this Christmas and beyond.

76 Sega AM Annex **SEGA**
The scoop on Sega's newest arcade division

84 Gundam Gaiden **SATURN**
The mother of all mechs heads for PSX

88 Resident Evil 2 **PLAYSTATION**
You want it, Capcom's ready to deliver it

88 Rev Limit **NINTENDO 64**
Nintendo 64's *Daytona* killer? Could be...

90 Toshinden URA **SATURN**
Brand new for Saturn from the ground up

92 GameDay '97 **PLAYSTATION**
Can Sony's champ really take on *Madden*?

99 Pro-Yakkyu **NINTENDO 64**
Big heads and baseballs go great together

100 Virtual On **SATURN**
Sega's arcade conversions march on

105 Steel Legions **PC CD-ROM**
A revolutionary new online mech game

111 Meridian 59 **PC CD-ROM**
An online world that sprawls across the Net

115 Crimewave **SATURN**
Frenzied freelance police of the future

121 Dark Saviour **SATURN**
An RPG and Climax, the folks who built it

127 Shadows' **NINTENDO 64**
Shadows of the Empire hits Nintendo 64

130 KI Gold **NINTENDO 64**
KI — on the console it was first made for



135 Sony U.K. **PLAYSTATION**
Can Sony's U.K. team keep up the pace?

143 StarCraft **PC CD-ROM**
A sci-fi trip from the makers of *WarCraft II*

147 Interstate 76 **PC CD-ROM**
Autodueling with a '70s funk beat — *cool*

155 Wave Race **NINTENDO 64**
N64's best game since *Super Mario 64*?

161 Army Men **PC CD-ROM**
Studio 3DO and the war of the plastic men

167 Crusader **SATURN, PSX**
So how do you port a PC title to consoles?

170 Mass Destruction **MULTI**
Tanks, tanks, and more tanks. (And bombs)

172 Herc's Adventure **SATURN**
LucasArts' mythological romp with muscles

176 NBA Live '97 **PLAYSTATION**
Can EA Sports stay at the top of its game?

179 Titanic **PC CD-ROM**
Cyberflix's hyper-realistic (if icy) adventure

185 Pod **PC CD-ROM**
It's MMX-compatible, and it's coming

191 Treasures **SATURN, PSX**
Thrill-packed underwater action

197 Jet Ski Sports **ARCADE**
So many jet ski games, so little time

203 Comanche 3 **PC CD-ROM**
Novalogic's latest chopper sim takes off

205 Mechwarrior **SATURN, PSX**
Another classic PC title, ported to consoles

Sega AM Annex

There's a new AM division at Sega HQ. Now, the team responsible for *Sega Rally* is heading back out onto the highway...











These early visuals from *Sega Touring Car Championship* give an indication of the quality of graphics that AM Annex is striving for. Sega's Model 2b board delivers the visuals although the team are anxious to get to grips with its formidable big brother, Model 3. *Sega Rally 2*, perhaps?

Format: **arcade**
Publisher: **Sega**
Developer: **Sega AM Annex**
Release Date: **TBA**
Origin: **Japan**

Primarily we want to produce very powerful games, using strong colors and graphics that are very realistic. Also, it's very important that we work on games that we really want to do — we don't want to only make competitive games, we want to make captivating games based on new concepts, games that are really challenging for the player."

These are the words of Tetsuya Mizuguchi, the Sega producer who's broken away from the strict confines of the company's AM divisions and hand-picked a team that he hopes will be able to replicate the success of *Sega Rally*, the smash hit whose development he oversaw while working as a producer within AM3.

"We wanted good working conditions, and our new department is small," he explains. "From a creativity point of view, big teams have

"Most of all, we are really impatient to start working with the Model 3 hardware"

Tetsuya Mizuguch **Sega AM Annex**



Tetsuya Mizuguchi's ambition is to produce games with unrivalled realism for both coin-op and console markets



***Sega Touring Car Championship* offers a choice of cars (top right). Director Kenji Sasaki and his team (right)**



The atmosphere within Sega's annexed coin-op design department is very relaxed, with the emphasis on creativity and innovation. First project, *Sega Touring Car Championship* (above left)

Sega AM3

For the longest time, it was Sega's other coin-op division — AM2 — that received nearly all the press and public attention. Headed up by Yu Suzuki, and responsible for such hits as *Out Run*, *Virtua Racing*, the *Virtua Fighter* series, *Daytona USA*, and *Virtua Cop*, it was only with the arrival of AM3's *Sega Rally* that it became apparent to many outsiders that AM2 weren't the only guys pushing the envelope

With games like *Last Bronx*, *Manx TT*, and *Virtual On* following in *Rally*'s successful footsteps, AM3 soon found itself with its own entourage of press and dedicated gamers.

Will AM Annex manage to reach the same heights of critical praise and commercial success? Only time will tell. But the dedication of Tetsuya Mizuguch and his team to making it happen is without question.

advantages and disadvantages. We certainly don't believe that it's bad to be separated from AM3. Before creating the department, I explained the concept to AM3's manager and then to Higashi Suzuki, the head of amusement machine development at Sega. Together we all agreed that creating a new department, separate from AM3, would be a good thing.

"Initially, we started with only six or seven people — *Sega Rally*'s programmer and some designers. Then we took on board more staff. We're currently only working on *Sega Touring Car Championship*, but we're aiming at making about two-and-a-half games a year. This year we might even begin work on *Sega Rally 2*, but the game is only running in our heads at the moment! Most of all, we are really impatient to start working with the Model 3 hardware."



Sega Touring Car Championship is the logical progression from *Rally*. Presently only 60% complete, the finished game will simulate the touring car racing scene that's enjoyed a surge in popularity in Europe in recent years.

"It's essentially a competition game playable with linked cabinets," explains Kenji Sasaki, the director of the project. "Beginners will be able to play it and take advantage of the gradually increasing difficulty level. As in *Out Run* you'll have to reach a goal in order to get to the next level. But advanced players will also be able to enjoy its time-attack mode."

The team behind the game has pedigree, though not all of the Annex group has worked on racing titles before.

"Only a few of the staff that worked on *Sega Rally* are working within what's now known as AM Annex" says Mizuguchi. "We brought in some members from outside, and some have been transferred from other departments within Sega. We've got about 15 people in Sega Annex. As I said, we didn't want a big team. Our goal is to get respected creators working together."

Sega Touring Car Championship's



With *STCC*, AM Annex and Tetsuya Mizuguchi's ambition is to increase the feel of "weight" to the game's handling

ng alphas

programmers are striving to make it an even more exciting experience than its previous racing efforts.

"In *Sega Rally* the player was principally driving alone — it was kind of like the player performing in a competition against himself," points out Mizuguchi. "This time there'll be many cars appearing during a race, cars will bump into each other and generally get in each others' way. The competitive aspect will be really improved," he promises.

The rough-and-tumble

angle is one that graphic designer Kumiko Shioji is especially keen to bring to the fore. "We want the player to be impressed by the game from the first moment they look at it. When cars bump into each other we're aiming to get very impressive effects. We really want to avoid having cheap-looking graphics."

Sega is respected for researching its driving games meticulously, and this attention to detail is in no small part responsible for the success of games such as *Daytona USA* and, more recently, *Manx TT*, whose development saw its designers visiting the Isle of Man in the U.K. to get firsthand experience of the sport. AM Annex has approached the *Touring Car* project with a similar devotion to detail.

"We thought that a competition covering cars from all over the world would be interesting," says Mizuguchi. "We had the opportunity to see touring cars running up close, some of us had the chance to drive real racing cars, and we also met some pro drivers. After this, everyone here was excited by the prospect of making a game based around touring cars."

Kumiko Shioji has designed the game's cars and backgrounds, having visited numerous locations around the world to acquire the flavor of real tournaments. "I went to Finland, and I took some photographs in order to recreate backgrounds in the game. I look at real life backgrounds with my own eyes and try to recreate the same atmosphere on the computer screen. As you'd expect, the main problem I have is trying to keep everything close to reality."





Competition for places on any of the AM teams is fierce. Game designers and programmers from all over the world aspire to join coin-op's elite

The team has

only been working on the game since April but planned to have a playable demo finished by September in time for the JAMMA show. The eventual goal is to provide four cars to choose from — an AMG Mercedes, an Opel Calibra V6, an Alfa Romeo 155 V6 TI, and a Toyota Supra GT, all of which have been designed with cooperation from their manufacturers and thrown around on screen using Sega's well-established Model 2b technology.

Mizuguchi's *Rally* was lauded not only for its visuals but also its feel, a factor that made it the coin-op with the closest-to-reality feel ever seen in the arcade. Naturally, Mizuguchi is aiming for similarly impressive results in *Touring Car*. "We wanted to make a game with lots of 'gravity.' The weight of graphics could be the keyword in describing the game — we've been saying that a lot recently. We wanted to make a game graphically very 'heavy.' Sound-wise we're aiming for really impressive effects and music. We've sampled the engines of real cars, and we'll be putting speakers in the seat to give a realistic feel. We've also included techno music."

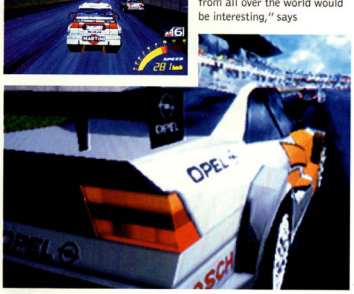
Mizuguchi's fondness of the dance music scene is manifesting in a way that mirrors what has been happening in the Western videogames industry, which has seen collaborations between the likes of Psygnosis and techno bands such as Orbital and Leftfield.

"In *Sega Rally* the player was principally driving alone. But this time there'll be many cars appearing during a race. So the competitive aspect will be improved"

Tetsuya Mizuguch **Sega AM Annex**







With its now customary 60fps update and hi-res display, *Sega Touring Car Championship* looks destined to become another racing classic for Tetsuya Mizuguchi's in a st[illegible]e that includes *Sega Rally Championship*, and more recently, the excellent motorbike racer *Manx TT*





Although *STCC* seems destined to be a a great game, it must be regarded as somewhat of a warm up lap for AM Annex, prior to getting to work with the Model 3 hardware

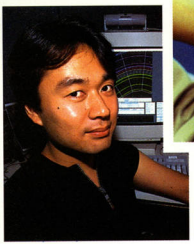
"Some of the music has been done by dance artists, and we've also got some work from AVEX-TRAX [a leading Japanese record label specializing in techno]," confirms Mizuguchi. "The concept was to make BGM [background music] which fits with the acceleration you feel in the game, so we decided to use techno music. We've used musicians from Japan, of course, but we're also using an artist from Belgium and one from Italy. We're writing a specific theme song for the game and, as we did for *Sega Rally Championship*, we're going to be putting out a race remix CD."

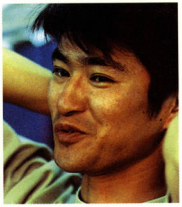
Sega Touring Car Championship

is likely to mark Sega Annex's first and last dalliance with Model 2 hardware. The team plans next to work with its esteemed Model 3 board, and whenever it's name is mentioned, Mizuguchi's eyes sparkle and a broad grin extends across his face with anticipation. Sasaki-san is equally optimistic about the possibilities afforded by Sega's newest technology. "Until now we haven't been able to make stages using rain or snow. Also we couldn't really do night stages — I don't mean completely dark stages, but stages with medium lighting and nice lighting effects. With a Model 3 board we'd be able to do these sorts of things.

"We've tried to make snow stages with Model 2 but we gave up because the general look was too crude. We'd be able to express ourselves more efficiently with Model 3."

"When a designer is working within the confines of Model 2, the work is very difficult," claims Mizuguchi. "Because the texturing is monochrome, designers have to gather different colors on polygons to get a good effect. This work is very fastidious and time consuming — with Model 3, and in the future, Model 4, the designer will be free to concentrate on other work."





Will the competitive rivalry between Sega's AM2 (*Daytona USA, Virtua Fighter*) and AM3 (*Sega Rally*) divisions spill over to AM Annex? Gamers can be forgiven for hoping that it will

Despite his track

record, Mizuguchi isn't in love with the idea of producing more racing games for the sake of it. "My prime concern is making games that are lively. I want to work on at least one per year and gradually improve their quality," he says. "But I also want to explore new concepts. Personally, I want to make new games that are based on dreams. I'm not saying rally games aren't my dreams, I simply would like to make games related to fantasy."

He concludes: "I want to create new worlds. I would also like to try, at least once, developing a dedicated console game."

Now *that* should be something to look forward to. ng



Graphic artist Kumiko Shioji visited Finland to research data for *STCC*

An interview with

Tetsuya Mizuguchi



"Unlike the arts, where it is often a matter of taste whether something is good or not, creating good interactive entertainment is more easily definable"

Tetsuya Mizuguchi has big plans for videogames. A former producer within Sega's Amusement Machine R&D Department 3 (AM3) and responsible for hugely successful coin-ops, *Sega Rally Championship* and *Manx TT*, he is now in a privileged position having formed a new AM department, provisionally titled "AM Annex." In his late twenties and currently enjoying a certain amount of autonomy within this new division, Mizuguchi-san's offices occupy the fourth floor of a small building a stone's throw from Sega's headquarters. And somewhat ironically, considering its racing game heritage, it sits above a car showroom.

Drawing on the talents of a small team of developers previously working within AM3 and AM2, Mizuguchi's first project is *Sega Touring Car Championship* (see proceeding pages). He recently invited **Next Generation** to look at a 50% complete version of the game, and to question him about the new department.

NG: What made you want to break from AM3 and set up a new AM department?

Mr. Mizuguchi: Our new department is a small one but that's not necessarily a bad thing for a working environment — big departments have their disadvantages. Before creating the new division I explained my concept to the head of AM3 and then to Yu Suzuki, and we all agreed that creating a new department would be a good thing.

NG: Will you continue making race games?

Mr. Mizuguchi: I hope to make one per year but while I'm still keen to make racing games I want to pursue some new directions. Personally, I want to make some new games based on dreams — not that *Sega Rally* wasn't a dream of mine! — or related to fantasy. I want to create new worlds and keep things very high-end, using nice colors and very realistic effects.

NG: How long have you been with Sega?

Mr. Mizuguchi: If my memory serves me well, after graduating from university I entered Sega back in 1990 — so about six years. I graduated from Nihon University of Art, a famous Japanese art college, where I majored in literature.

NG: And this led to a career in videogames?

Mr. Mizuguchi: When I was at university I studied different topics like physical senses, media, and so on. I was also interested in marketing... but there are no physical production tasks in marketing so I thought it would be boring. I preferred doing something in relation to human senses or entertainment — something more in relation with human nature, a field where I could do some research. I discovered that the entertainment world would be suitable.

Unlike the arts, where it is often a matter of taste whether something is good or not, creating good interactive entertainment is more easily definable. I chose Sega because it was using new technology and I was able to study things like human movements.

NG: What was your first project?

Mr. Mizuguchi: When I entered the company I joined a department which was doing some arcade cabinet design. During the first year I got involved in many different projects, but because I was interested in computer graphics, I joined a CG department that was designing *Megalopolis* [a prerendered shoot 'em up developed for the Sega AS-1 simulator].



NG: Describe working at Sega.

Mr. Mizuguchi: Sega is overflowing with creative-minded people. It is a very good place for creativity. In our new department, however, we don't feel like we're part of Sega's AM departments. If anything, we feel as if we're an external team. It doesn't mean we are completely free but it enables us to see what is happening beyond Sega's AM departments.

NG: What relations does AM Annex have with AM2 and AM3 ?

Mr. Mizuguchi: We all belong to Sega, so there are some frequent exchanges of staff between departments. Everybody respects the work of others and when a particular division is doing something exceptional, other departments do not hesitate to say so.

NG: Is Sega a typical Japanese company in the way employees are treated?

Mr. Mizuguchi: No, not really. I believe Sega gives its employees lots of freedom. I think it is possible to compare the atmosphere within Sega to the old Hollywood atmosphere. I believe it will be very good for the worldwide leisure entertainment industry to have, at its core, key people who have already had ten or 15 years of work experience within Sega.

NG: How many hours do you work a week?

Mr. Mizuguchi: I really don't know. Normally, I begin around ten o'clock but it really depends on the day. We sometimes spend nights in the office.

NG: What interests or hobbies do you have?

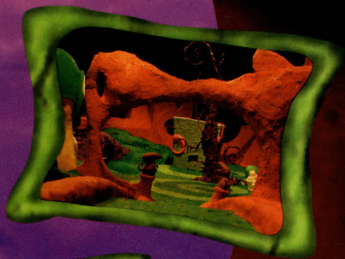
Mr. Mizuguchi: I like travelling and I'm fortunate to be able to travel a lot with my job. I also go clubbing a lot and I really love techno music, so I often go out in different techno clubs in Tokyo. Needless to say, the music we will put in *Sega Touring Car Championship* will be techno!

In Japan, many young people are making this kind of music, or are playing it as DJs. I enjoy going to techno parties and in this kind of place there is lots of energy and creativity. Sometimes, people will approach me if they know I work for Sega and make me listen to the tapes they've created!





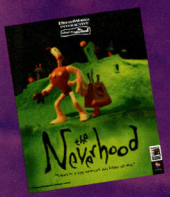
***Sega Touring Car Racing* is the first project to come from Tetsuya Mizuguchi's "AM Annex" division. Real cars such as Mercedes (above) and Opel will feature in the game**







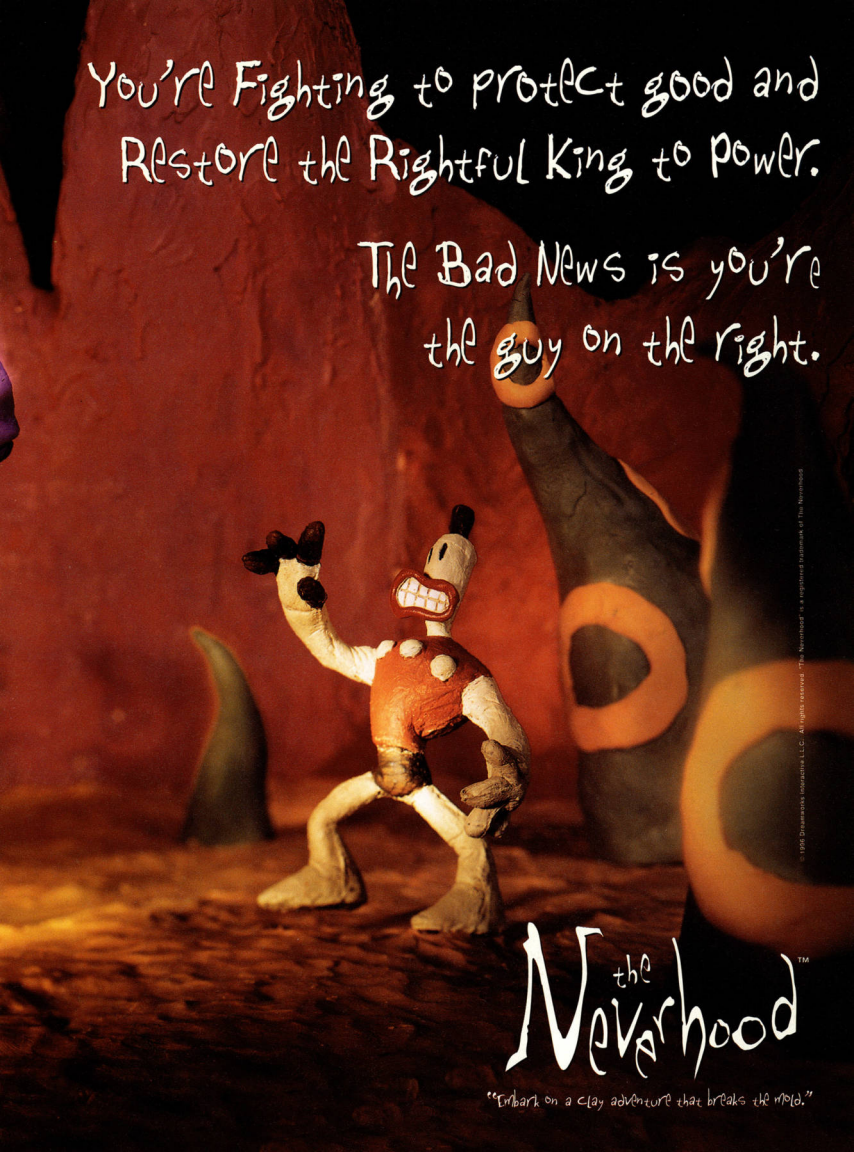
"A winner..."
—LA TIMES



"Clever, an utterly different vision and experience from all the lookalike games..."
—NEWSDAY

The good news is you're a lot smarter than the guy on the left. Good thing, considering you'll have to solve more than 60 puzzles in order to succeed in the twisted, clay-animated world of Neverhood. You'll help Klaymen avoid pitfalls, collect clues, and kick a little clay butt. All to defeat the evil Klogg and bring the Neverhood back to normal. At least, as normal as it ever gets.

DREAMWORKS INTERACTIVE [www.DreamWorksGames.com]

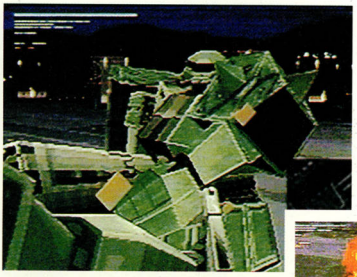


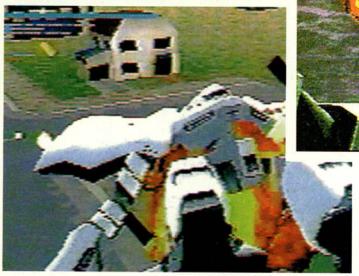
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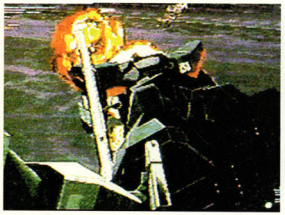
Gundam Gaiden

The mother of all mechwarriors is finally getting the kind of treatment it deserves

Format:	**Saturn**
Publisher:	**Bandai**
Developer:	**Bandai**
Release Date:	**November (Japan)**
Origin:	**Japan**







Look familiar? 'Mech combat has become a staple of video and computer gaming, but the inspiration for them all was the *Gundam* saga — it may have been done before, but at least *Gundam Gaiden* comes by it honestly







Missions are fought over a wide variety of terrain and conditions

The *Mobile Suit Gundam* saga, a long-running series of Japanese manga and anime based around soldiers outfitted with giant, walking battle robots, were the direct inspiration for such U.S. gaming mainstays as FASA's *Battletech*. Predictably, *Gundam* also spawned games for SNES and Genesis, all of which were either side-scrolling action or strategy titles. Meanwhile, in the 32-bit age, titles like *Krazy Ivan* and *Gun Griffon* were showcasing 'mechs the way everyone imagines them: from inside the cockpit.

Finally, it seems that someone at Bandai has woken up to the possibilities. *Gundam Gaiden* is a first-person, in the cockpit game using polygon-modeled 'mechs.

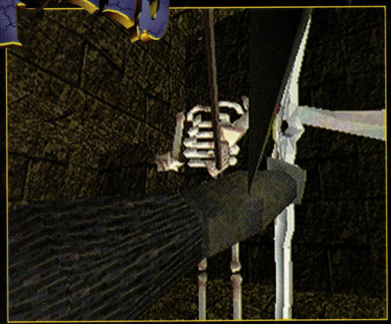
Based loosely on the first three *Gundam* films, *Gaiden* very consciously uses some of the most popular mobile suits in the series. The animation is being handled by the same team who worked on the latest *Gundam* OVAs (Original Video Animation, an animated work released directly to home video), resulting in smooth motion that matches the films exactly. Missions take place in the forest, desert, and at night, and effective use of terrain is a major strategic element. *Gundam* has had a long run, and this latest entry may very well take the series to a new level.

PLAYSTATION



KING'S FIELD II™





The King Is Back, But His Field Has Changed!

No more Mr. Nice King! He's working for the dark side now! King Alfred, the Holy King of Verdite has fallen victim to the minions of evil as ASCII Entertainment brings in another installment of last winter's hit PlayStation title *King's Field*!

In King's Field II, you will find the same gripping elements you found in the first King's Field, only with even **MORE** of the fantastic elements that addicted you to the original.

An awesome new world lies before you as you embark on your new quest. ASCII obviously put in an incredible amount of work to make this new quest in the kingdom of Verdite as lavish and realistic as possible. This realism stems from the same technology that was used in King's Field I, but this time, you have the entirety of the kingdom to explore!



Outdoors, inside castles, villages, underground passages and dungeons — all combine to make an immense world that will have you immersed within moments.

Make no mistake, this is no ordinary sequel. Numerous upgrades and captivating elements mix with the most addictive points of the original top-selling adventure to bring you the hottest new title to hit the PlayStation this year.

As you may recall from the first King's Field, a 3D texture-mapped, 360° world of larger-than-life enemies lay before you on the monster infested island of Melanat.

Shipwrecked on this island, you were to battle your way through levels upon levels of dungeons and monsters in search of the Moonlight Sword which was stolen from the King's Throne in Verdite (the kingdom on the mainland).

Your character, Alexander, learned magic spells, grew more skilled with his sword, and was able to pick up and equip any weapons, armor, or items found on the island. All of the elements of a winning RPG were packed into a first-person, Action/Adventure outer shell — bringing a very unique game to the genre which held the attention of most everyone. With vast improvements over the first, King's Field II is bound to share the same success story!

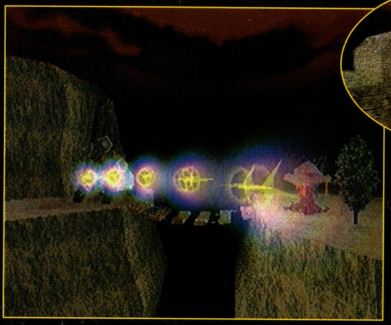
One of the most riveting elements of the new quest is that the storyline has been greatly improved upon! I know that a lot of us thought that the first King's Field was plenty deep, but ASCII has gone above and beyond to make this sequel an experience that will draw you deep into the involved plot — disabling you from putting down your controller until every last *Red Eye*, *DragoNewt*, and *Stool* are driven from the kingdom!

You start out the game with an introduction which allows you the chance to find out what has been happening since *Alexander* brought back the Moonlight Sword to the kingdom of Verdite five years ago. A cool intro sequence complete with voice over and full-motion cinematics bring you into the world as the King's son, *Prince Austin Lyle Forester*, a title that should have everyone in the kingdom bowing to kiss your feet. Unfortunately, your father — *King John Alfred Forester I* — has fallen to the will of the evil forces which are attacking your kingdom.



PUBLISHED BY	RELEASE DATE
ASCII Entertainment	Halloween '96
SYSTEM	**THEME**
PlayStation	Action/Adventure RPG
# OF PLAYERS	**SIZE**	**% COMPLETE**
1	CD-ROM	95%

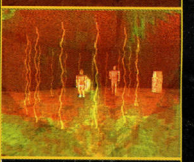














As you progress through the game to go out and save the world, you will have to talk to all walks of life in the kingdom. Eccentric Monks, irate mothers, indifferent soldiers, even an occasional enraged monster will have a few words for you. Your challenge, of course, is to win the favor of the people so that they will give you the help you need as you try to learn new spells of magic, pass over rivers of lava, and collect threads of power that can sew your kingdom back together.

"It's so addictive, they'll have to cut the power to my house to get me to stop playing!"

— Game Tester

Don't get me wrong, this is no "rocking at home with your crochet needles" game we're talking about! You'll come up against some of the most frightening and powerful enemies since Clash of the Titans!

In addition to the game's storyline, ASCII has also put forth a valiant effort to come up with humorous and stimulating dialog and characters to bring your quest to life. Such characters as *Jack*, a 100+ year old resident of Verdite with a more than stereotypical attitude and a funny senility about him, will bring sparks of humor that you'll enjoy throughout the game! Even a bit of romance enters the quest as the scantily clad elf merchant, *Lyn* — who has held a flame for the prince since childhood — drops hints about her feelings that even a *Golem* could comprehend.

Not to forget about the CD quality sound, of course! King's Field II has a wide selection of accompanying music to entreat your ears as you progress along your journey. Original scores are long enough to not sound repetitive and yet are not so intruding as to distract from the ambiance which they so artfully bring to the game. Other sound effects include terrifying wails, screams, and roars from the afflicted and from the enemy; thunderous explosions, the glorious sound of steel on steel during sword fights; and, of course, the exceptional Stereo effects that were such a notable achievement in the first King's Field! You can actually tell how close you are to a monster by how loud the eerie screeches and roars are — with some practice, you can even distinguish what you're going to come up against around the next bend!

Swordplay...

The fighting technique in King's Field II is slightly different from the original. The enemies have been enhanced to recognize your pattern of attack so that they can turn, block, even parry and thrust to put you quickly into the realm of the dead! What you will have to learn is to circle and then double back while the enemy is distracted. In this way, you will reduce your hits and live longer. As in the first quest, you can always go in for a quick hit, but in King's Field II, you will be less likely to achieve success — the Skeletons, for example, now have the ability to block with a shield, duck under a slash, and stab you while you try to retreat!

In addition, use your magic as a distraction while you go in for a hit. Once you learn some spells, stun the enemy first, then go in for the kill! Enemies can use the same tactics though, so be careful. They also attack in groups, so make sure that you don't get surrounded! Good luck!



With all of the improvements over the original King's Field, you may be worried that ASCII made changes in the intuitive control & easy-to-use pop-up menus. Well, let me put your





Remember me? Shore ya do...it's Leon Shore. Come visit my house whenever you need a friend or a guide.



Behind The Screams...

While the first King's Field was a phenomenal success, ASCII wasn't satisfied with just putting out a sequel with the same great features that made KF I a hit. So they put their best American team on the project working directly with From Software, Inc. of Japan to make King's Field II the biggest, best, blow out game of the year!











mind at ease. ASCII did leave in some of the already refined elements that made the first King's Field a roaring success. The intuitive control and pop-up menus remain unchanged for the most part. ASCII did, however, add a feature to the "System" menu which allows you to change the default button configuration to anything you want. This feature gives you just that much more control over how your game acts and reacts.

This much anticipated sequel to King's Field would have done incredibly well even without the vast improvements. Just on the promise of the same quality in the beautiful 3D polygon graphics and intensity of gameplay, King's Field II would have been a sell out game! But with improved sound, graphics, and storyline; along with a humongous world to explore, King's Field II is destined to be one of the top sellers this holiday season and well into next year!

I would wish good luck to you, Prince Austin Lyle Forester...but you're gonna' need a lot more than luck to make it through this one!





Inside Edge

King's Field II is immense. Your only hope of exploring the whole thing is to acquire the *Pixy Map* early on in your quest. (It's an automap which maps everywhere you go in the game.) Each village, castle, dungeon, and underground has its own map, so figuring out where you've been is as easy as pulling up your items menu!

To find the *Pixy Map*, you must make your way through *Varde's Forest* (a maze just beyond the castle in the first town). Once you've made it through the maze, you'll receive this map along with another important item.

To receive the *Pixy Map*, you will have to talk to *Varde*, the character that holds it. It is important to speak with every character you come across every time you see them. Characters change what they say after you've visited other villages and villagers, so talk to them often! For reference, your character keeps a log of all conversations automatically.

Behind The SCREAMS

It all started with a wish list. Design and Layout coordinator David "Commander" Silviera and Production overseer, Mark "The Monk" Johnson (doubling as ASCII's video game consultants and game masters) were given the opportunity to make a wish list for everything they wished had been in KF I and everything that could have been better that was already in the game. Combining feedback information from the consumers via the On-line News Groups, registration card information, and their own ideas, they put together a list of upgrades that would make the ultimate game. After presenting the list to From Software, Inc. of Japan, ASCII also added Austin (as in "Prince") Leininger to the ranks of the KF II team to help implement the upgrades and make KF II a smashing success.

"Rewriting the Japanese script was a blast," quoth Austin. "It was the opportunity to actually create an entire script for a video game only limited by the original story line from Japan."

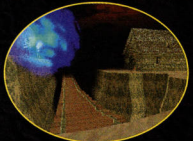
The improvements over King's Field I include...

- Larger world to explore.
- Outside areas of exploration.
- CD Quality music and sounds.
- Improved character definition and dialog.
- Enhanced storyline and plot.
- More fearsome enemies.
- Enhanced weapons and magics.

And Much, Much MORE!



THE FACE OF THE ENEMY!



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Resident Evil 2

Format: **PlayStation**
Publisher: **Capcom**
Developer: **Capcom**
Release Date: **TBA**
Origin: **Japan**

Without a doubt, this is the most hotly anticipated sequel of the year, but can Capcom live up to its own success?





An empty police HQ... until the zombies arrive

Picking up where the original left off, the sequel is set in 1998 in Racoon City, where a medical corporation, Umbrella, is performing some dubious experiments on humans, and the arrest of several Umbrella execs has coincided with an outbreak of serial murder. Once again, it's the result of a plague of zombies, but this time they're attacking police HQ, and in danger of overrunning the entire city.

The story may smack of *Dawn of the Dead* meets *Assault on Precinct 13* but the game follows the same winning format as the first *Resident Evil — Alone in the Dark* derived prerendered scenery, and plenty of guns and gore. New features include the ability to change your characters clothes, opting, for instance, for a police uniform with bullet-proof vest.

Resident Evil 2 has more locations, more weapons, more zombies and more bloody action. With the success of the original, how can it fail? ng





The new batch of zombies are mutant policemen. Plenty more gore all round

Rev Limit

Seta's N64 answer to *Daytona* and *Ridge Racer* flies by the competition

Format: **Nintendo 64**
Publisher: **Seta**
Developer: **Seta**
Release Date: **TBA**
Origin: **Japan**





As expected, the graphics in *Rev Limit* play like a full-blown demonstration of the N64's awesome graphic capabilities

Looking somewhat like an N64 version of *Ridge Racer*, Seta's *Rev Limit* appears to place as much of an emphasis on driving as it does on racing — each car has different weight and tires, which affects ground friction and handling.

Rather than some wildly outrageous spin or crash, followed by returning your car to the track completely unharmed, as is the norm, contact with other cars in *Rev Limit* results in realistic damage. It looks as if some genuine race tactics will be called for, rather than the abstract gaming skills demanded by typical racers.

The game offers three different modes of play. The sprint race option offers races of between three and ten laps, while long distance races run between 20 and 50 laps with pit stops. The third mode gives the player a straight road to drive down to test racing and close-quarters handling up against other cars. ng





Seta's racers not only look more like real cars, they drive like them, too

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All performance tests conducted by Matrox Graphics Inc. on a Gateway P5-166 configured with 64 MB RAM, 1.44MB of EDO RAM with 2MB cache, Matrox Mystique, Diamond Stealth 3D 2000XL and ATI 3D XPRESSION+ were configured with 2 MB of memory. Some PCI bus cards were tested on a 133 MHz Intel Triton PCI motherboard. Windows 95 and Direct 3D were used for all tests. Direct 3D tests were conducted at 1024 x 768 resolution with 8 bit color. Direct 3D tests using single texture under Windows 95.

Toshinden URA

The 3D brawler that originally made PlayStation a must-have is back — but this time as a special edition specifically designed for Sega's Saturn



***Toshinden URA* blends fighters from *Toshinden 1* and *2*, gives them a completely new look, then adds a couple of new characters**



A year ago, many described *Toshinden* as PlayStation's answer to *Virtua Fighter*. But now the two games share a system, who's on top?

Takara has clearly committed itself to the Saturn platform

Format: **Saturn**
Publisher: **Takara**
Developer: **Takara**
Release Date: **TBA (Japan)**
Origin: **Japan**

Toshinden S (known as *Toshinden Remix* in the U.S.) for Saturn suffered disappointing sales in Japan. There are a couple of theories to explain this: first, its characters were too heavily associated with the PlayStation — Ellis, for example, was used in Japanese ads in much the same way that Sophia was featured in the U.S. PlayStation campaign. Second, *Toshinden S* was a port (rumor has it the developers simply used a C++ version of the *Toshinden* code, with little or no attempt to use any of the Saturn's features), and competition from *Virtua Fighter 2*, with its clearly superior high-resolution graphics, simply gave the public no reason to look twice.

In response, Takara is planning a new line of Toshinden products specifically designed for Saturn called *Sega Saturn Toshinden World*, of which *Toshinden URA*, or *Ultra Revenge Attack*, is the first title.





These early screens show a marked improvement over *Toshinden S*

For *URA*, Takara has completely redesigned the old characters and added two new ones for a total of eleven fighters. In addition, new boss characters have been designed, including a mysterious killer robot named Toshinhei, around whom the game's story, such as it is, revolves.

The most powerful

fighter in the world has been murdered, and the killer is slowly eliminating all witnesses to the crime. In order to protect himself, one of the witnesses stole a prototype robot fighter from the police and sent it to combat the best fighters in the world to gather data on techniques.

The Saturn and PlayStation are neck and neck in Japan, and Takara has clearly committed itself to the platform. *URA* is high-resolution, fast, and designed from the ground up specifically for Saturn, not ported from some other system.

Virtua Fighter 2 is no longer the only brawler in town.



Eiji, or "Ripper"? All the fighters have been completely reworked

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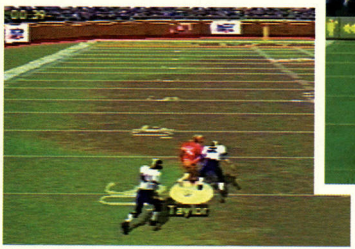
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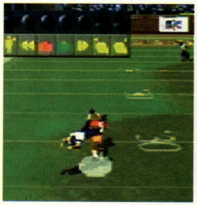
NFL GameDay '97

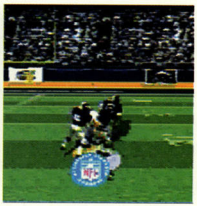
Format: **PlayStation**
Publisher: **Sony Sports**
Developer: **Sony Sports**
Release Date: **November**
Origin: **U.S.**

Sony Sports' upgrade to last year's best-selling title is looking better than ever, but now that *Madden*'s back in town, will good looks be enough to take the title?



Although thanks to the poor materials supplied by Sony, these aren't the greatest screens we've ever run, trust us: the actual game looks as good as any football sim we've ever seen, bar none





The playbook has been completely updated, new players have been added — and is that a hint of *GameBreaker* mud we see?

SCEA is getting ready to release the follow-up to 1996's "*Madden* Killer"

At one point, the original *NFL GameDay* was the single best-selling title ever for PlayStation, (it was eventually unseated by Capcom's *Resident Evil*). In fact it was so good, it forced EA Sports to completely re-evaluate the position of *Madden* '96, delaying the 32-bit debut of what had been the undisputed king of console football sims for an entire year. Now SCEA is getting ready to release the follow-up to its "*Madden* killer."

There has been an interim step: *NCAA GameBreaker* used an upgrade of the *GameDay* engine with impressive results. *GameBreaker* runs some 20% faster than *GameDay*, uses an AI that learns which plays are used frequently, and even sports details like players' uniforms getting dirtier as they wrestle in the mud.

GameDay '97 will in all likelihood be a better game for the experience of its college cousin. The frame rate is exceptionally high (enabling even smoother animation) the playbook has been updated, and of course, all the latest teams, players, and stats are in.

This should be an exciting fall for console quarterbacks. *GameDay* faces stiff competition from the revised *Madden* '97, and even Acclaim's latest *Quarterback Club* is looking good. So can *GameDay* stay aheadof the pack? Time will tell. ng



Yup, it's another *GameDay*, all set to eat up the best-seller lists for another year



Last year's engine has been tuned and refined, and some new options have been added, but it's still the same great game underneath



The precise physics of your ball hitting the pins is so technically advanced and graphically dazzling, **you'll be bowled over!**

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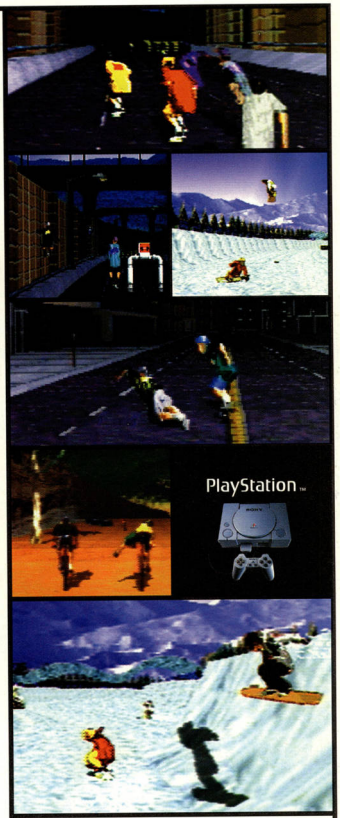

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Pro-Yakkyu King

Imagineer presents one of the Nintendo 64's first Japanese sports games — but can it step up the plate in the U.S.?



Play on little guy! *Pro-Yakkyu King* uses the big-headed characters the Japanese are known for, but will U.S. gamers like 'em?



Real players from the Japanese league are used, and mostly realistic play mechanics. Aim with your head when you slide — you can't miss

Given the small number of titles available for N64, rumor has it that Nintendo may pick this up for U.S. distribution

Format:	**N64**
Publisher:	**Imagineer**
Developer:	**Imagineer**
Release Date:	**November (Japan)**
Origin:	**Japan**

For the record, "yakkyu" is the Japanese word for baseball. This latest N64 release, one of only a few sports titles announced for Nintendo's 64-bit system, smacks of everything Mr. Yamauchi seems to have planned for the system: namely, it uses polygonal characters in a true 3D environment, and it's cloyingly, oppressively cute.

In this case, however, the cuteness may be deceptive. While all the players are the big-headed, soft-shouldered, superdeformed little guys the Japanese can't seem to get enough of, each player is actually named after real players in the Japanese league and performance is based on real stats. All twelve Japanese teams are included, along with two additional "fantasy" teams. Also included in the package are options for editing existing teams or creating one from scratch. Other game options include exhibition, pennant, and training modes. During training modes, existing players can be given extra practice and improve their stats. In addition, thanks to the N64's numerous joypad ports, the game fully supports up to four players at the same time, either all on one team, two-on-two, or any mix.

Then again, maybe the cuteness isn't so deceptive after all. While most of the game's mechanics appear to be fairly realistic, the players are prone to strange histrionics and melodramatic facial expressions. Furthermore, players can become "stressed out" and lose much of their ability to play. Exactly how this differs from the kind of traditional fatigue modifier found in many sports games is unclear, but the approach is certainly unique.

Whether or not this game will ever be released in the U.S., and in what form, is up in the air. However, given the limited number of titles available for N64, rumor has it that Nintendo, themselves, may pick this up for Stateside distribution. ng





***Pro-Yakkyu King* features real stadiums (bet you don't recognize them)**

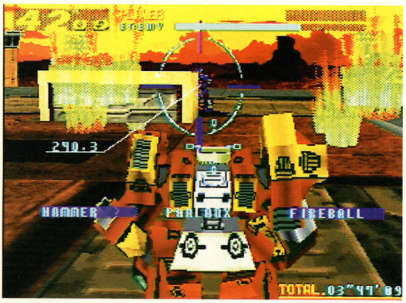


On the other hand, the "cute" approach leads to some odd expressions

Virtual On

Sega continues to push the Saturn envelope with conversions of arcade titles. But can the standard of *VF2* and *Sega Rally* be maintained?

Format:	**Saturn**
Publisher:	**Sega**
Developer:	**AM3**
Release Date:	**November**
Origin:	**Japan**



Buildings double as obstacles and provide protection, but tactical movement takes a backseat to trigger-heavy action, as many projectile weapons cleave a wide path of destruction. Jumping also enables the player to hover briefly







A variety of in-close and distance attacks lends a unique style to combat.

In the brief history of Saturn titles, AM2 and AM3's exclusive coin-op conversions are undoubtedly the brightest stars in a galaxy where black holes are readily apparent. With third party support seeming to slip, Sega's success depends more and more on the output of these development teams, and arcade hardware is evolving rapidly beyond the means of 32-bit power. *Virtual On* pushes these dilemmas aside, however.

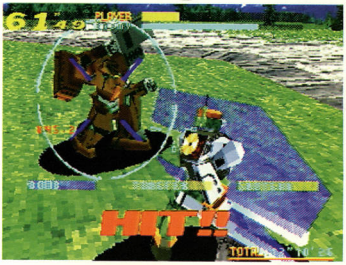
Players choose one of eight mech characters, each with varied weapons and abilities. From a third-person view, players compete on a relatively small 3D battlefield one-on-one against a CPU opponent or another player. Without a dual-screen arcade cabinet, head-to-head play runs on the Saturn via a split screen — an unsubtle solution that hampers the action by letting opponents see each other at all times. Control also seems to suffer from the loss of the arcade version's two joysticks, and arcade fans will find rotating with the D-pad somewhat annoying. Apparently, Sega had some initial plans to make the home version compatible with Sega's dual-stick analog controller, but it seems that time constraints have made such a feature unworkable.

Like the early version of *Fighting Vipers*, the graphics thus far are not as polished as the arcade version, but the engine is well duplicated, and *Fighting Vipers* cleaned up to a remarkable degree by the final product.

With *Virtual On*, AM3 looks as if it is keeping the Saturn up to pace with Sega's coin-op development. The next great hurdle, however, will be for AM2 to convert *Virtua Fighter 3* from the Model 3 board — an entirely different proposition.

ng

With *Virtual On*, AM3 looks as if it is keeping the Saturn up to pace with Sega's coin-op development



Unlike *Battletech*'s stumpy bi-peds, these engines of destruction are from a more graceful anime school, like something out of *Voltron*

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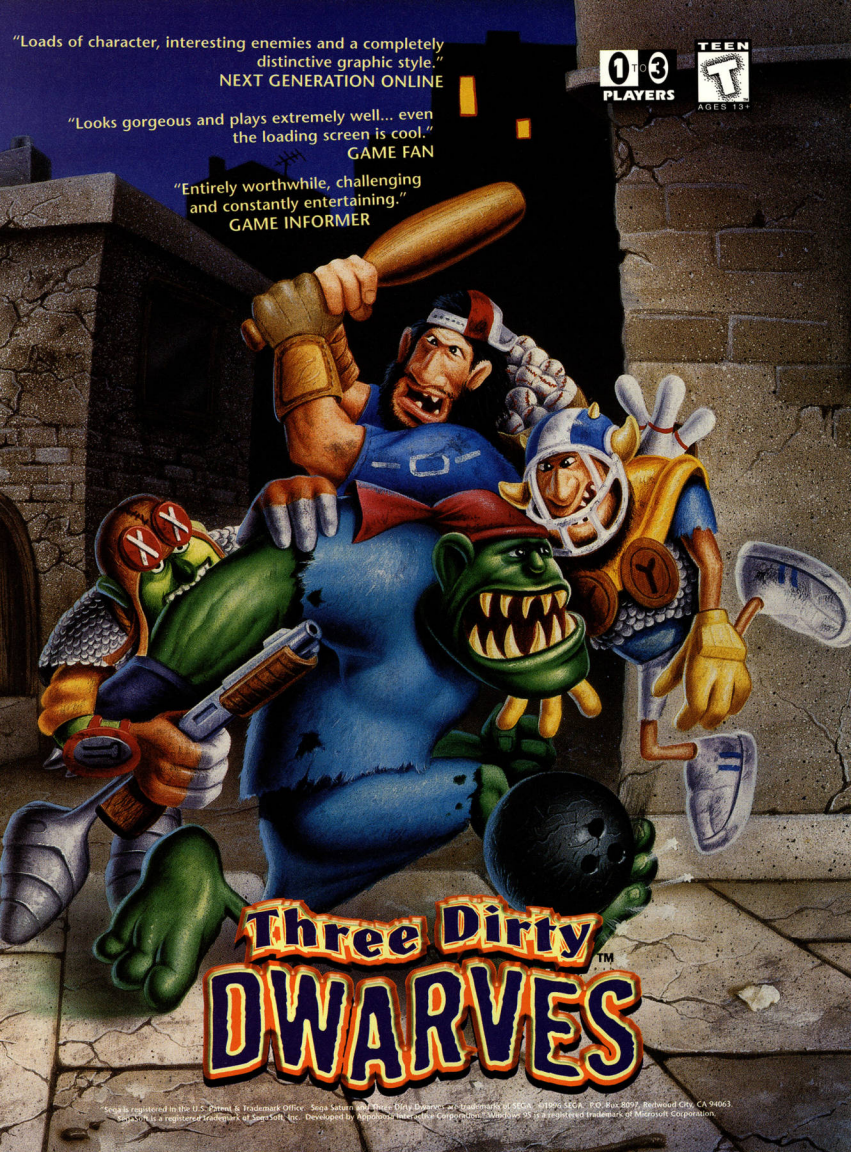
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"Gawd bless Necrodome™ says Action Ab!



Action Ab, action game and weap ons enthusiast

Ah just love action games, 'specially the kind that makes me sweat like a pig in heat. Ah love action games even more than my favert food, dinner.

Lately, lotsa games seem ho-hum. But not NECRODOME. This new game composts two of my favert things: trucks 'n guns.



Ah had so much fun ah can't believe it. You gotta git all them scumbags with your cannons before they git you. But watch out 'cause every time ah thought ah had 'em, my truck blowed up!



You can even have a buddy shoot out of your back turret while you race. But if yur like me, you don't want nobody near yur turret — let alone in it. If NECRODOME ain't the biggest game o' the year, then ah don't know my hole from a head in the ground."



"Omigod! Dare Devil Derby 3D™ is way cool!



Lips Akimbo, major babe and sports enthusiast

I love racing games, okay? And unlike my choice of men, I've got real high standards. So when people said, 'Lips, you gotta play DARE DEVIL DERBY, the new 3D multi-player racing game from Mindscape' I said, 'Puh-lease!'

But then, whoa! I'm all, this game is totally awesome! I played it so much that all my fingernails broke off! My boyfriend Marty said my nails were fake, just like me. So I kept beating that ignorant puke at DDD!





Then six of Marty's friends showed up, so I plugged all eight of us into multi-taps and we raced against each other! It was way beyond amazing!

I played it like 14 hours straight and never ever thought about eating or going to the bathroom. Can you believe it? I know! I couldn't either!"

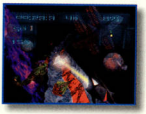


"Starwinder™ is so fast, it'll make you hurl!



Rocket Ronnie, action reviewer dude at large

Just popped in a toastie version of the new PlayStation™ title STARWINDER: THE ULTIMATE SPACE RACE. Dudes and Dudettes, this game is kickin'!



Right off the hip, I noticed the amazing buzz from the free flight control. The Ronster was flying his ship in and out of the rails...for real.

If you're into speed, this is the treat for you. MAXIMUM SPEEDATUDE! My buddy Fred hurled just watching the game.







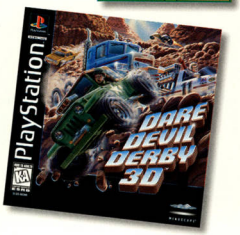




And there's lots more! Usually, I blow by the cut scenes, but all those clips of alien pilots were a major trip. I was laughing so hard, I almost blew lunch outta my nose!"

The Ronster says check it out!"







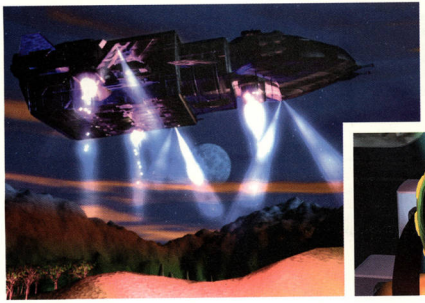
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Steel Legions



Multiplayer gaming over a PC network is big news. Now, a Scottish company with a background in classified work for the U.S. space program and the U.K.'s defense department prepares for gaming lift-off







Digital Animations' forthcoming *Steel Legions* will be the latest PC game to take on the likes of *MechWarrior*. A company traditionally renowned for its professional 3D animations, expect the FMV in *Steel Legions* to set new standards

"*Steel Legions* is basically a game of AIs, with players coming in to replace one of the AIs. This way, it's always fully populated"

Jim Robertson, AI Guru

Format:	**PC**
Publisher:	**Eidos**
Developer:	**Digital Animations**
Release Date:	**November**
Origin:	**Scotland**

In the year 500 BC in the reign of King Ho Lu in ancient China, a general named Sun Tzu Wu wrote a book entitled *The Art Of War*. "The supreme excellence is not to win a hundred victories in a hundred battles" he argued, but "to subdue the armies of your enemies without even having to fight them."

In the 13 short chapters of *The Art Of War*, Sun Tzu Wu wrote many other wise things which any future players of *Steel Legions* would be well advised to study. Although Sun Tzu Wu, or indeed *Steel Legions* are not commonly used conversation pieces, the latter has the potential to become famous in the annals of computer gaming history. And if the programmers, graphic artists, marketers and architects among the staff of Digital Animations get their way, Sun Tzu Wu will become required reading for all players of their games.

Those familiar with Digital Animations will probably have viewed one of its $75,000-plus 3D-animated corporate videos extolling the virtue of this mega-corporation or that new world-saving widget. Alternatively, the names Steve Doyle (electronic engineer), Jamie Reid (Windows guru) or Jim Robertson (AI-neural network expert) may be instantly recognizable to anyone who's ever spent any time at the U.K.'s NEL (National Engineering Laboratories), one of the British Government's most high-powered centers for the study of supercomputing, parallel processing and artificial life. This is the sort of





Can a small Scottish developer really compete on the world gaming stage? Eidos bets it can

ng alphas



Jim Robertson (left), Digital Animations' AI guru, and Steve Dayle (right), are responsible for the generation of *Steel Legions'* artificial intelligence

place where they routinely produce 3D visualizations of the inside of battle tanks for the army, space shuttle missions for NASA, or the cockpits of the futuristic aircraft which will be dogfighting high above the battlefields of World War III.

It's the sort of work which sounds tremendously exciting but which, in its actual execution, lacks the true escapism of computer and roleplay gaming — the sort of work which Steve, Jim and Jamie were all gagging to do but were destined never to taste. Until, that is, they met Catriona Paton, the sales and marketing director with whom they now work.

Catriona not only convinced them that they could write the kind of stunning games they'd always wanted to play but had never found on the shelves of their local computer store, but she also envisaged creating the greatest online game yet seen.

Digital Animations has been keeping details about the game itself close to its chest, but it will essentially be a network battle strategy game along similar lines to the Activision smash hit *MechWarrior 2*.

Steel Legions' main strength, however, could well lie in its unusual use of AI for governing the battle scenarios. Next Generation was shown about eight minutes of prerendered footage before witnessing some of the game's realtime features. "Look at this," says Steve, plumping down at a terminal. "We're not supposed to be using any of our terminals at the moment — the graphics guys have got them all in rendering mode — but you should see this." It's a neat program which generates a fresh landscape for each game of *Steel Legions*, so that no matter how many times you play it — even if you always play in the jungle or the city every day for a year — you'll never get the same battlefield twice.

There are just 16 people working to get *Steel Legions* out of the door by November, but writing the game exclusively for the Windows 95 platform saves a lot of hassle. "We don't have to worry about screen drivers or joystick drivers or whatever — it's a pure 32bit game and Microsoft takes care of all the boring bits for us," says Jamie.

The company is also taking full advantage of DirectX, Microsoft's new direct-to-the-metal set of APIs developed specifically for the games market. It is also impressed with the resilience and virtual memory capabilities of Win95. "A month ago we had a bug in the code which leaked about half a megabyte of memory for every frame we rendered, and it's a testament to Windows 95 that even with over 100 megabytes of memory allocated the game was still running," Steve grins. "Slowly, mind you, but still running. You couldn't do that on a PlayStation."

Steel Legions' characters are like real people: they have good days and bad days — they'll even talk about you behind your back



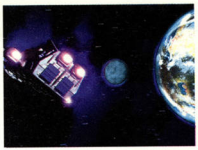
The 3D engine of *Steel Legions* looks likely to impress PC owners. Here a quad "Goliath" lumbers in the foreground while a fast recon "Goliath" lurks behind

Jim left NEL a year or so ago when they offered him early retirement, and his colleagues are only half-joking when they quip that the Government should feel uncomfortable about having so much AI know-how walking around in the private sector. Indeed, the AI running the characters in *Steel Legions* will be









***Steel Legions* comes complete with the now traditional dosage of FMV. A pilot speeds across a gantry to mount his goliath spaceship (top). The dropship prepares for a bumpy landing (above). A shot of the exterior of the base, which is under attack (left)**

"One of the first tasks I had was to delve quite deeply into military tactics and strategy"

Jim Robertson, AI Guru

like real people – characters will react differently to different inputs, they can have good days and bad days, and they'll love or loathe their commander and subordinates. If you give them good orders they'll respect you. If you give them bad orders, they'll try to frag you. They'll even talk about you behind your back.

"One of the highlights for me is that the AIs in our games aren't designed to work at their very maximum capability all the time," says Jim. "Rather, they're designed to emulate as closely as possible the characters they represent. There are situations where the AI works flat out, but in its main mode, it's working to represent ordinary humans as accurately as possible."

Behind the AI characters is neural net technology to cope with the huge inputs of which the game is capable. Neural networks, once they've finished their learning stage, are inherently quick and use much less of the processor time than other processes. "One of the first tasks I had was to delve quite deeply into military tactics and strategy, looking at the great military leaders of the past," says Jim, "as far back as Sun Tzu Wu — that guy was fantastic, the things he was saying 2,500 years ago are still applicable today." The team then programmed Wu's rules — and those of great generals like Napoleon — into its neural net and discovered that it could come up with tactics and strategies for situations that had never been directly programmed into it.

Steel Legions can be played at many different levels, depending on how players feel. Be the general at the top, taking a strategic view of the battlefield and watching the big picture, or be a grunt hunkered down in a corner of a ruined semi-detached house, wondering where your next tin of cold C-rations are coming from. Or players can be anyone in between.

With the Internet's bandwidth being too narrow to accommodate a fast-paced game, for now Digital Animations concedes that local network play will be the only feasible environment for *Steel Legions*, although it hopes to have the game running on BT's Wireplay service (in the U.K.) and possibly Dwango (in the U.S.). Then you'll never know (nor indeed *need* to know) who you're playing against.

"In *Steel Legions* the human player is a guest," adds Jim. "It's basically a game of AIs and you come in and replace one of the AIs, so it's always fully-populated."

The company is already planning interlocking games which will play in the *Steel Legions* universe. But that's for the future. For now, the team merely hopes that its first game prospers in the outside world. ng

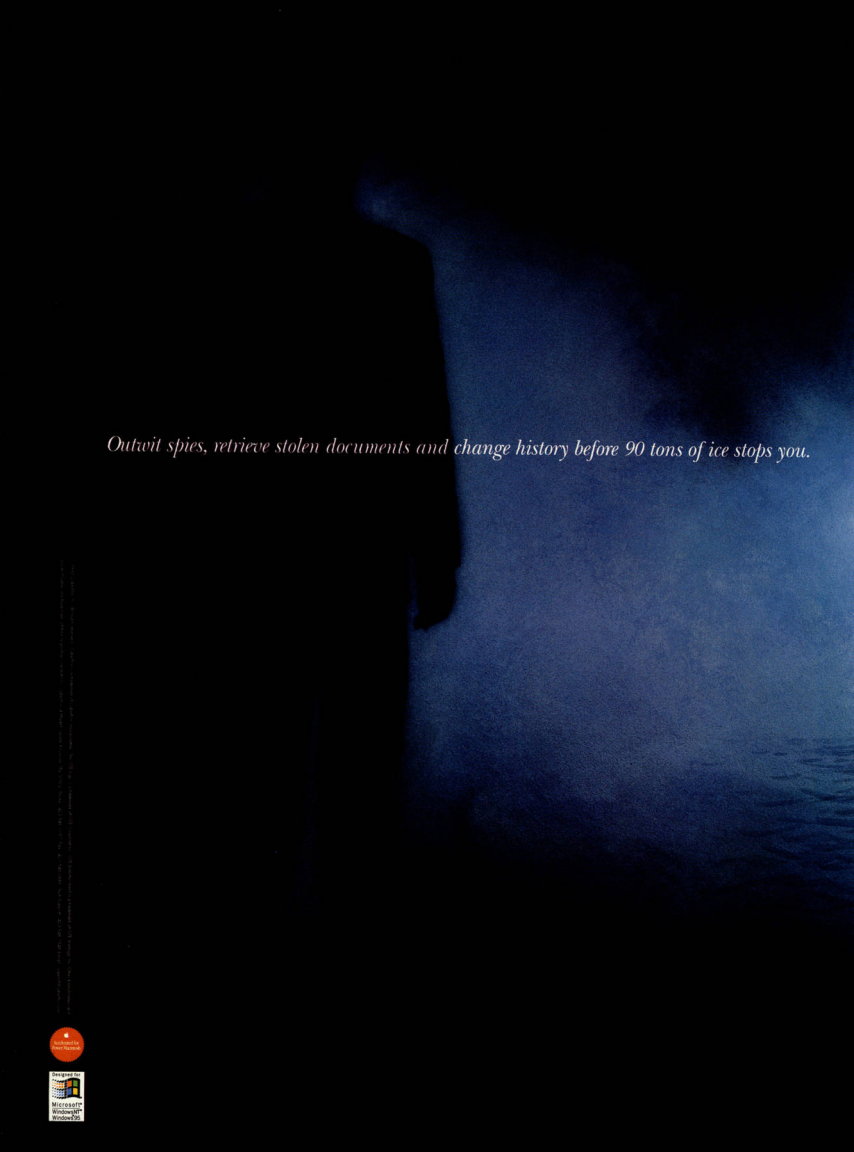




Colin McNab (left), and Michael Antliff (right), two of DA's head men. Expect *Steel Legions* to appear in stores in November of this year



Digital Animations' operations director Colin McNab; sales and marketing director Catriona Paton; and creative chief Michael Antliff


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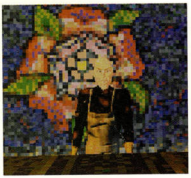
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Meridian 59

The 3DO Company takes a stab at creating the ultimate multiplayer online experience. Can it succeed?







***Meridian 59* is truly a self-contained world. It has its hazards (above), its own economy (shop keeper, right), and even its own version of an online newsgroup (*The Obsidian Globe*, far right)**

Format:	**PC-CD ROM**
Publisher:	**3DO**
Developer:	**3DO**
Release Date:	**November**
Origin:	**U.S.**

MUDs have been around since the earliest days of the Internet, but as technology has gotten better (and bandwidth has gotten higher), gamers have started clamoring for a more immersive, comprehensive gaming experience than simple text can provide. And, predictably, new services are popping up to fill the need. Origin has taken one approach with *Ultima Online* (NG 21), now 3DO is coming out with its solution, *Meridian 59*.

"Sociologists reckon that the most people a person can ever really know at once is about 700, which is about the average size of a medieval town"

Mike Sellers, Online Designer

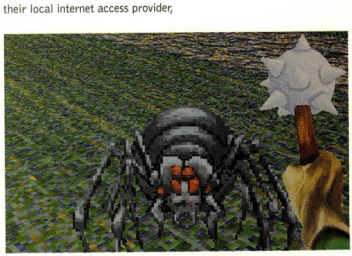
The game is a first-person, fantasy-based virtual word, resembling Bethesda's *Daggerfall* (in concept, if not in operation). Currently undergoing continuous beta testing, the world of *Meridian 59* consists of three towns, a few square miles of landscape, numerous scattered guild halls, and of course, an underworld for players to wind up in when they die. Actually, make that "worlds," plural. The system works by having parallel Meridians running on separate servers, each used by a few hundred people at a time, so that thousands can be online without overcrowding the world.

"There's some interesting sociological work that was done a long time ago which showed that the most people a person can ever really know at once is about 700," says Mike Sellers, one of 3DO's online designers, "which, it turns out, is about the average size of a medieval town. We didn't want *Meridian 59* to be like being alone in New York — lost with about a zillion people around you. We wanted each of our parallel worlds to be well-founded communities; not too small but not too large."

Like *Ultima Online*, *Meridian 59* is a TCP/IP client application. Users dial their local internet access provider,



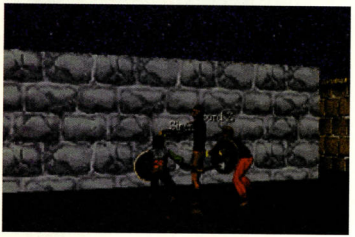
Start by building a character from a wide range of features



Initially, players can expect to spend time beating up on smaller vermin — not exactly heroic, but good for building up experience

ng alphas

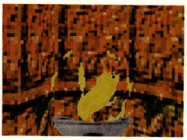


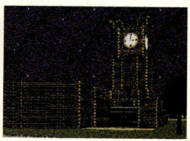


Hunting zombies in the graveyard is a favorite pastime after midnight

then launch *Meridian* in much the same fashion as one would run Netscape or a newsreader.

Once connected, players can then customize their onscreen incarnation, choosing to be either male or female, varying skin tone, and selecting different hair styles, eyes, noses and chins. The characters are structured so that each player's face is presented in as high a resolution as is possible with a view to preserving the human element (different expressions can also be affected during the game), then resolution drops off in the torso and legs to preserve access speed ("Nobody cares about legs," jokes Sellers). Players then choose from a list of spells and skills, and dive in.





The online world even extends to social constructs like weddings (far right). It's amazing what happens when you set people loose...

Adventures are generated

in a number of ways. There are, for instance, two rival NPC leaders, a Princess and a Duke, and players can ally with one or the other and go on quests for them. But as with most online entities, it's mostly up to the players themselves what to do.

Gathering groups to clear an area of dangerous creatures so newcomers have a safe place to gather, for example, or mounting an expedition to the frozen wastes for an assault on the dreaded Yeti, are activities the players themselves can invent and take part in. And the world itself is planned to undergo periodic revisions: "This isn't a 'fire and forget' kind of product," Sellers explains. "We have the ability to update the world, and the game automatic downloads when you log on, so you can get new art and new areas anything else we want to add. It will change over time."

At press time, there were still many bugs to be worked out — the interface needed tweaking, and there were still some problems with latency — but the game engine itself can be upgraded automatically just like the game world, and with an open beta test, feedback is instantaneous, and definitely appreciated by the design team.

But the key to the world is

the ability to role play and interact with others. Sellers concludes, "My daughter, for instance, is 15 and she plays this a lot.

A while back I came home and found she'd gotten married to some guy online, and I thought, 'Well, it's time we had a nice long talk,' but then I found out that the vows were, 'Til death do us part' — turns out it lasted about two hours."



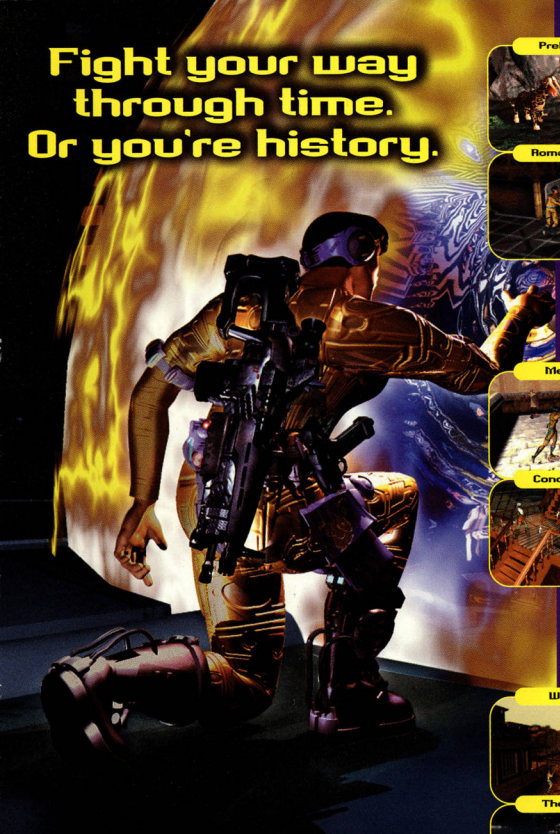
A stranger on a dark road. Should you trust him or run? Your call

"My daughter is 15 and she got married to some guy online — 'Til death us do part.' Turns out it lasted about two hours"

Mike Fnord, Game Designer



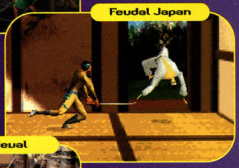
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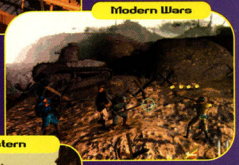




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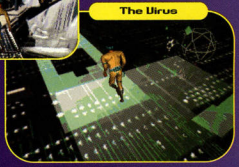
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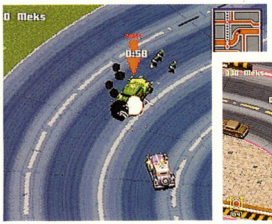
Action RPG Winner

PlayStation

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Call 1-800-771-3772 for Game Rating Information.

Crimewave

It's simple, there's not much strategy, and it plays like other games — so why is Eidos' latest so much fun?





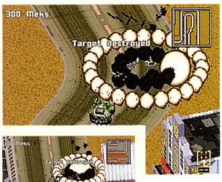


As a Freelance Security Provider, you're entitled to drive around in a heavily-armed vehicle and blow stuff up — ain't life grand?

Format:	**Saturn**
Publisher:	**Eidos**
Developer:	**Eidos**
Release Date:	**November**
Origin:	**U.K.**

Crimewave isn't especially groundbreaking. A cross between *Micro Machines* and *Spy Hunter* (without the cool soundtrack), there's plenty of precedent for its style of game play.

But it's rarely been done this well. *Crimewave* gives the player the role of a new kind of cop, the Freelance Security Provider. The goal? Simple, drive around the city, waiting for the call on lethal lawbreakers in the area. When you find them, blow 'em off the road. Easy.



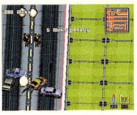


And everything blows up real good — oh, um, just watch out for civilians

Destroyed cars yield fuel and better weapons, including rear-mounted minedroppers and oil slicks (referred to as "road lubricant"). A bounty is awarded, and when enough money is been earned, the action moves to the next stage.

The biggest hurdle is that civilian cars have to be spared (or you're fined), and that rival cops may try to destroy you and claim your bounty.

The game is played from an isometric perspective, but unlike the norm for this view, the environment is actually rendered completely in 3D. As the player's car takes the curves, the camera rotates with the car to find the best view. It takes a little getting used to, but is technically impressive, and rarely leaves the player with no idea what's happening. The control is responsive, and the level of detail is astounding. There are eight different areas, from the flashy Casino level to the more laid back Beach, but each is completely unique.





Watch out for rival cops — they're all too happy to ruin your good time

There are still some

features that need tweaking: the frame rate, while high, occasionally slows to a crawl as the view spins, and the total loss of control during collisions, especially with stationary objects, is problematical. Also, since this was developed in the U.K., all the civilian cars are driving on the wrong side of the road. However, it's mostly a matter of minor adjustments, and on the whole, *Crimewave* is shaping up to be simply a blast. ng

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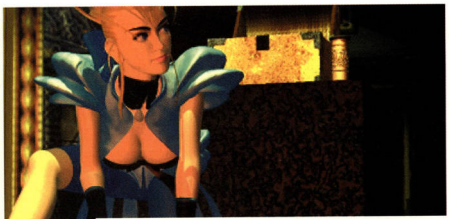
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Softimage-rendered CGI (above, right) adorns *Dark Saviour*'s lavish intro and cut-scenes. This is one pretty game

Dark Saviour

Format: **Saturn**
Publisher: **TBA**
Developer: **Climax**
Release Date: **TBA**
Origin: **Japan**

Climax Entertainment is a tiny Japanese development team with a reputation for quality, not quantity. **Next Generation** meets the small time RPG heroes on the verge of hitting it big with Saturn



Climax Entertainment's HQ in the Shinjuku district of downtown Tokyo, Japan

Climax is one of Japan's unsung development heroes. Occupying an office block near the infamous Shinjuku train station (which frequently loses bewildered tourists in its labyrinthine corridors) the company accommodates approximately 20 staff and, so far, has developed just three games.

In 1993 Sega published Climax's seminal Genesis action RPG *Landstalker* to a rapturous reception — despite the small market Sega's 16-bit machine commanded in Japan. This was Sega's answer to Nintendo's *Zelda* on the Super Famicom and proved to be a Genesis title that consumed the lives of Japan's RPG cognoscenti. This was later followed by *Ladystalker*, the curious Super NES equivalent designed with female gamers in mind. But, perhaps for this very reason, it failed to match the success of its predecessor. Now the company has returned to Sega and its new 32-bit hardware for its latest and greatest project, *Dark Saviour*.

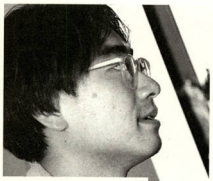
Kan Naito, president of Climax and director of *Dark Saviour*, previously worked at Enix on the all-conquering *Dragon Quest* series (by far the most successful series of RPGs in Japan) and so understands the nuances of the Japanese RPG market.

He admits that his path into the games industry wasn't conventional, having often played truant while at school to the detriment of his education. "I missed out on so much that I had to buy school books in order

"We decided to use the Saturn's 3D abilities to include a camera with complete freedom of movement"

Shinya Nishigaki, Producer

ng alphas





Shinya Nishigaki, producer, (top) and Kan Naito, director (above) muse over Saturn's strengths and weaknesses

to catch up on things like math and geometry — skills I later found I needed." This, he concedes, was the hardest aspect of starting to develop for a 3D machine such as the Saturn.

Instead of being able to draw upon skills assimilated from a wide portfolio of games, Climax had experience of just two very similar games before work started on *Dark Saviour*, and its 2D heritage meant the Saturn title required learning many of the techniques from scratch.

"To be honest, we weren't at all familiar with the Saturn when we started, and that's been one of the reasons this project has taken so long," adds Naito. "Both *Landstalker* and *Dragon Quest* were essentially very flat worlds so we had to learn how to handle 3D camera work from the beginning," he explains.

Other problems encountered during the early stages of development were thrown up by the Saturn's specifications, despite Sega's technical support teams assisting them well. When the project began two years ago, the Saturn was perceived by the Japanese development community as the underdog to the PlayStation. In Naito's words, "Compared to the PlayStation, the Saturn is not very good at managing polygons and textures. Initially we had some difficulties to make the game work at a good speed. However, we finally succeeded," he proudly notes.

Overall, Naito is enthusiastic about the Saturn and its reputation for being — when pushed — a far more versatile machine than PlayStation.

The team has coded *Dark Saviour* completely in assembler, which it claims was the only way to keep things moving at speed. "The PlayStation may be better at managing polygons," continues Naito, "but you can't write in assembler, you can only use C and we just don't know if *Dark Saviour* could be done in C. The PlayStation's polygons become easily distorted, too — especially when big polygons come close to the camera." Still, this is little for Naito to lose sleep over now since *Dark Saviour* will only be appearing on the Saturn — making it a valuable weapon for Sega in the battle against PlayStation and Nintendo 64.

But coding in assembler has its problems and, particularly on the Saturn, there will always be the headache of juggling two CPUs. Climax's director concedes that handling 3D graphics with two CPUs is no easy job, despite the results that Sega's internal teams have delivered with *Virtua Fighter 2*, *Sega Rally*, and the hotly tipped revamped version of *Daytona USA*, soon to be unveiled.

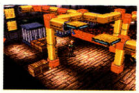
"Even if you have two CPUs it is difficult to use 100% of the hardware specifications," Naito explains, "because data has to be shared between them and the probability of them interfering with each other becomes higher. One CPU has to wait for the other to finish and it's a very complex process. We do not exploit the twin CPUs 100% but we succeeded in using them in a very efficient way."

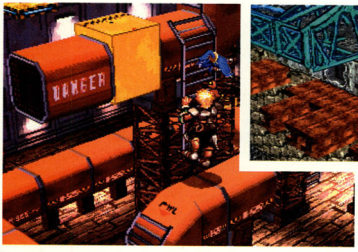
The inspiration for *Dark Saviour* naturally comes from *Landstalker*,

"Sony's PlayStation may be better at 3D, but you can't write in assembler — and the polygons easily distort"

Kan Naito, Director







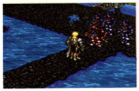




Dark Saviour* includes more than 300 maps, all rendered in realtime. The game also has the benefit of three independent storylines that Climax's director Kan Naito has labored upon for the past two years. The game camera can be controlled by the player, as in Shigeru Miyamoto's *Super Mario 64







Talking (and, of course, fighting) with other characters is essential

itself a project derived from what the company's director describes as his own childhood fascination with miniature toys such as plastic models, trains, and action men type figures.

Naito had experimented with radio-controlled toy figures and had then run tests on his PC which gave him a basis from which to start developing games. *Dark Saviour* was the logical progression once 32-bit technology arrived to match his ambition.

Dark Saviour's producer, Shinya Nishigaki, admits that the game has some parts in common with *Landstalker* but the company had wanted it to look more like a movie than its 16-bit effort. "We pioneered the quarter view in *Landstalker*," he explains, "and decided this should become our speciality. As soon as the Saturn was released we decided to use the machine's 3D abilities to include a camera with complete freedom of movement. Our main desire was also to make a style of game that nobody had done before. So, we decided to use a 3D world with parallel stories."

The implementation of this proved to be a lot more work than the team bargained for. Starting work on the project in December 1994, the game was forecast to be released in May of this year, but the team hit problems due to the sheer size of the title.

Now far bigger than previously planned, *Dark Saviour* was scheduled to hit Japanese streets at the end of August (the U.S. version will be released later in the year). Shinya Nishigaki puts the delays down to the game environments requiring modeling in polygons, while rendering and applying textures to these has taken longer than expected. "We also spent lots of time making the main camera system. We've called this system 'Hyperion Perspective' and our director took no less than six months to make it! After this, we had to make more than 300 maps, each one in 3D."

To help get reach deadline, Climax has relied upon freelance graphic designers, music composers, voice actresses, and scenario writers. The team also hired a famous Japanese TV script writer to pen the scenario for *Dark Saviour*.

However, the team has had technical disadvantages when compared to high-powered rivals such as Square Soft and Enix. Currently, Climax doesn't rely on a huge network of Silicon Graphics machines equipped with SoftImage. Instead, it uses a less well-known 3D software package called Cyclone and its own tools, although it did employ a freelance SoftImage artist (Masayuki Hasegawa, who designed the stunning intro sequence for Sega's *Clockwork Knight*) for the intro and cut-scenes.

One of *Dark Saviour*'s most interesting features signposts the differences in videogame culture between Japan and the rest of the world. In a similar way to *Landstalker*, Climax has designed its first Saturn game to have three parallel stories.

"People who play a game a second time are numerous in Japan, but it's not interesting to play a game twice if the story is the same," explains Naito. "So, for *Dark Saviour* we've included a practice story, a main story and the third more action-orientated stage." The first part of *Dark Saviour* includes either six or seven stages and takes about eight hours to complete. The second includes ten stages and will be a romantic action story in which a heroine will appear. Even though the third story is shorter, it is tough and Climax estimates that to complete the game will take most gamers at least 30 hours.

When pressed for future plans the company's director stressed to **Next Generation** that he doesn't want to continue making just RPGs. "I have to admit, *Dark Saviour* was a difficult game to make. In the future, I'd really like to do a racing game on the Saturn or PlayStation. I really like cars, and I think we could make some genuine innovations, too."

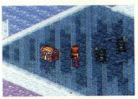
Next Generation wishes this small, dedicated company well. ng

Backtracking

Released in late 1992 in Japan to widespread acclaim (and a year later in the U.S.), Climax's *Landstalker* was one of the Genesis's finest hours. Combining an extensive quest with some unusual isometric graphics, it was an action RPG with a strong storyline and gameplay closer to Nintendo's *Zelda* than previous Genesis RPGs such as *Shining Force*.

The company's second game, *Ladystalker*, appeared on the Super NES about two years later. It failed to have the same impact, though, mainly because it was more comic in tone and was designed with female players in mind.





***Landstalker* (top) was the game that put Climax on the map and helped the ailing Genesis in Japan. Pseudo-sequel, *Ladystalker* (above), was released for the Super Nintendo**



The team has developed its own custom Saturn tools specifically for *DS*

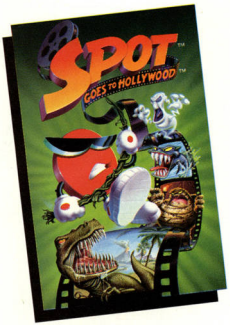
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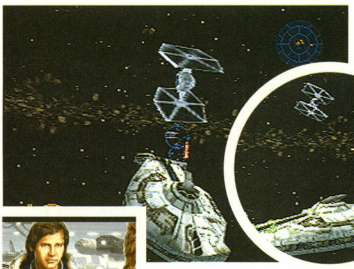


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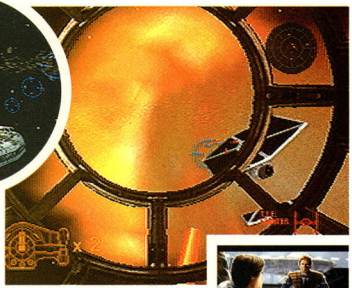
Shadows of the Empire

There's no doubting the force of Nintendo 64, but can a game that tries to be all things to all gamers really succeed?



Han Solo or Dash Rendar? Actually, it's Han. But you'd be forgiven for getting the two confused

Format: **Nintendo 64**
Publisher: **Nintendo**
Developer: **LucasArts**
Release Date: **December 2**
Origin: **U.S.**



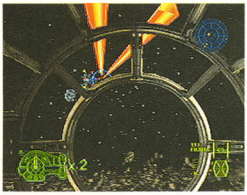
Of course, *Shadows of the Empire* showcases all N64's graphic effects





Intendo is counting heavily on the power of the Force. Indeed, the Star Wars universe (spawned from the mind of George Lucas) has generated so much money from licensing alone, that the grand total could probably fund the construction of a real-life Death Star. Nintendo obviously realizes this, and in the absence of any other "big name" games from the non-Nintendo universe to bolster N64's meagre line up, it is *Shadows of the Empire* that will sit next to *Super Mario 64* as the systems most marketable property — at least until the release of the *Mortal Kombat Trilogy* next year.

As with previous *Star Wars* titles, the storyline actually sets up good gameplay. The plot for *Shadows* is taken directly from the series of novels of the same name (in the *Star Wars* chronology, the game falls between *The Empire Strikes Back* and *Return of the Jedi)* but don't expect to play as Luke or any of the other familiar headliners. Instead, *Shadows* introduces a new character, Dash Rendar, and elevates him to hero.



Is there anything better than shooting TIE fighters?

Cut from the same roguish

mold as Han Solo (even his ship bears a striking resemblance to the Millennium Falcon) Dash is no Jedi. But it is in Dash's shoes that the player find himself as the adventure begins on the ice planet Hoth at the scene of the Imperial invasion. In later levels players cross the galaxy in pursuit of Boba Fett the bounty hunter and Xizor, a new agent of the Emperor, visiting familiar Star Wars landmarks, such as during a Swoopbike race through the streets of Mos Eisley and into Beggar's Canyon.

Essentially the game design is *Dark Forces* meets *Tie Fighter* meets *Rebel Assault.* According to Jim Merrick, a Software Engineer at Nintendo, the levels operate on either

The laser blast sound effects were sampled directly from the LucasFilm library

ng alphas





All that's missing from the *Doom*-style first-person sequences is a light saber. It's easy to forget that you're not a Jedi

a "walking, flight, or rail" engine. Each of the ten levels of gameplay alternate between first or third-person shooting, and traditional galactic dogfights. The only ones that really disappoint are the "rail" levels, such as the starship battle in an asteroid field, in which Dash's flight path is completely computer navigated. But don't be too disappointed, even when the game control is out of players' hands, this is still the Star Wars world.

"There are a lot of things going on in *Shadows* that have to remain true to something Star Wars fans already have a frame of reference for," explains Merrick. The laser blast sound effects, for instance, were sampled directly from the LucasFilm library. "Gamers already have a predetermined expectation of what a Star Wars title has to be, and to hit that mark is a tough challenge," Merrick notes. But Nintendo is confident that LucasArts has risen to the challenge.

New locations like Ord Mandell and Xizor's palace, which have never been seen on film, gave the designers more freedom, and add some variation to the game. From the third-person view in Ord Mandell, players must shoot oncoming enemies as they move on a 3D flatbed train. In Xizor's palace, a *Duke Nukem*-style jetpack gives players a chance to fly around and hover in true 3D space.

At about 90% complete, all the Star Wars trappings have been fully implemented into *Shadows of the Empire* — the signature yellow story text scrolls across a starscape to set several stages, and much of the same orchestrated music used in the films fills the backgrounds.

"When you think of Star Wars, you think of a fully orchestral John Williams soundtrack," notes Merrick. "Most videogames today use synthesized music, but even a rack of wonderful synthesizers isn't going to sound like what you remember from the film. So *Shadows'* is the only game that we're offering right now that has a pre-recorded — or digitized — soundtrack. This is something that people said couldn't be done with a cartridge. But here's evidence to the contrary, and it sounds pretty good."

"Gamers already have a firm expectation of what a Star Wars title has to be, and to hit that mark is a tough challenge."
Jim Merrick, Software Engineer

It is Interesting to note that *Shadows of the Empire* will be the first N64 game released not developed by Nintendo. And while the title still has a while to go until completion, it does look as if it will fall below the standard of *Mario*, *Pilot Wings,* and *Wave Rave*. Will any other third parties match the impressive standards set by Nintendo's in-house teams? Only time will tell. ng



At a 90% stage of completion, *Shadows of the Empire* doesn't seem to be as impressive as *Mario 64*, *Pilot Wings*, or *Wave Race* — either graphically, or from a gameplay point of view. But is this because LucasArts failed to deliver? Or is it testament to the awesome power of Nintendo's in-house teams?



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Killer Instinct Gold

Love it or loathe it, there's no denying its popularity. But can *KI* really do for N64 what *Virtua Fighter 2* did for Saturn?





In the nearly-complete version played at press time, the characters blur when zoomed in on, but Lobb insists this small glitch will be minimized in the final version

Format: **Nintendo 64**
Publisher: **Nintendo**
Developer: **Rare/Nintendo**
Release Date: **November 25**
Origin: **U.K.**

The original *Killer Instinct* coin-op was released in 1994 during the lull between *Mortal Kombat 2* and *Mortal Kombat 3*, and captured the mindshare of teenage quarter-droppers looking to master thirty-hit combos. Nintendo now offers *Killer Instinct Gold* in the hope of wooing these fans into buying an N64.

Killer Instinct 2 and *KI Gold* shared some development time at Rare, so it's no surprise that both games deliver similar visual effects, are based on the same graphic engine, and feature an identical character roster. Returning fighters include Orchid, Fulgore, Sabrewulf, Spinal, Jago, T.J. Combo, and Glacius. The new *KI2* characters also appear, Kim Wu, Tusk, Maya, and the boss, Gargos. Supposedly, no new combatants were created for *KI Gold*, but Nintendo offers a firm "no comment" on the subject of hidden characters. (We suspect that missing *KI* alumni Eyedol, Chief Thunder, Cinder, and Riptor are buried in there somewhere).

Graphically the game looks pretty much the same as it did in the arcade, with the addition of some quasi-interactive 3D backgrounds. "There are more 'knock-offs' in the new levels," points out Nintendo's Ken Lobb, referring to the places where it's possible to send characters plunging from great heights. "Kim Wu's stage is probably the coolest," Lobb boasts, "as the losing character bounces off the side of a mountain on the way down."

"There are more 'knock-offs' in the new levels. Kim Wu's stage is probably the coolest."

Ken Lobb, Nintendo

According to

Lobb, frame rate has not been a problem, as the game runs consistently at 30 frames per second. It also incorporates some real-time lighting effects absent from the *KI 2* coin-op. "When the train comes in T.J. Combo's stage," says Lobb, "the light changes from green to red, and the whole background changes color and the characters change hue. That's a combination of pre-rendered and real-time lighting."

KI Gold will do for now, but N64 probably deserves better. ng





Great graphics, shame about the gameplay. With any luck, *KI* will quickly be superceded by a more involving N64 fighter







Along with the standard Arcade mode, Nintendo beefs up this 12 MB cartridge with a Training Mode, a Tournament Mode, and a Team Battle Mode. As in the Super NES version of *Killer Instinct*, the Training Mode instructs the player in combo skills

The reason lightning doesn't strike twice in the same place is that the same place isn't there the second time.

— Willie Tyler



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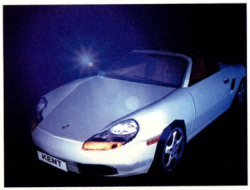
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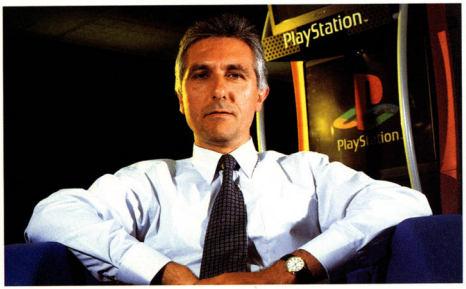
Sony Computer Entertainment U.K.

Can the team responsible for *NBA Shoot Out* repeat its initial success or was it just a case of beginner's luck? **Next Generation** investigates behind the scenes of Sony's London, U.K. development headquarters





Porsche Challenge* (top) and *Rapid Racer* (above), two new games from the Sony studio responsible for *NBA Shoot Out



Juan Montes heads up Sony's London-based PlayStation development

Format:	**PlayStation**
Publisher:	**SCEA**
Developer:	**Sony**
Release Date:	**multi**
Origin:	**U.K.**

The best thing about releasing a good first game is that you instantly grab a reputation for quality. The worst thing is having to live up to it. That is the challenge now facing Sony's London, U.K. in-house development team — a group of 30 programmers, artists and designers, based in London's notorious den of downtown iniquity, Soho.

The team has two new projects well into development – *Porsche Challenge*, a racing game based around Porsche's forthcoming Boxster sports car; and *Rapid Racer*, another racing game, this time set on water. The game these titles must live up to is of course *NBA Shoot Out*, a visual tour de force and one of the most popular basketball games ever released — not a bad effort for a group who had never worked on a project together before, and which, at the time, consisted mostly of recent college graduates.

But Sony had a lot of faith in the group, and gave the team the freedom to develop its own style of production.

"In *NBA Shoot Out* we established a style and a vision of the type of games we'd like to develop internally', explains Juan Montes, general manager of software development, "and that's a mixture of trying to aim

"We're aiming for a very high degree of realism, and trying to push the PlayStation to the max"

John Roberts, Producer

ng alphas

for a very high level of realism, and using the PlayStation to the maximum." Along with technical innovation, though, Montes is keen to stress the importance of playability in any game concept discussed by the team. "You cannot forget gameplay, because as soon as you do, you end up with nothing but lots of nice pictures."

Montes' philosophy does not restrict the type of games developed, but dictates how games should be produced and who should get a say in the process. As Montes points out, "Anyone could come up with the next 'hit game' so I arrange a discussion on the first Friday of every month and in that discussion we usually have between 12 and 15 people. Everyone in the office is invited to attend, it's not restricted to game designers or producers — it's a lot more open. We have someone who works in the print department who plays a lot of games and has a lot of ideas — he usually comes along. I don't believe that you should inhibit the natural creative process that exists in the industry."

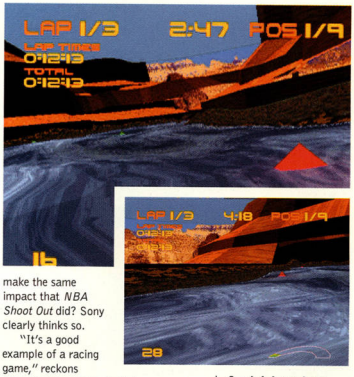
"We have someone in the print department who plays a lot of games and has a lot of ideas"

Juan Montes, General Manager

In other words, Montes believes in recruiting people who may not necessarily be the most experienced or the most expensive, but people who have a passion for games and a few good ideas.

Both *Porsche Challenge* and *Rapid Racer* have been in development for over a year. The concern in the initial R&D stages was to explore the advanced technical aspects of the titles fully so that drastic changes would not have to be made at a later date. But can *Porsche Challenge* — a game that has been preceded by dozens of racing titles — make the same impact that *NBA Shoot Out* did? Sony clearly thinks so.

"It's a good example of a racing game," reckons Montes. "The design includes interactive music, interactive tracks, realtime lighting for the highest level of realism, and excellent driving control. It's also fun to play and has endless appeal. Technically, we started R&D very early in development and reached all our targets. We didn't make any concessions on quality."

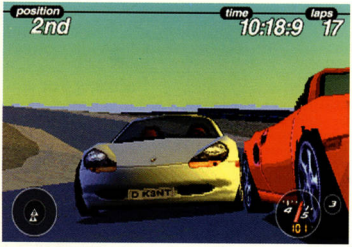


Sony's in-house team spent six months perfecting the water dynamics for *Rapid Racer*. Consequently, elements such as waves and turbulence will play a realistic and important part of each race

Of course the main coup for Montes and his team was to secure an official license from Porsche. The final agreement allowed the game's designers to work closely with Porsche to create an accurate representation of the Boxster, both in terms of look and performance. The result is an incredibly detailed in-game model which not only resembles the real thing but also looks good enough to appear in a prerendered sequence (producer Pascal Jarry was rather furtive, but claims that between 400 to 500 Gouraud-shaded, textured polygons are used for the player's car).

But will such graphical luxury slow the game down? Apparently not. The designers are aiming for a 30fps frame rate and the engine was smooth in the early incarnation Next Generation saw. However, there was very little landscape detail on show — a situation which the artists insist is temporary — and so a question mark remains over the final frame rate.

Away from speed concerns, attention to detail has opened a few stylistic doors for the designers. One of



There will be 25 circuits in the finished *Porsche Challenge*, including the famous test track in Stuttgart. Landscapes currently look empty

Sony was privy to collateral Porsche information, including the dimensions of its complex German test track in Stuttgart

the most noticeable elements of the Boxster is the fact that it is a convertible, and the Sony team have capitalized on this by giving the player a choice of six different characters to sit behind the wheel, à la *Power Drift*. Each of these characters has actually been motion captured and all have their own distinctive movements during play. It's a superficial detail, but may give the game a more leisurely look, providing a distinct aesthetic contrast to the overabundance of more serious sporting racing games already available. It's also a respectful tip of the hat to Yu Suzuki's *Out Run*, a favorite of all race game design teams.

The realism evident so far in the project doesn't stop at the Boxster car itself. Sony was privy to collateral Porsche information, including the dimensions of the company's famously complex test track in Stuttgart. As a result, the track is included in the game along with 24 other circuits, split into five different courses.

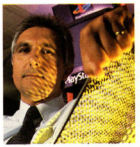
As for gameplay, the title is at such an early period of development this is still an unknown factor. Sony has confirmed that there will be a split-screen two-player option, which should add much to the game's appeal, and the interactive circuit feature sounds interesting — fast drivers are rewarded with hidden short cuts and bonuses, but other racers will be able to find other short cuts to catch up. The designers also claim that there are myriad other secrets and cheat modes within the circuits for players to discover during play.

There are further features which mark out the title. For example, Porsche Challenge features an "intelligent" catch-up feature which enables players who are straggling behind to make less mistakes and to have a higher top speed. Impressively, the leader cannot lose his position because of the catch-up system — he'll only lose it through his own bad driving. This AI achievement is a significant advance. In most games — Sega's *Virtua Racing* included — you can stay behind the leader until the very last second and then use the catch-up to zoom past and over the finish line, hence eliminating any competitive spirit.

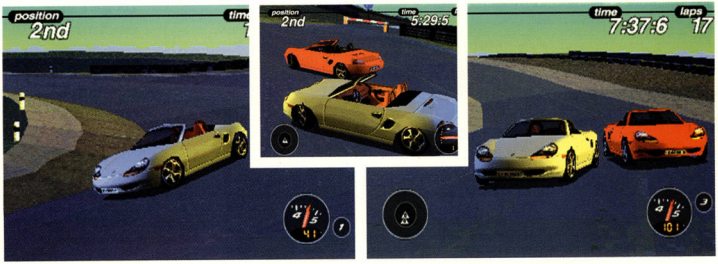
It is clear, then, that the team is not relying solely on the Porsche license to attract gamers. Although this has of course been well exploited, many small refinements to the racing genre are being made within the game.

Whereas *Porsche Challenge* has a ready-made audience of fast car lovers, *Rapid Racer* will have a lot to prove when it is released next year. Water racing games seem to be a new-found game genre, and with Nintendo's imminent *Wave Race 64* and a slew of jetskiing coin-ops appearing soon, head-to-head comparisons will be inevitable.

It's a challenge which has been taken seriously by Sony. As Montes explains, "With *Rapid Racer* we spent six months modeling the water, how it moves, and so on, to try and make it as realistic as possible. Consequently the water is not just made out of sprites that always move in the same direction



Juan Montes: "It's very important to build up strong teams where everyone counts and responsibilities are clear"



The Porsche Boxster model that appears in the game is accurately based on the real vehicle which is due to appear on the roads later this year. The 3D model is constructed from between 400 to 500 polygons and then Gouraud shaded. The designers of the game worked very closely with Porsche to ensure authenticity. In the finished game, each of the cars will have its own motion captured driver, rather than zooming around the track pilotless

whenever you go to the same place. We studied how immersed objects affect water and how they affect things around the water like rocks, and so on. We also looked at how spray is produced when you have something touching the water. We tried ways of capturing water movement that were very effective, but took up too many cycles for the machine, so we then looked at other ways where you could still have a similar level of realism but with more optimized code."

The result of all this experimentation is an incredibly complex series of water courses, each alive with complicated liquid currents and swells. Elements such as spray, wakes and waterfalls are also included and all of these affect the handling of the player's boat as it competes. Smashing though a wave, for example, will slow the boat down, as will getting caught in the turbulence of another boat's wake. It's an attempt to provide a real watersports experience, rather than just having a blue road and hoping no-one notices it doesn't move.





John Roberts (above) senior producer at Sony. "*NBA Shoot Out* was our first product and we want every title to get the acclaim it has had." Sony's London development facilities (right)

To accompany the advanced water physics, *Rapid Racer* offers a similar list of attributes to *Porsche Challenge*. The vehicles are detailed, texture-mapped models and the circuits (there are 18 placed over six courses) all feature hidden shortcuts and cheat modes to add to the longevity. As with *Porsche Challenge*, the courses are at a very early stage so it is difficult to assess the game graphically. The interactive water does look rather strange at the moment: Although it is clear that there are currents moving independently of each other, the water still looks flat, like some kind of trippy texture effect. Have Sony been forced to sacrifice aesthetic concerns in favor of realism? Later versions are bound to provide an answer, but Montes is keen to stress that the emphasis is on gameplay.



Almost inevitably, despite Sony's new interest in the racing genre, *NBA Shoot Out* has not been laid to rest. *NBA Shoot Out '97* is currently also in development and Montes promises improved motion capturing and new moves based on those performed by real basketball players. Next Generation saw an early video of the title in action and it looked astonishing. Perhaps most importantly, the players in the game now resemble their real world counterparts, marking a huge step forward in the team's quest to bring as much realism as possible to its games.

So it looks like Sony's gamble — to employ a young, inexperienced, U.K. team and give it total creative freedom — has paid off incredibly well, so far at least. *NBA Shoot Out* was a commercial and graphic triumph (it was a smash hit in Europe) and if only half the realism and technical audacity on display in that game finds its way into *Porsche Challenge* and *Rapid Racer*, they should both be exceptional titles. John Roberts, senior producer, points out, "I'm quite fortunate. We don't find ourselves under as much pressure as I've had with other publishers to get the games finished and released. We can spend a lot of time and cost to get them right, and we won't release them unless they're right because our reputation could suffer. We need to build on it. *NBA Shoot Out* was our first product and we want each and every title to get the acclaim it has had."

While SCE Japan has enjoyed mixed success with technically astute but flawed titles such as the *Jumping Flash!* and *Motor Toon GP* series, the London team's efforts, combined with those of developers such as Psygnosis and Neon, should continue to ensure that Europe is acknowledged as a major centre for imaginative innovation and technical know-how. Which can only be good news for the PlayStation. ng



The Sony team's offices located in downtown Soho. Although U.S. gamers were aware of missing subtleties, many European gamers found it difficult to accept that *NBA Shoot Out* was made in London not the U.S.

"*NBA Shoot Out* was our first product and we want every title to get the acclaim it has had"

John Roberts, Producer

60,000 frames of animation later our artists were getting a little ticked off. After all, EWJ only had 3,000 frames and back then, we thought that was a lot. Can we pull off the most animated game ever? Time will tell…

— The Shiny Team

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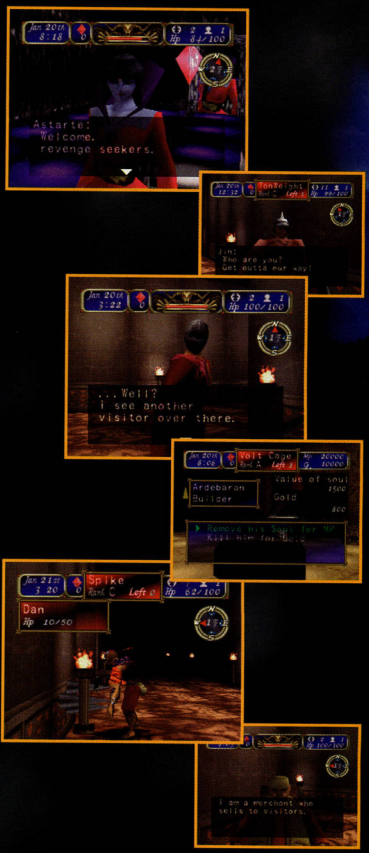
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StarCraft

The designers of *Warcraft II* are ready to serve up another dose of combat strategy, this time in space





Resource management is as important to success in *StarCraft* as fighting skills or military strategy. Multiplayer games are an exercise in inter-player cooperation, planning, and — of course — betrayal

Format: **PC-CD ROM**
Publisher: **Blizzard**
Developer: **Blizzard**
Release Date: **April '97**
Origin: **U.S.**

"There are role-playing and puzzle elements, along with missions ranging from rescues to terminations"
Bill Roper, Senior Producer

Over the last year and a half, Blizzard has gone from being a small, relatively obscure development house to an industry force to be reckoned with. The impact of *Warcraft II* on the gaming world can't be underestimated, and the upcoming *Diablo* is already making waves. So how do you follow up one of the most successful action/strategy titles of the year? Simple: start from square one, and build something new.

Bill Roper, *StarCraft's* Senior Producer, puts it this way: "Like any gamers, at Blizzard we're always looking for new experiences. If we were content to rest on our laurels, we would have never made the changes we did when we went from *Warcraft: Orcs & Humans* to *Warcraft II*."

Enter *Starcraft*, an action/strategy title that loosely follows the *Warcraft* design but updates the premise and adds a plethora of new features. Combat takes place between the forces of the Terrans, a human species, and two alien races, the Protoss and the Zurg. Unlike *Warcraft II*, however, in which no matter what race you played as, all the units were roughly



Not all races are created equal in *StarCraft*. With disparate strengths and weaknesses, it will be possible for players to nurture an individual playing style to a greater extent than was possible in *WarCraft 2*

ng alphas







***WarCraft 2*, Blizzard's biggest game to date, came in at number 10 in NG 21's Top 100 Games of All Time. *StarCraft* looks to keep all of the elements that made *WarCraft 2*, and them some**







Gone are the knights, elves, and foot soldiers. *StarCraft* is more high tech than Blizzard's previous offerings

equivalent, *StarCraft* is taking a different approach. Protoss units, for example, are extremely powerful but take a great deal of time and resources to build, while Terran units are cheap and fast to construct but can't take extensive punishment.

There are other changes as well. The most immediately noticeable of which is the switch to an isometric perspective. "We really wanted to give a much deeper graphical look to the units," Roper explains, "and we're also using wholly rendered artwork for the units and wanted to make sure that every detail can be seen and draw the player in as much as possible. We feel that the isometric view will really help make *StarCraft* stand out."

And so, unlike *WarCraft 2* in which the characters were rendered then extensively touched up for a style more consistent with the fantasy setting, the artwork in *StarCraft* has undergone very little retouching, retaining a rendered, high-tech look.

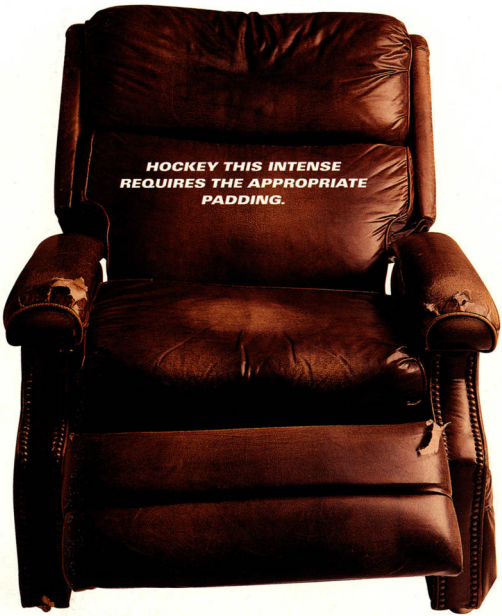
Another change is in the structure of the game itself. *WarCraft 2* is a game of attrition and conquest, in which opponents fight until one is defeated. *StarCraft* has a much more integrated storyline, and some levels are much more like missions than battles. "In *StarCraft* there are slight role-playing and puzzle elements, along with unique missions ranging from rescues to assassinations." Many missions, in fact, are loosely patterned on classic scenarios from science fiction films, such as the trench assault from *Star Wars*.

Lastly, along with *Diablo*, *StarCraft* will be one of the first titles available for play on Blizzard's Battle.net, a new online gaming service. "Battle.net will be provided to players at no additional cost," Roper explains. "The player will go into the multiplayer selection menu from within the game and press the Battle.net button. The player will then be taken to our Battle.net service using their own ISP. Players can swap hints, strategies, files, set up guilds and meeting sites, and most importantly, initiate multiplayer games."

So how are matches set-up? Roper explains: "Whenever a player enters Battle.net, they are filtered by location and ping times, and placed with other players close to them in the internet neighborhood. Our goal is to provide an exciting and fun experience with no hassles."

"Battle.net will be provided at no additional cost. Players can swap hints and strategies, and initiate multiplayer games."

Bill Roper, Senior Producer



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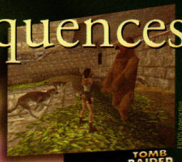
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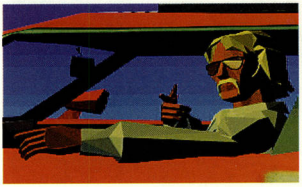
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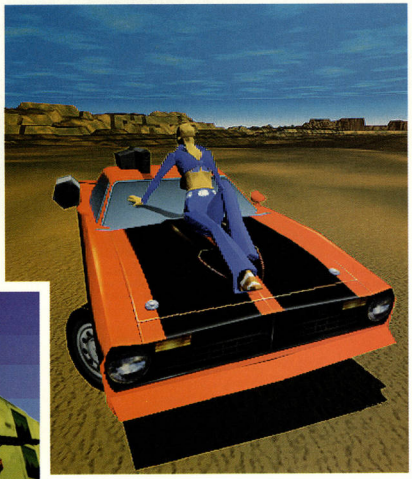
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Interstate '76

Activision adapts its *MechWarrior II* engine for a different vehicle — and you won't believe (or won't remember) the world it's set in







It's hard to tell what's game and what's cut scene in *Interstate '76*, and that's exactly the way Activision intended it. The cinematic screens use graphics based on the actual game sequences, so continuity remains intact

Format: **PC-CD ROM**
Publisher: **Activision**
Developer: **Activision**
Release Date: **November**
Origin: **U.S.**



This is the 1970 s as it might have been — not a post-apocalyptic scenario

Imagine that the '70s never died. Imagine bell bottoms and afros never went out of style. Now imagine the gas crisis of the period never ended either, and all those mod badasses with their sideburns and leisure suits are tearing around the American Southwest, killing each other for the fuel to keep their gas-guzzling muscle cars running. Base the whole thing on a souped-up *Mechwarrior II* game engine and throw in an ice-cool funk soundtrack, and you've got the idea behind *Interstate 76*.

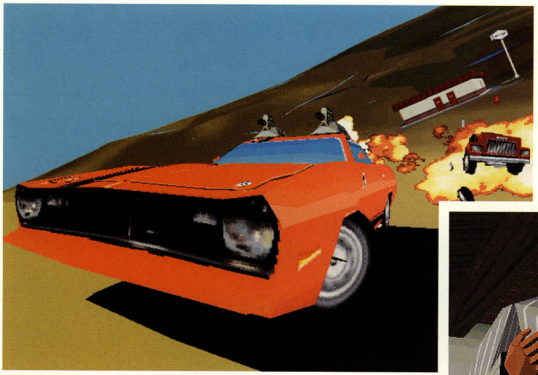
Zack Norman, *I76*'s lead designer, explains, "The idea came from a desire to take the *Mech II* technology to the next level and make a real action-simulation hybrid — a vehicle action simulation – but also infuse it with a style and a soul that hasn't been exploited before."

"We wanted to make a game that could capture a mood in a way that goes beyond just lighting things on fire and blowing them up," Norman continues. "And once we

"The idea came from a desire to take the *MechWarrior II* technology to the next level"

Zack Norman, Lead Designer

ng alphas





Of course, a lot of 1970's memorabilia and fashions crop up in the game. Players will need to use the CB regularly to check in with allies, and if you're *really* lucky, Taurus (your wing man) will recite some poetry

Real World

A great deal of thought has gone into keeping *Interstate '76*'s world consistent. Vesce says, "We're trying to get away from the shell-mission, shell-mission paradigm that's seen in most sims. What we're doing is using cut scenes and CB radio broadcasts *within* missions to create a more cinematic game – instead of jarring players out of the sim with ugly breaks in the game."

Norman concludes, "We've tried to keep the interactive and non-interactive parts of the game stylistically consistent. You'll notice that the characters have a low polygon count and that the cars used in the cut scenes use exactly the same models as found in the game. We're also experimenting with blending palettes from the cut scenes and the game, so that the average player won't be able to tell the difference and will stay totally immersed."

decided on a vehicle combat game, we looked for the best vehicles to use."

The next piece fell automatically into place. "At the time we were deciding how to do this, I was also trying to decide what to do with my bonus from *MechWarrior II*," Norman reveals, "so naturally I was looking for a car, and I thought, 'Oh yeah! I'll get a '70s muscle car!' So one day I had the *Auto Buys* book on my lap, looking at all these cars while we were trying to decide what kind of vehicles to use in a videogame, and I wasn't really listening and I looked up and said, 'Y'know, I could buy a 1970 Barracuda. That would be a bitchin' car to have,' and suddenly Sean Vesce, *176*'s Director went, 'Whoa!'"

In the world of *176*, the U.S. has been thrown into economic chaos by the prolonged gas crunch. Marauding bands have taken to cruising the American desert in their heavily armed V8s, looting anything that moves and laying siege to anything that doesn't. Authorities have already been stretched to the breaking point, so a new kind of solution emerges: the auto vigilante. They can protect you, and they will come to your aid — but for a price.

Norman continues: "We made it clear that we wanted to stay away from the *Road Warrior* cliché and not make the universe a post-apocalyptic one. The metaphor isn't *Road Warrior*, it's a combination of comic book vigilantes and villains meets the Wild West. It's a place where you can walk into a 7-11 and buy both ammunition and a quart of milk."

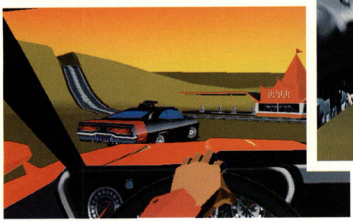
As a vigilante, the player tackles a variety of missions, from escorting other vehicles, to defeating known road criminals, even coming to the aid of a diner under attack. The



***Interstate '76*'s heroes and villains are classic '70s characters. Groove Champion and Taurus (above) are the two heroes trying to bring down the evil Antonio Malochio (top), a man trying to blow up U.S. oil fields**







Fans of the best-selling *MechWarrior 2* will immediately recognize *I76*'s pace and feel. Although the game engine and the pace of action have been tweaked, *I76* is very much a chip off of the old Activision block

history, developed by a large team of programmers over the course of two or three years under the direction of several producers, with a lot of trials and tribulations before it went out the door. As you can imagine, the technology was held together with super glue and bubble gum. So when we got our hands on it, we really had to gut a lot of the systems."

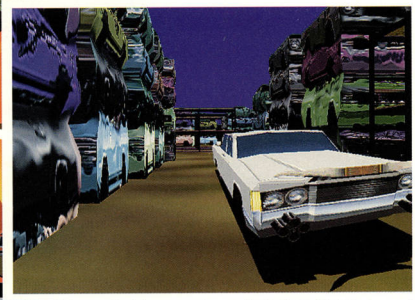
You'll now find a completely new rendering system (which can pump out many more polygons per second) and fully texture-mapped graphics (as opposed to the combination of textures and flat shading featured in *Mech II*). On top of this, the team has added a new system to take care of all the vehicle dynamics such as suspension, flat tires and vehicle skidding.

Vesce continues. "One of the things we're really proud of is that unlike other racing games, we're not track based. Just like *Mech II*, as much as your car can endure off-road driving, you can take it wherever you want, and that opens up new possibilities, such as fighting in the desert."

Norman adds, "In *Mech II* you have a kind of two-dimensional flight combat model, in that you have a speed-determined turn radius, so getting on somebody's tail and waxing them was the order of the day. It's similar in *I76*, but vehicles of different weight and maneuverability will benefit from sticking to different terrains and surface types. This adds a new strategy to the game."



Would *you* cut this guy up at your local freeway intersection? Probably not



Between each mission, cars can be souped up further and damage repaired. It's important to finish each round of combat with as little damage as possible, and with enough cash to reload all your weapons

overall goal is to bring to justice one Antonio Malochio, who's been hired by OPEC to detonate a nuclear warhead over the U.S.'s one remaining oil field (he also killed your sister, Jade, when she got wind of the plot). So the player's motivation is simple: avenge your sister and save America.

Adapting the *Mechwarrior II* engine for automotive combat, however, proved difficult. Vesce explains, "There have been quite a few hurdles. If you look at the *Mech II* engine, it had a long and difficult

"We wanted to stay away from the *Road Warrior* cliché and not make the universe post-apocalyptic"

Zack Norman, Lead Designer



From inside the car (above) it's possible to shoot bad guys with a hand gun (be sure that you have enough money for a new windshield, however). Your car is one of the hottest on the road — be sure to look after it (left)

The game includes

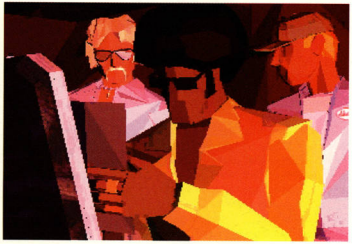
some 25 different types of cars, all based on classic '70s-era American cars. To avoid trademark problems they're called by slightly different names — Piranha instead of Barracuda, for example — but the chassis are clearly recognizable. In addition, each car can be customized with any of three different paint jobs per car. Plus, as with *Mech II*, each vehicle has a set number of hard points for mounting weapons. One major difference between *I76* and *Mech II*, however, is in the speed with which certain missions must be accomplished — if you can't reach the diner in time, for example, it will be gutted by the time you get there.

Another new wrinkle is the way in which enemies act and react. "We implemented a totally new AI," explains Vesce, "and I think you'll find that the enemy vehicles are far superior in their intelligence, in how they react to the player and how they utilize their weapons. So for instance, if a vehicle is damaged on its right side, it will know to keep itself to the left side of the player so it won't take any more damage to its hurt side."

In addition to the story mode, *I76* includes an Auto Melee mode, which is a networked autoduel for up to eight players over either a LAN or direct connect. At present, no 3D accelerator cards are supported — the game engine is now tuned to the team's satisfaction without one, and adding even Direct3D support would put the project behind schedule. Although, as with *MechWarrior II* and its Pentium and *NetMech* editions, there should be a hardware accelerated version of the game in the near future.

In world of games glutted with space operas and elf-ridden fantasy worlds, finding a scenario that takes a radically different approach is like finding the proverbial diamond in a mountain of coal.

"Besides," Norman adds, "we all love '70s funk. It's great road-trip music."



Will the murder of your sister and the plot to destroy the U.S.'s oil reserves be foiled? It will take some fast driving and a steady trigger finger — not to mention a taste for prolonged exposure to 70s funk







Of course, explosions play a large part in the game. As do pit stops at 7-11s



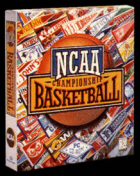
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Wave Race 64

Water, water everywhere, and not a plumber in sight. Nintendo's new jet ski racer looks to wash away the N64's two-title blues







Check out the reflections and the refraction of light in the water. The real beauty is that it's not just graphical luxury, they're there to help you read the waves' contours and size

Format:	**Nintendo 64**
Publisher:	**Nintendo**
Developer:	**Nintendo**
Release Date:	**November**
Origin:	**Japan**

After collecting all of Mario's stars, there isn't much else for N64 watchers to do but half-heartedly play *Pilotwings* and memorize the holiday release schedule.

Surprisingly, it is *Wave Race* and not *Cruisin' USA* that will be the first racing title to test-drive the N64 processors, and the third blockbuster to hit store shelves.

Playing *Wave Race* is similar to playing *Excite Bike* or *Alpine Racer*, in that players compete against the environment as much as against other racers. From a third-person perspective, players negotiate one of eight tracks, including a night track, and an arctic environment (platform game veterans rejoice — there's an ice level!).

With no *Road Rash*-style armorments, 'bumping' opponents is the extent of combat. But this doesn't matter — the thrill here is born of out and out racing (which *Wave Race* delivers it by the — excuse the pun — bucketful) and performing tricks and stunts (you can air it out over ramps with everything from a handstand on the handlebars to a double back flip). All on the most realistic water courses Next Generation has ever seen.

"*Wave Race* actually uses real wave propagation physics. The jet skis actually lay a wake and that interacts with the jet skis behind."

Jim Merrick, Nintendo

Anyone who's played *Mario 64* (and if you haven't, what have you been doing?) will appreciate the Nintendo 64's ability to implement water into a game world. However, *Wave Race* raises the bar to a new level, featuring water that doesn't just look pretty (a la *Crash Bandicoot*) but actually moves, behaves, and affects a player's jet ski in a realistic manner. For example, on one course, the dark and glassy water of a marshy pond beautifully reflects the bordering landscape — and a lack of waves makes for a fast, smooth, race. On another course, set in a more tropical environment, the translucent aqua blue textures enable you to see your submerged jet skier while diving under a dock



A dolphin leaps out the water as you approach. Occasionally, they will swim alongside your ski





A really big wave (top) — so be sure to get ready with a stunt or at the very least, a solid approach. Avoid obstacles (above), or you'll slow down

ng alphas



The crystal smooth waters of the lake make for a very fast, smooth ride

— which makes it great for tricks. By far the most thrilling environments, however, are the courses with enormous waves that require split-second timing to negotiate.

"It's actually using real wave propagation physics," explains Jim Merrick, one of Nintendo's Software Engineers. "The Japanese developers really did model the characteristics of the fluid properties of water and wave propagation to make the game as realistic as possible. The jet skis actually lay a wake and that wake will interact with the jet skis behind it."

Another thing that *Wave Race* and *Super Mario 64* have in common is that both titles manage to be both a great game and a showcase for N64's hardware graphic features. "The key to what makes *Wave Race* look so good is the usage of the N64's alpha blending — or transparency," explains Merrick. "For example, you can see the fish under the water, but you can still see the reflection of the bird flying overhead. If you're in the still pond track, the alpha blending creates the transparent effect of the water, and environment mapping is used to get the reflection of the shore."

"The key to what makes Wave race look so good is the usage of the N64's alpha blending, or transparency"

Jim Merrick, Nintendo

But the details

don't stop with the water. When a rider falls off the jet ski, there's a different animation depending upon each situation. If the jet ski collides with a solid object head-on, for example, the rider falls directly off the back, and when climbing back on, their head will shudder just a little bit, as if shaking off the hit. Also, some courses feature well-animated wildlife, like a dolphin that swims alongside the jetski and there is even a flock of Canadian Geese that occasionally swoop across the race track. There's even a subtle moment of lens flare when tight cornering into the sun.





Entering the docklands, be sure to make your corners tight and your speed slow

While jet skis

add a new angle to the racing genre, *Wave Race* is not unique. Many similar titles are currently in development (see page 197), including one from Sony — *Jet Moto*, currently in development at Singletrac for the PlayStation.

Direct comparisons of these two products will be inevitable, and — considering the sheer thrills offered by *Wave Race* — it seems as if Sony has its work cut out to make *Jet Moto* even remotely comparable.





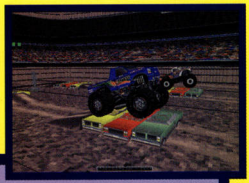


Of course, you don't have to stay on the water surface. You can go above it (left), or below it (right). Split screen two-player mode seems to work fine

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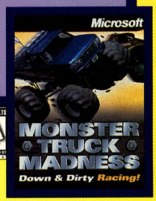
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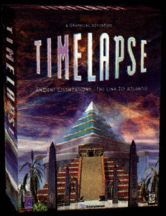
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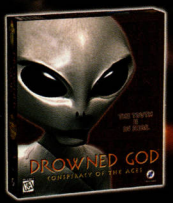
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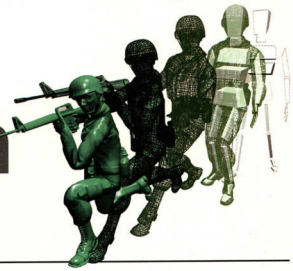
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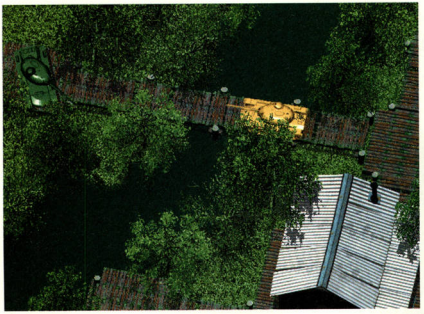
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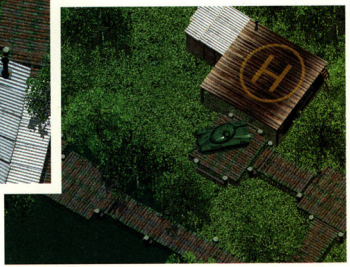
Army Men



Studio 3DO is back, and what is it up to lately? One word, son: "Plastic"



Format: **PC-CD ROM**
Publisher: **Studio 3DO**
Developer: **Studio 3DO**
Release Date: **April '97**
Origin: **U.S.**



Yup, it's a green plastic tank, rolling through a realistic swamp — *Army Men* is nothing if not gleefully aware of its own absurdity

"We realized early on that everyone always likens a game like this to playing with army men anyway"
Chris Wilson, Producer

As the first of 3DO's "new breed" after the slow-heat death of the 3DO Opera system, *Army Men* shows Trip Hawkins' company moving in a promising new direction. It's a realtime action-strategy wargame, in roughly the same genre as *Command and Conquer* or *Warcraft II*. And like many of 3DO's up-and-coming titles, *Army Men* is a native Win95 application using DirectX. It's high-res, extremely fast, and designed by a team of gaming veterans, including Producer Chris Wilson (*Centurion, General Chaos*), Director David Bunch (*Skate or Die, Bulls vs Blazers*), and Software Engineers Andrew Burgess (*Starflight, S.T.U.N. Runner*) and Nicolette Robinson (*Centurion, Killing Time*).

It's also based around an interesting and funny twist: "We were debating about how realistic we wanted to make it," explains Producer Chris Wilson, "and we were also worried about how we could reach the German market since, for this kind of title, Europe will make up about half of our sales, with the bulk of that selling in Germany."

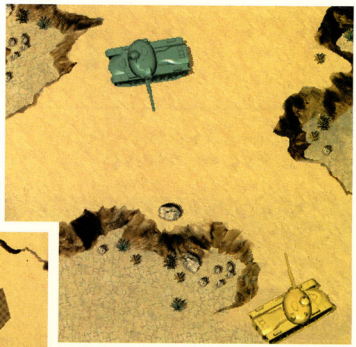
And why is this a problem? Wilson explains: "The Germans are extremely uptight about realistic violence, so *Command and Conquer*, for instance, changed all its units into robots and changed some of the cut scenes. But we didn't want to have to do two versions, and very early on in the design process we'd been planning things out with little plastic army men, so we suddenly realized that this was what everyone always likens a game like this to anyway! So it was just the most natural idea in the world to keep it that way. We'll animate them realistically, but they'll be plastic."

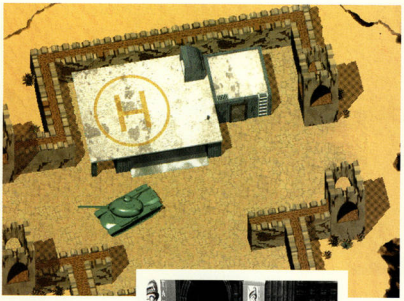
ng alphas

And so it came to pass that *Army Men* takes place in a strange world divided between the good, green plastic people and the evil, tan plastic people.

Whenever a soldier fires, he snaps into a classic plastic army man pose, and when a tank blows up, it flips over to reveal the hollow underside and plastic wheels.

"It's actually a blessing to me that we're doing it this way," says Art Director Keith Bullen, "because 3D modeling packages in general always give you a plastic look anyhow. So when we decided to go with plastic, I just said, 'Great! It makes my job easier!'"





Studio 3DO's proprietary map editing toolset enables the team to quickly and easily create complex level designs. The plan is to keep adding levels until the last minute

Cut scenes play like old *Movietone News* clips (plastic recruits are shown undergoing training and physicals, while plastic Rosie Riveters work on plastic planes and tanks back home), letterboxed in black and white, with scratches and hair on the film.

Plastic recruits are shown training while plastic Rosie Riveters work on plastic planes and plastic tanks back home







***Movietone News*-style cutscenes are one of the game's high points**

The game is played from an isometric perspective, over terrain that varies from desert, to swamp, to Alpine snowscapes. Players directly control one of six types of vehicles, including tanks and helicopters, then deploy seven different kinds of troops with orders to either attack or defend.



"Once you tell them what to do, troops act on their own," explains Andrew Burgess. "They have a pretty sophisticated AI though, so they act intelligently when they go after a target, waiting until they have enough force to attack — they won't rush in on a suicide mission."

With its blend of action and real-time strategy, *Army Men* is gunning for a genre clearly dominated by *C&C* and *Warcraft II*. However, its unique world and light-hearted approach set it in a niche by itself — and it bodes well for Studio 3DO's future. ng

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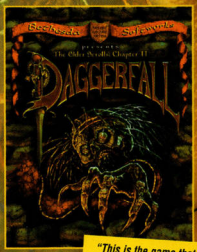
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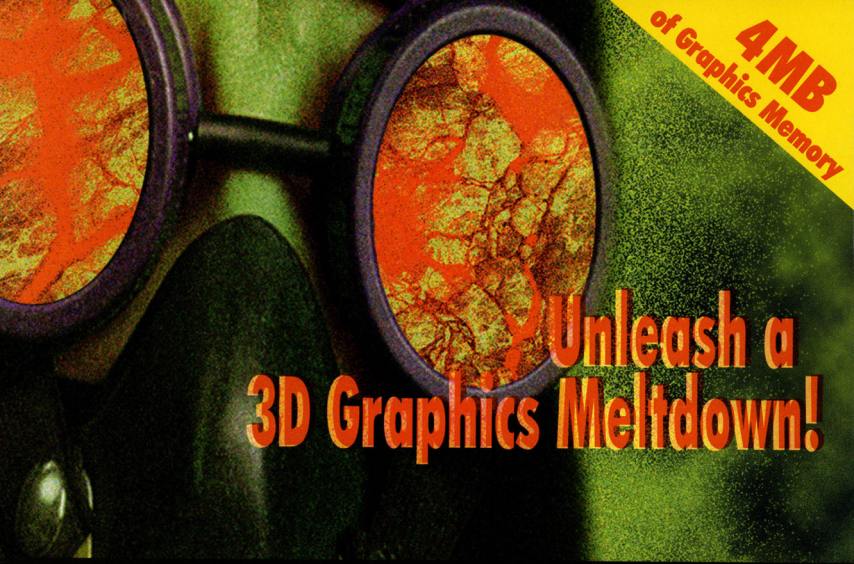
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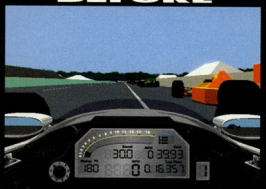
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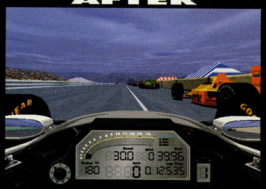
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INTERGRAPH

Crusader: No Remorse

Origin ports one of its most action-packed PC titles to home consoles. But was the effort worth it?



The grenade launcher needs to be located and then picked up, but *Crusader* relies on big explosions, so it isn't difficult to find



Enemy troops teleport in to deal with you. You can use the teleport yourself, or simply be a one-man welcoming committee and wait outside

Format:	**PlayStation, Saturn**
Publisher:	**Origin**
Developer:	**Origin/Realtime Associates**
Release Date:	**November 23**
Origin:	**U.S.**

Crusader: No Remorse was a relatively successful action/strategy title for Origin as a PC CD-ROM game late last year. For a PC game, *Crusader* was relatively unique in that it concentrated on fast-paced action from an isometric perspective. Now — as the console arena slowly becomes glutted with similar titles — Origin is porting the game to PlayStation and Saturn.

However, a surfeit of competition doesn't worry Jorg Newman, *Crusader*'s producer for both console versions. "The problem I think some of the other games have," Newman explains, "is that they're pretty brainless. I've seen *Project Overkill* and *Loaded*, for instance, and I think the difference is that *Crusader* requires a lot of strategy; there's even a kind of economic model to the game. Plus there's a lot more variety to the action — lots of ducking behind boxes and rolls, all kinds of other actions besides just shooting."

"Crusader has lots of ducking behind boxes and rolls, all kinds of other actions besides just shooting"

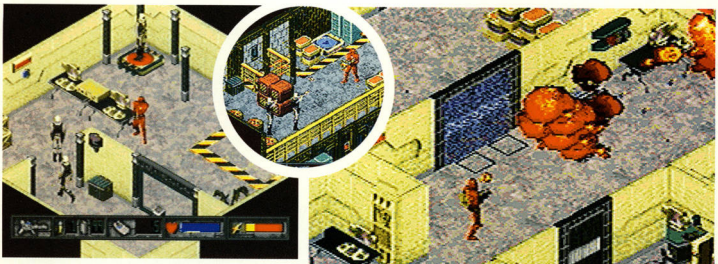
Jorg Newman, Producer

But, it hasn't been easy bringing the Silencer's one man war against the World Economic Consortium to the consoles. Obviously, PCs and consoles are very different platforms to code for. Newman continues, "The problem is that the PC version was written in C++ and assembly, and was therefore very PC specific — it couldn't be directly ported. Therefore, these console versions are complete rewrites." But



Security cameras keep the enemy's defense posted, so shoot 'em out

ng alphas



Computer terminals can be used by the player to deactivate security fields, tune teleports on or off, and generally alter the environment to suit your purpose

This door is protected by an electric security field — try grenading it. The data at the bottom of the screen keeps track of your weapons, ammunition, inventory item, and health

"When we do the sequel, *No Regret*, for the consoles early next year, you'll see a lot more extras"

Jorg Newman, Producer

that hasn't been the only hurdle. "There are a lot of problems with consoles," Newman explains. "They each have about two Megs of RAM — you're constantly fighting for memory — so we had to scale some things back. The resolution was cut from 640x480 to 320x240, we cut down the colors, and we took out the walking — now he's always running, and he always has his gun out — but we've also added the forward roll from *No Regret*, the PC sequel. But, overall, the core game has been preserved."

So how are the console versions better than their PC parent? "We're improving the video because the consoles have better compression," reveals Newman, "and we've had some additional music written because we can do musical overlays, and we have way better sound in general, than on the PC. There's also a few other nice little graphical tricks we can do: the watch stations you access now zoom in and out when you access them. But due to the limitations of the RAM, we can't do that much extra fancy stuff beyond what was in the game already.

"On the Saturn we can use the second processor to do some calculations in the background, but overall I'd call this a very conservative, very direct port. When we do the sequel, *No Regret*, for the consoles early next year, you'll see a lot more extras, more use of the PlayStation graphics library, and so on, but for right now, we're just trying to get used to the platforms."

Origin has ported games to consoles before — notably some excellent 3DO and PlayStation versions of the *Wing Commander* series. In general however, it's never tried to convert a game that was so like a console title to start with. Does this worry anyone there? "For us this is new territory, yes," Newman concludes, "but it's also very exciting. I think it's the prettiest game I've seen of its kind — and it definitely has the best explosions!" ng



The world of Crusader is essentially one big excuse for some enormous explosions. As in *Doom*, all barrels of ooze simply beg to be blown up



Man on fire (top). Pick up a shield (middle). Turn off a power grid (above)

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Mass Destruction

As one of the new big publishers on the block, BMG looks to rub a winning game from a dusty lamp of a genre



Explosions play a big role in *Mass Destruction* (above). A near death experience (left)



Of course, it's always preferable that the enemy tanks suffer this fate

Format:	**PlayStation, Saturn, PC**
Publisher:	**BMG**
Developer:	**NMS**
Release Date:	**April 1997**
Origin:	**U.K.**

"Some people are going to want to leave nothing behind them. But if they do, then the AI is going to ramp up."

Scott Smith, Product Manager

Choose from one of three tanks that vary in speed and armor, and then, from a fixed overhead viewpoint, maneuver that tank across 24 levels including tundra, desert, city, and cratered-battlefields. This is the *Return Fire*-style essence of *Mass Destruction*.

Each level has multiple strategy-based objectives (like rescuing P.O.W.s and destroying radar installations, for example) with some explorative elements such as searching out additional ammo and power-ups hidden inside of buildings. Players can outright obliterate everything in their surroundings, including civilians. But according to Scott Smith, BMG's Product Marketing Manager, such tactics have a cost to pay.

"Some people are going to want to leave nothing behind them," Smith warns, "but if they do, then the AI is going to ramp up so that the enemy fights harder, and Super Troopers are going to appear."

So what the hell's a Super Trooper? "If a Super Trooper touches a fleeing civilian," Smith explains, "he immediately inducts the civilian into the army. So players have a choice: either run over and kill civilians so they can't be converted by Super Troopers, in which case the enemy will fight even harder — or let the civilians escape, knowing that there is then a much greater chance of them returning as converted soldiers to try and attack you."

At the time of going to press, several enemy vehicles (such as boats and helicopters) as well as the sprite-based humans are yet to be implemented into the game. Human characters will also have death animations corresponding to each of the weapons on offer. Nice.

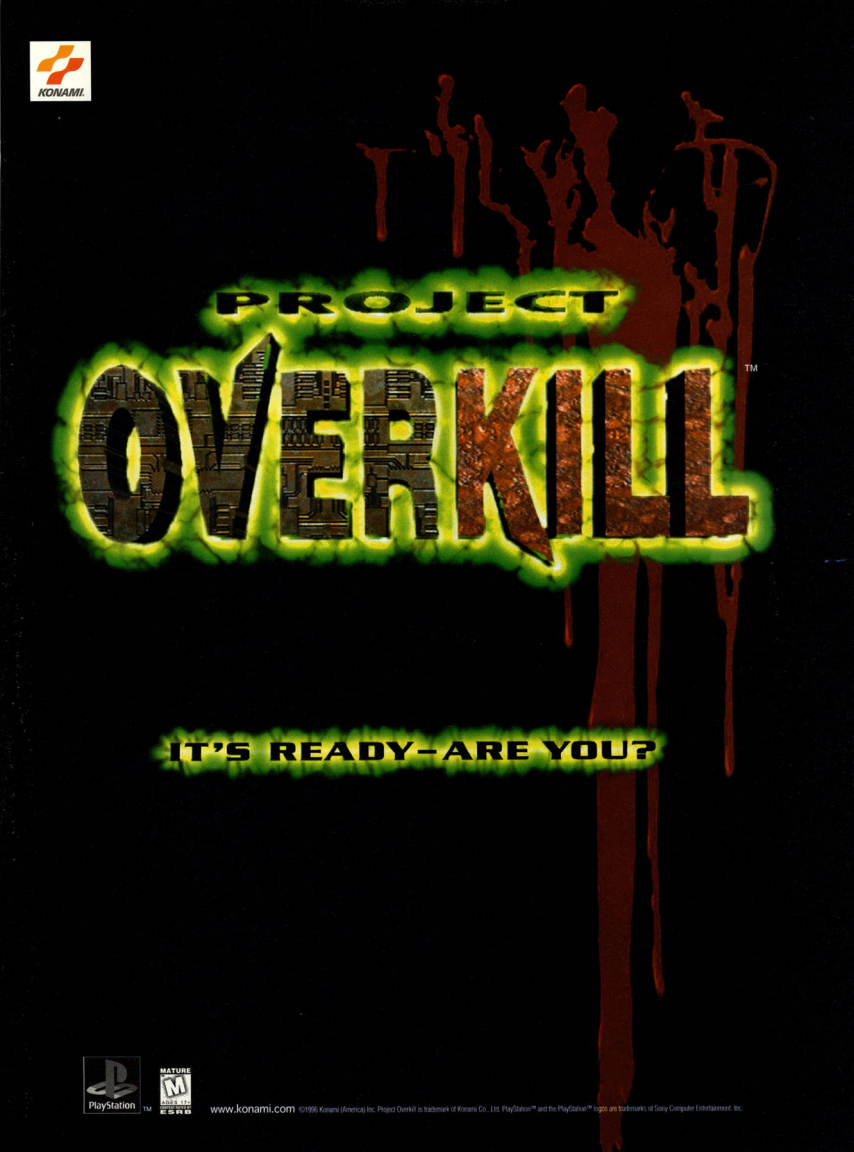
At only 40% complete, and slated to be BMG's second release, NMS has built a solid gameplay foundation with good control and clean, colorful environments. If the AI holds up, and future levels offer diverse play, this will be one game that shakes new life into an old-as-*Combat* genre. ng







Rolling through battle zones in a well-armored tank is always great fun


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Herc's Adventures

Almost lost in the slew of Star Wars-based games is LucasArts' Saturn exclusive









The characters manage to convey humor, menace, and personality — all in 2D

Although LucasArts is most famous for its *Star Wars* games, there has been a tradition at the company of creating less flashy — but no less solid — titles, usually published by JVC on the console side (*Big Sky Troopers*, anyone?). *Herc's Adventures* looks to follow in this mode.

While the game probably won't win awards for technical innovation, it looks to be a step forward for the top-down action genre, and is one of a growing number of exclusive Saturn titles (*CrimeWave* and *Mass Destruction*, previewed this issue, are others) that eschew a reliance on 3D, focusing instead on game length and depth of gameplay.

Basically, Herc's is a humorous action adventure (a la *Legend of Oasis*), in which players take on the role of one of three characters from Greek mythology: Hercules, Atlanta, or Jason. The goal it is to rescue Persephone, the goddess of fertility, from Hades, thus preventing Hades from creating an army of undead warriors (and thus saving Greece). Along the way, players will have to battle (and appease) various gods, demigods, and other mythical creatures, as well as completing some rudimentary puzzle solving.

The game takes good advantage of Saturn's sprite engine, and has exceptionally fluid animation. The art direction is right on as well, with a cartoony — but not kiddie — style that lends itself well to the fairly humorous nature of the game. There are enough gameplay innovations, too, to keep this from being a flat-out repeat of a game you've played before. We particularly like the way, when you die, that you must fight your way out of the underworld to continue.

If Saturn is to succeed as a platform, Sega needs to find a way to differentiate it from PlayStation. With Sony Computer Entertainment America apparently unable to grasp the concept that 3D doesn't automatically equal good game, just as 2D doesn't automatically mean crap, providing Saturn as platform of choice for entertaining 2D game experiences may be the way to capture a dedicated core audience of gamers.

Titles like *Herc's Adventures* — fun, high quality, 2D and Saturn exclusive — are the kind of games Sega needs to encourage more of in the coming months. In the meantime, we expect *Herc's'* will keep us busy for some time.

Format:	**Saturn**
Publisher:	**LucasArts**
Developer:	**LucasArts**
Release Date:	**December**
Origin:	**U.S.**

When you die, you must fight your way out of the underworld to continue





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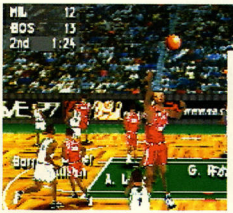
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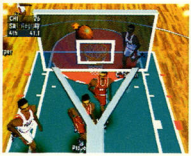
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NBA Live '97

In the new world of 32-bit dunkathons, *NBA Live* '97 fights to retain its supremacy











New camera angles have been added, but it's questionable as to how useful they'll be in the heat of the action

As seen in these PlayStation screen shots, the days of hand drawn sprites are long gone

Format:	**PlayStation, Saturn, PC**
Publisher:	**EA Sports**
Developer:	**EA Canada**
Release Date:	**November**
Origin:	**Canada**

After last year's closely-contested race with Sony's *NBA Shoot Out*, the phrase "dedicated to our franchises" holds more weight at Electronic Arts now more than ever, as the second edition of PlayStation and first Saturn version of *NBA Live* try to keep pace with the cutting-edge competition.

The most immediately noticeable change from *NBA Live* '96 is that '97 breaks from sprite-based to 3D polygonal players. "With the poly players, we've really been able to take our accuracy to a new level," says *NBA Live*'s Associate Producer Tarrnie Williams. "Every uniform is going to have the numbers in the right place, depending on the style of jersey, not all just centered on the back. Even the little NBA symbol will go in the right place for each uniform."

"With the polygon players, we've really been able to take our accuracy to a new level"

Tarrnie Williams, EA Sports

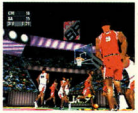
The animation

is fully motion-captured, and while still early, it appears in no way to interfere with control. EA is also incorporating "motion-blending," a technology which helps ease the jerky starts and stops of motion-captured animation.

Keeping with tradition, expect full, updated NBA rosters (approximately 350 NBA stars), eight-player capability, in-depth stats, and enhanced create, trade, and draft player features (when a player is created in *Live* '97, the surname appears on the back of his jersey).

More than a decade of NBA game production has led to this year's extremely well-designed front end menus, which incorporate actual NBA player photos. "Last year you were only able to take one team at a time through a season, this year you can take all 29 if you want," Williams says. The final game will also include a much larger amount of audio compared to last year's PlayStation version. Al Murdoch, the stadium announcer for the Vancouver Grizzlies, will provide full stadium-style coverage, and you'll hear the voice of TNT's Ernie Johnson Jr. giving the quarterly summary.

As of this writing, Sony's silence (it has released nothing on *Shoot Out* '97) makes it impossible to forecast an early leader. But as in years past, EA's *NBA Live* is coming out strong with its traditionally solid, true-to-the-sport gameplay. ng





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Titanic

CyberFlix takes realism (some cynics might say anal retentiveness) to new levels with its latest graphic adventure

Format:	**PC, Mac**
Publisher:	**GTE Interactive**
Developer:	**CyberFlix**
Release Date:	**December**
Origin:	**U.S.**







One of the most tragic yet fascinating moments in history — The Titanic's maiden voyage. Now you can be there yourself





Beautifully rendered environments set the scene for the adventure

Despite its moniker as "the interactive movie company," CyberFlix's previous products have been anything but. Instead of basing its games around FMV, president Bill Appleton (responsible for SuperCard and WorldBuilder multimedia/game authoring systems on the Mac), developed DreamFactory, a proprietary development system that enables the creation of highly detailed 3D environments and characters. The drawbacks — you can only move in cardinal directions, and characters, when speaking, look a bit like ventriloquist dummies — are insignificant when compared to the greater control and depth of gameplay on offer compared to the average FMV-based "adventure."

The system worked well in *Dust: A Tale of the Wired West*, and has been refined for *Titanic*. First, players now have more freedom of movement (it is now possible to explore the environment in a full 360°, instead of being restricted to a grid of movement). Second, the character interaction sequences have been beefed up, with better lip syncing when characters are talking. Finally, the entire player interface has been improved, with a view to sharper, more instinctive control.

The 3D models of the ship were created from actual blueprints of the Titanic

The plot of the game places players as a British secret agent, undercover on the Titanic's maiden (and final) voyage. As the game progresses, players will have an opportunity to drastically change the course of history (well, part of it, anyway — the Titanic's date with an iceberg is, unfortunately, pretty much a foregone conclusion).

One of the nice things about DreamFactory is that it enables lots of character interaction. In *Titanic*, there are more than 25 characters to interact with, and there are literally hundreds of possible things to say to



Over one million polygons are used to render this staircase. All the scenery and backdrops are recreated using photographs of the original

ng alphas



As a detective on board The Titanic, players get the chance to explore pretty much anywhere they want to as the *Titanic*'s adventure unfolds

them. Also, the character AI is fairly smart, with people remembering what you said to them, and acting in subsequent conversations accordingly.

Probably the most impressive aspect of the game, though, is the amount of historical accuracy CyberFlix has squeezed into the program. The 3D models of the ship were created from actual blue-prints of the Titanic, but it goes far beyond that. Hundreds of photographs were analyzed while building the models of the interior, and an exhaustive amount of research was conducted to make sure that everything — from the floor tile patterns to the wall paper to the glass ceilings — is an exact duplicate of what was found on the actual ship.

The attention to detail in the game is nothing short of awesome (the initial model for the grand staircase has over a million polygons, for instance). But our favorite example of this attention to historical detail is that in one possible outcome of the game, players end up in London in the 1920s, listening to the radio. The researchers at CyberFlix got the BBC playlist for that day, and the songs you hear on the radio are the songs that were actually playing that day. That's hardcore realism, and it underscores just how detailed the game is. Indeed, CyberFlix has had a full-time Titantic researcher on staff since the inception of the project, and the company's web-site has become a "must-see" for Titanic research buffs.

Adventure games, as a genre, have been in decline lately as *Myst*-style copycats and poorly acted, non-interactive FMV boondoggles bore gamers out of their skulls. *Titantic* looks to change that trend, with a highly detailed, realistic game that offers gamers — practically for the first time since CyberFlix's last game, *Dust* — a chance to experience truly deep gameplay in a high-resolution graphic adventure. ng



Blueprints and photographs of the original ship were used

The Titanic's date with an iceberg is, unfortunately, pretty much a foregone conclusion









Of course, a computer world as highly detailed as this cannot be explored in 3D "on the fly" (at least, not yet). But in the absence of home computing power up to this task, CyberFlix's DreamFactory system is probably as good as it gets. Having evolved further since its use in *Dust: A Tale of the Wired West*, DreamFactory offers real interaction

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POD

The first game to showcase Intel's MMX "game" chip delivers fast racing thrills

Format: **MMX PC**
Publisher: **UbiSoft**
Developer: **UbiSoft**
Release Date: **January 1997**
Origin: **France**



The action flies by at a slick 30 frames per second, courtesy of MMX

The race to deliver the first MMX game that fully exploits the capabilities of the new "multimedia" processor from Intel is officially on. The new CPU, designed to enhance multimedia applications, is also being touted as Intel's "games" chip — but this name tag, of course, will only be truly earned in the playing of MMX-based games.

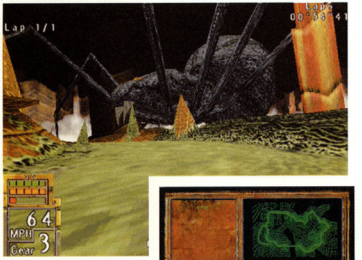
It seemed that Epic MegaGames would be the first to produce a dedicated MMX title with its first-person shoot-'em-up, *Unreal*. But as we head down the home stretch and the January 1997 launch date for MMX grows closer, it seems that French publisher UbiSoft will be the first to cross the finish line with its futuristic racing game, *POD*.

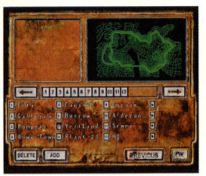


The performance and tactics of opponent cars changes each race

It's scheduled to first appear inside the box of MMX-powered PCs in January 1997. Then in the spring, it will also be available as a standard Pentium version. Fabrice Valay, product director at UbiSoft Paris explains the relationship between his company and Intel for this project. "We had the same goal, and we have been working together on many aspects of the game and the technology," Valay explains. "Intel have a very good machine and they want to sell it. But to have a very good machine you need to have games. We had a very good game and we want to sell it." Simple.

The power of MMX is being exploited in nearly every aspect of *POD*. The simple instruction multiple data (SIMD) processing power has enabled more sophisticated audio (the sound of the engine in your car alone is composed of 32 separate voices),







UbiSoft studied all the great race games on both the PC and the consoles. The company hopes that *POD* takes all the best elements from each, to create something new

"You must know the car and the track and understand how it all works. If you win, you will not only be a better driver, you will be smarter"

Fabrice Valay, Product Director

ng alphas



One of the best looking PC racing games ever, *POD* will help MMX sales

and the positioning of the sound has also been enhanced. You may not see a car pass you over, but from the sound cues, you'll feel and hear it.

On the screen, players will see high resolution graphics moving at more than 30 fps. The use of shadows and high level of graphic detail immerses you in the game's neo-classical motif. It is without question one of the finest looking games on PC to date.

But while the graphics and the sound are extremely impressive, it's the sheer speed of this game that best demonstrates the power of MMX. Putting the pedal to the medal can thrust you into a wall or barrier before you realize what has happened. Of course, this has as much to do with the game design as it does processing power — but it is perhaps significant to note that this may be the first racing game in which the brake will be used as much as the gas pedal.

"We studied *Ridge Racer* for the design of the streets and tracks. We tried to understand everything that makes a great game"

Fabrice Valay, Product Director

MMX has also extended the capabilities of this game's AI. "You must know the car and the track and understand how it all works," says Valay. "To win, you must not only be a better driver, you will be smarter." In single player mode, no two races will ever be the same as the characteristics and performances of the rival cars are generated at random. So unlike with other racing games, you'll never have the same *POD* race twice.

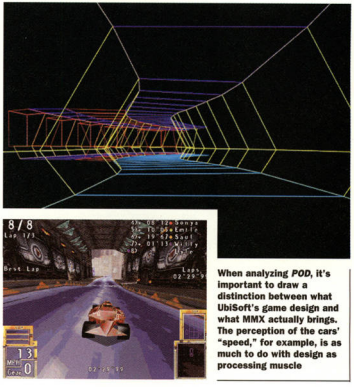
To create *POD*, Valay and his team studied many of the landmark racing titles in the history of computer gaming. Since their goal was to create a title that went beyond the existing boundaries of gaming on a PC, many of the games they used as reference points were console titles. "We have been studying every game in the world; all the production values; all the behavior, like in *Mario Kart* — the way you control the car and the gravity. We also studied *Ridge Racer* very closely for the design of the streets and tracks. We tried to understand everything that makes a great game and figure out what was the best combination for *POD*."

Unfortunately, MMX processors cannot combat the latency issues of Internet play. But *POD* will support multiplayer races for up to eight human drivers over a LAN or Internet connection. UbiSoft will be utilizing the power of the WWW to enhance the game on other levels, such as posting new tracks, new cars, and the fastest times of gamers around the world.

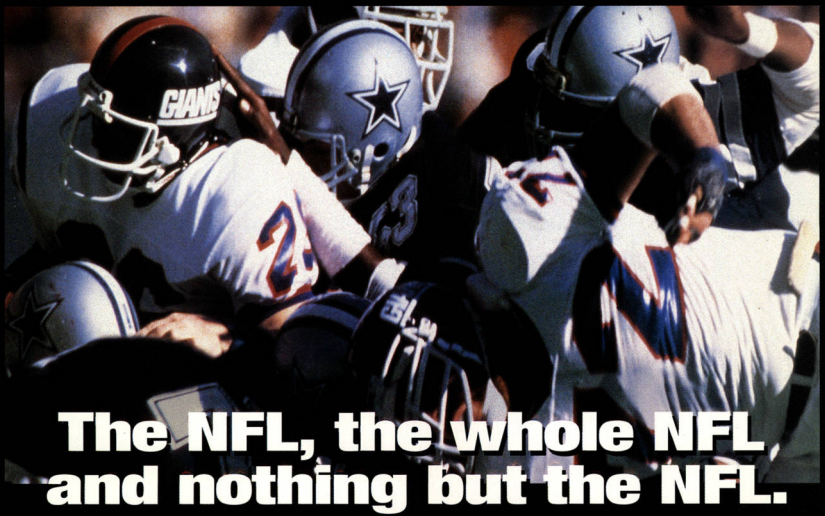
Valay admits that every product that demonstrates a new technology manages to achieve some sort of notoriety and hype — regardless of the product's actual merits. At the same time, he feels that after the initial excitement for the new technology fades, people will realize that this is also a very fine game in and of itself. "*POD* is only a racing game," says Valay. "But from what I've seen, this is the most amazing racing in terms of speed and behavior. In order to have a mega-hit, you need much more than good technology. You need good gameplay. I hope all this will be true of *POD*, also." ng



Are you the best *POD* player ever? Then post your times online



When analyzing *POD*, it's important to draw a distinction between what UbiSoft's game design and what MMX actually brings. The perception of the cars' "speed," for example, is as much to do with design as processing muscle



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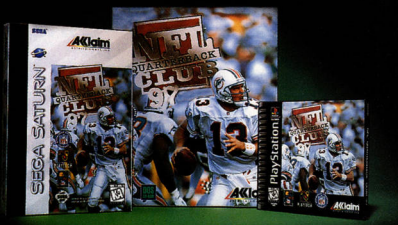


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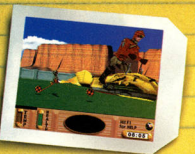
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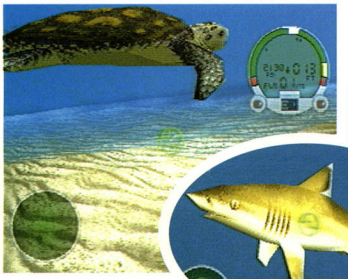
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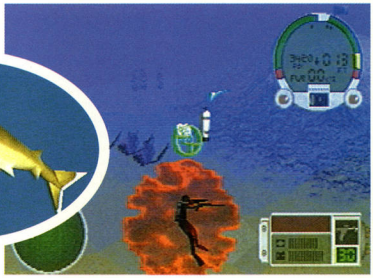
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JALECO

Treasures of the Deep

Black Ops' next shooter captures the beauty of the ocean floor and all its accompanying danger — this is no *Aquanaut's Holiday*





Even up-close, manta-rays and giant sea turtles are extremely well detailed and animated, lending superb believability to the game. At one point, players will come across a giant sperm whale that dwarfs everything in its path

Format: **PlayStation**
Publisher: **Virgin**
Developer: **Black Ops**
Release Date: **Fall '97**
Origin: **U.S.**

"There's an underwater assault rifle used by Navy Seals I never knew existed until we began the research for *Treasures'* — and now it's in the game"

John Botti, **Black Ops Entertainment**

Can one game developer, which started on such a wrong note, actually redeem itself with two cutting edge titles in the space of a year? If you're talking about Black Ops, it looks like the answer could be a resounding "yes." Under the leadership of President and veteran coder John Botti, Blacks Ops stumbled with *Agile Warrior* last year, scored big with *Black Dawn* this year, and is now currently working on its third PlayStation title, *Treasures of the Deep* for release in 1997.

At its heart, *Treasures'* follows the established Black Ops formula, but takes another leap forward perhaps equal to the leap taken between *Agile Warrior* and the helicopter shooter *Black Dawn*.

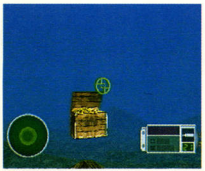
The plot is similar to that of the 1970's film *The Deep* (with a chunk of *Thunderball* thrown in for good measure) complete with speargun battles. As an ex-Navy Seal/Marine biologist, players take the role of a character who works as a freelance salvage and search and rescue specialist. From a first or third-person perspective, players pilot one of eight subs, engaging men and sea creatures alike with everything from nets to mines. Primarily, the goal is to collect treasure, (with the secondary pleasure of destroying enemies in the process) but each of the 11 missions have at least one environmental objective, like rescuing a dolphin or a number of giant sea turtles.

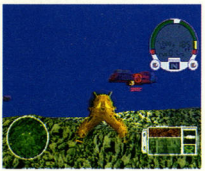
"It's a real-time, 3D environment, so you can do anything you want," Botti says, "but there are consequences. If you're on level six, and you say, 'Hey I'm gonna shoot this creature!' first of all, you're gonna be fined by the marine



The majority of the shooting action comes by way of dealing with enemy subs and divers who lurk along the ocean floor

ng alphas





Collecting treasure yields cash for upgrading equipment (top). Of course, enemy subs often make treasure-hunting difficult (above)

police and lose all your gold points. Second, you release all this blood into the water which starts a shark feeding-frenzy, and you'll get torn apart."

Treasures incorporates a realistic undersea atmosphere that the lead programmer worked on solely for three months. "The game uses 16 levels of fogging" Botti says proudly, "and so objects are now coming up out of the distance smoothly." He also notes that underwater lighting has been a challenge. "If a shark or enemy diver swims into the depths the actual light calculation on that diver will be darker. If he swims to the surface it will be lighter, with more highlights on the top of the object."

While dedicated to

graphic realism, the Black Ops team tries to ensure that gameplay comes first. "We research each title heavily," explains Botti. "*Jane's Defense Weekly* is staple reading at Black Ops. For example, there's an underwater assault rifle used by Navy Seals I never knew existed until we began the research for *Treasures* — and now it's in the game. So we try to root ourselves in realism, but if reality gets in the way of making a great game, we toss reality right out the window."

In the way that

Resident Evil radiates that constant feeling of impending horror, *Treasures'* gives deep-water paranoia. Yet at the same time, it offers it's own brand of exhilaration, a Cousteau-like feeling of discovery, the closest thing comparable to which is the freedom found in *Nights*. Players will be delightfully awed to encounter a massive sperm whale that just gets bigger and looks more realistic as it gets nearer.

Also, the ambient sound effects and music, while still in development, are fairly cohesive with the visuals. Most of the sound is being handled by game-audio prodigy Tommy Tallerico, who used to work with Botti at Virgin. "We can give him direction and pretty much he'll go to town" Botti explains. "In the Mexican caves you might have Spanish guitar, whereas in the North Atlantic you might have orchestral music that's really appropriate."

Set to ship in the spring, Virgin has extended Black Ops' development time to optimize the game and add secret areas. According to Botti, Virgin is also looking into a Saturn version, but like *Black Dawn*, the conversion will probably be done externally.

As for other future Black Ops titles, a Navy Seal game is still in the early design stages, but for now, *Treasures of the Deep* has a shot at living up to its name. ng



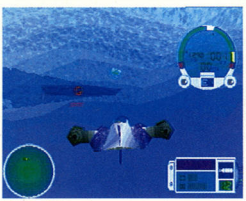


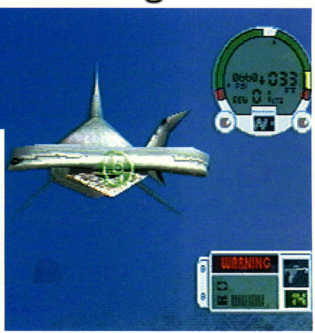


There are a total of eight possible vehicles to pilot, varying in speed, armorments, and strength

The plot is similar to that of the 1970's film *The Deep* (with a little *Thunderball* thrown in for good measure)







In the over-the-shoulder perspective, it's easier to see the size and scale of the objects around you (above left). Looking up towards the water's surface, you can target enemy boats (left). Shoot the sharks before they bite (right)

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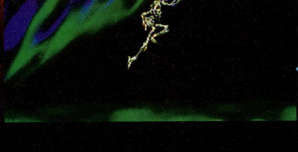


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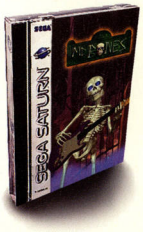




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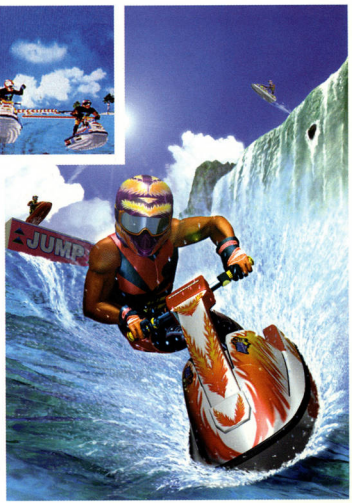
ESRB

Jet Ski Sports

With a surge of athletic simulators approaching the arcades, Konami, Sega, and Namco now have a viable new genre in which to compete head-to-head







Konami has greatly improved its *Wave Shark* since its initial showing at last year's ACME (top). Sega's *Wave Runner* (middle) is the only one of the three in which players sit down to play. Artwork from *AquaJet* (right)

Format:	**Arcade**
Publisher:	**Multi**
Developer:	**Multi**
Release Date:	**Multi**
Origin:	**Japan**







The outdoor environments in all three titles take place all over the world

Despite careening profits for many arcade owners, Japanese manufacturers Namco and Sega have gradually increased their output of high-priced showcase pieces like *Alpine Racer* and *Manx TT*. They seem adamant about bringing arcade-goers game experiences they just can't find at home, regardless of the price tag. Maybe they've got something going, maybe they'll tear the walls of the industry down with them. Nevertheless, they're all hot on the idea of wave simulators, and Konami's *Wave Shark*, Namco's *AquaJet*, and Sega's *Wave Runner* are perfect examples of this trend.

Although Sega's and Namco's games will just finish testing by the time this magazine hits the stands, Konami's *Wave Shark* was the first to be publicly tested at the March ACME (American Coin-op Machine Expo), receiving strong praise from players, but scoffed at by rival companies. The stand-up, single-player unit was only 30% complete, but featured an excellent sense of speed, harrowing, sharp turns, jump ramps, and competitive AI. Capturing the thrilling, adrenaline-filled sport of jetskiing in the arcades was a great idea, and it's probable that Konami was watching Namco's huge success with the groundbreaking *Alpine Racer*

ng alphas



Namco's *AquaJet* delivers wild jumps and upstream rivers as well as highly anticipated waterfalls

when it created *Wave Shark*.

Much like Namco's skiing sim, which placed gamers on modified skis that swivelled 180° left and right and edged up and down for sharper turns, *Wave Shark* players will stand on top of a full-sized model of a jet ski and look into a 50" screen, leaning in 360° to cut, turn, jump, or bump off opponents. Winning depends on the player's balance, coordination, and physical ability to anticipate and recover from jumps, waves, and other obstacles. It includes time-based checkpoints, both first-person and over the shoulder views, and is linkable with up to four other units for multiplayer play.

This full-sized jet ski model feels more like mastering a motorcycle or riding a horse, and is yet one more new sign that the company seriously means to compete head-to-head with its dominant rivals. *Wave Shark* felt like nothing else before it — until Sega and Namco entered the picture — but its weakest feature is, unfortunately, Namco's and Sega's strongest attribute: graphics. Compared to the other two, *Wave Shark* looks less than stunning, with often blocky backgrounds, a less polished oceanic look, and visually reminds one of the choppy look of the original *Doom*.

In contrast, *AquaJet* and *WaveRunner* are stunning displays of advanced coastlines and oceans, with waves swelling out from multiple sources, smooth polygonal, texture-mapped surfaces, and many obstacles.







***Wave Runner* differs because players can steer and lean to maneuver**

Namco's *AquaJet* is a

stand-up sim like *Wave Shark*, featuring a column in the front with two handle bars and an accelerator on the right side, steered by shifting one's weight and balance. Players really need to lean and balance to compete, a skill severely tested by the game's course design. Of the two courses, the extended, advanced route is a wild, multi-level experience with several good-sized waterfalls and platforms to jump off, and river-like canals that rise to higher elevations in which the riders often submerge the nose of their crafts, with full kick-outs, notable torque, and the high-pitched whine of a real jet ski. Its only drawback is that unlike Konami's and Sega's titles, *AquaJet* has no multiplayer capability.

Sega's *Wave Runner*, like *Wave Shark*, is multiplayer, linkable with up to four units, and its steering mechanism is by far the easiest (though not the best) to control, plus it's the only sitdown unit. The handlebars actually swivel from right to left, which lessens dependence on balance and coordination. Throwing one's weight around is an important part of the feel of piloting a jet ski, and is necessary in only a few of the advanced course's sharpest turns (about 5%-10% of the game). Sega's two courses are brilliant looking, and highly experiential, with rows of jumps, obstacles, and even an island to race around, but the jury's still out on whether the game is that much fun to play, or whether it's just a high-tech version of riding a mechanical bull.

Overall, these games offer

players the ability to feel the experience of jet skis or wave runners for the first time in the arcade. Moreover, they represent the first time since driving or cycle games that the major arcade powers jumped so quickly into a new genre.

But how many small to medium-sized arcade owners will be able to afford even one, much less four linkable water-sport simulators? Especially with linkable games like *Daytona USA* and *Virtual On*, and odd gems like *Prop Cycle* taking up valuable floor space. But there's no doubt about it, physical sport simulators are here, and thanks to the success of *Alpine Racer*, they're here to stay.

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It's probable that Konami was watching Namco's huge success with *Alpine Racer* when it created *Wave Shark*







***Wave Shark* is yet another Konami entree into direct competition with Sega and Namco. Despite its super-fast feel and cool backgrounds, the unit's graphics seem rather blocky compared to the competition**

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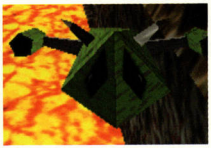
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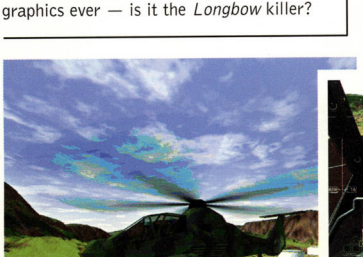
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Comanche 3

Novalogic's latest attack chopper sim boasts some of the most impressive graphics ever — is it the *Longbow* killer?

Format: **PC-CD ROM**
Publisher: **Novalogic**
Developer: **Novalogic**
Release Date: **December**
Origin: **U.S.**





Novalogic's patent (literally) Voxel Space technology enables realistic looking graphics and terrain, and fast gameplay

"It's more than just a revision. It's an entirely new game from the ground up."
John Garcia, Novalogic

With a brand-spanking new, government issued patent on Voxel Space technology in its collective pocket, Novalogic (**NG 20**) is heading full speed into production on the latest follow-up to its groundbreaking chopper sim, *Comanche*. "It's more than just a new revision," boasts John Garcia, Novalogic's President and CEO, "it's a new game from the ground up."

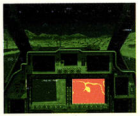
The increase in PC computing power since the introduction of the original has allowed for even greater realism, and the development of Voxel Space 2.

"The new engine provides much cleaner and smoother 3D terrain rendering than the original. It also supports the incorporation of highly detailed, texture-mapped polygon objects onto the terrains," Garcia says. "Whereas the original *Comanche* had a resolution of 160x240, *Comanche 3* supports varying resolutions up to 640x480 — an eight-fold increase in resolution."

Other improvements include larger, more detailed terrains, a translucent cloud layer, and missions that take place in the snow, rain, and at night. *Comanche 3* also sets no arbitrary restrictions on how high a pilot can fly — beyond the restrictions imposed by the craft's abilities, of course — and the player's line of sight goes right to the horizon. And, as with all Novalogic titles, the game is fully networkable.

"The U.S. Army flew an actual prototype *Comanche* back in January," Garcia continues, "so, we now have access to much more information on the real helicopter than ever before, and Boeing-Sikorsky have been extremely helpful. We also received feedback from Comanche test pilots and incorporated their comments into our flight physics. Even the game's programmer himself has spent time flying a real helicopter."

Gamers can try it out for themselves in December.





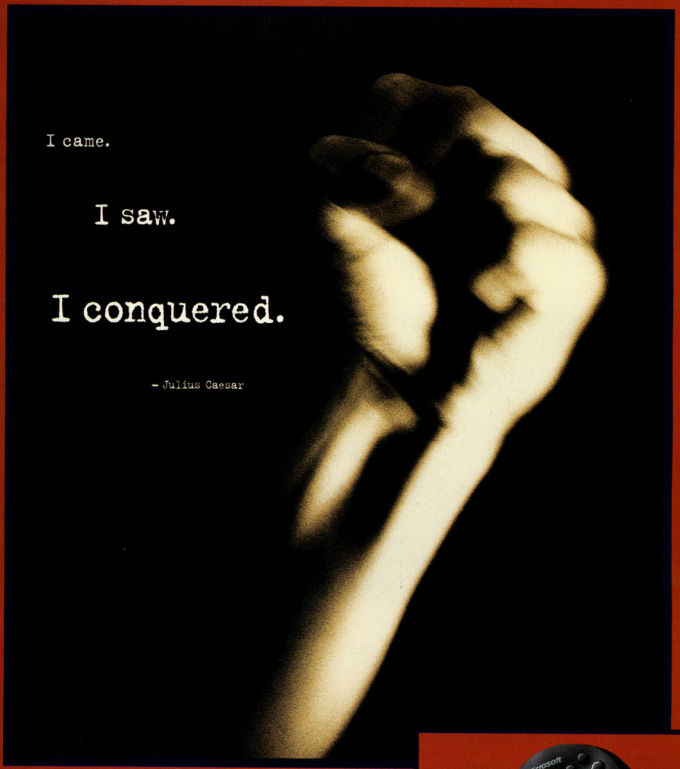
The Commanche helicopter is supposedly one of the easiest to fly in real life — which is also good news for players of the game





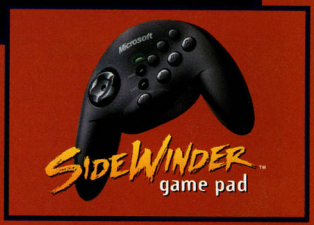


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MechWarrior II

Activision is porting its signature action simulation series to PlayStation and Saturn. But can it survive the transition?





These screenshots are extremely early (note the lack of textures and flat-shaded terrain) but they do show the impressive number of polygons used for each mech

Format: **PlayStation, Saturn**
Publisher: **Activision**
Developer: **Quantum Factory**
Release Date: **December**
Origin: **U.S.**

The saga of bringing *MechWarrior II* to the PC is one of the gaming industry's apocryphal tales. Through a series of licensing conflicts and personnel shifts, the game was delayed nearly three years. "We're going to try to get ours out on time," jokes Brian Clarke, Project Coordinator for *MWII*'s PlayStation and Saturn conversions. "We're building them both from the ground up, but there don't seem to be any major problems. The same developer, Quantum Factory, is working simultaneously on both versions, and they're just hitting their stride. The Saturn's textures are looking really nice right now, and the AI is being worked out mostly on the PlayStation. It's looking very good."

"We're making the crossover to a console type game, where it's more action-oriented and fast paced."
Brian Clarke, Project Coordinator

These are not, however, straight conversions. The designers are keenly aware of the many differences between PCs and consoles, both technologically, and with respect to their different audiences. Clarke explains, "For a start, you don't have as many control options on a console game pad. There were so many controllable features available on the original PC version that we had to cut them down, otherwise there would be 300 different keypresses for every option — and that's just not fun. But there's also the fact that the console audience is into a different kind of game, and you have to try to cater to that type of sensibility." So who has this changed the direction of the game?



Already the game shows promise. But will console gamers embrace this classic PC hit?

"Instead of doing a sim game," Clarke continues, "we're making the crossover into a console type game, where it's more action-oriented and fast paced, and also doing things like adding power-ups so it's more of an arcade experience. We're also adding more enemy mechs to each mission so there's a certain carnage element





In time, both the Saturn and PlayStation versions will feature Gouraud-shaded mechs and fully texture-mapped landscapes

ng alphas





Chase 'em down, blow 'em away — ah, life is good

to the whole thing."

Both the PlayStation and Saturn versions offer 12 different mechs to choose from before each mission — within the weight limitations of Clan honor codes, of course. The overall design concept is to keep the missions short, fast, and action-packed, then just make sure there are a lot of them. To that end there are 32 missions from the original *MWII*, plus at least 12 (and perhaps as many as 16) new missions specifically designed for the console versions. This easily beats the numbers for other console mech games like *Iron Rain* or *Krazy Ivan*, each of which only had six. The PlayStation version is also going to be compatible with Sony's link cable, so two players can compete either head-to-head or cooperate — the only notable feature difference between the two versions.

Other additions include

real-time light sourcing and fully texture-mapped mechs, along with particle system generation for big, beautiful explosions. It's also worth pointing out that at 320x240 resolution — actually a slightly higher resolution than the original PC version — the game runs at 20fps, without having yet been optimized.



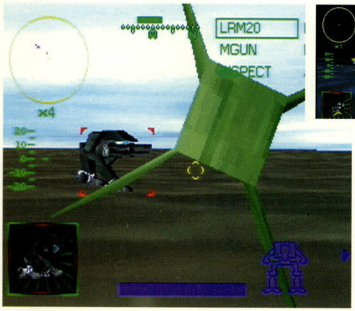


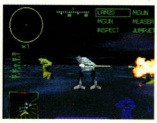
Nearly all the mechs featured in the PC version are included for consoles

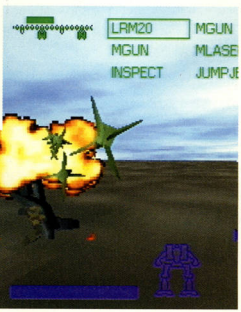
At press time, *MechWarrior II* is approximately 40% complete. The game engine has been finished, and all the remains is to complete work designing the levels and tuning the gameplay.

Out by Christmas? Clarke says bet on it. "I can remember years ago before I was working here, going into Chips 'N Bits and seeing the box for the original *MWII*, and I was like, 'Oh yeah, I gotta get that!' And I waited and waited, and of course years later by the time it came out I was actually working for Activision, so I got one. It was worth the wait too, but we're not going to make console owners wait quite that long."

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Plenty of missions, a wide variety of mechs, a linkable two-player version (for PlayStation) anyway) and intense, fast-paced action — great stuff



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(continued from page 68) Defending lawyers would later present Russell, who never filed for a copyright or patent, as having set a precedence for sharing game ideas. Baer, whose employers jealously guarded all of his patents, set precedence for defending intellectual property.

Russell and Baer have become the forgotten fathers of the industry. Steve Russell's game, which only ran on expensive computers, had no practical application. Outrageously priced and poorly advertised, Ralph Baer's game machine might also have gone unnoticed. But in 1972, the year Magnovox finally released the Odyssey 100, a very similar machine was about to change the way America played games.

"I met Nolan [Bushnell] in the late '70s. I was a reporter at the Washington Post, and my recollection is that I met Nolan at a party at Bob Woodward's house. Nolan was his next door neighbor in Washington. Nolan at one point decided, as only Nolan can, that he wanted to run for President. And the way that Nolan's mind works, he decided that if he wanted to be President he'd better buy a house in Washington, D.C."

TOM ZITO

He was the son of a small-town cement contractor who became a citizen of the world. A critic once called him "the smartest man who ever walked the earth," but a close friend describes him as having "the attention span of a labrador retriever." He is Nolan Bushnell, an electrical engineer and inventor perhaps whose only true invention is a $16 billion industry.

Nolan Bushnell was born a Mormon in Clearfield, Utah, in 1943. Though he left both Mormonism and Utah behind early in life, he still speaks warmly of both. Bushnell has eight children. The rest of the country would call this a large family. In largely Mormon Clearfield, Utah, they would fit right in.

Bushnell's father died in the summer of 1958, leaving behind several unfinished construction jobs. Whether driven by youthful bravado or a sense of responsibility, 15-year-old Nolan Bushnell, who already stood over six feet tall, fulfilled the contracts himself. "When you do something like that as a 15-year-old, you begin to believe you can do anything," says Bushnell.

In 1962, Bushnell enrolled in college at the University of Utah. Almost immediately he lost his tuition money in a poker game and, in order to pay his way, took a job running games at Lagoon, an amusement park located north of Salt Lake City. Here, he says, he got his "second education."

"Remember, I started out selling balls to knock milk bottles over. So I'd say 'Come on over.' If I got you to take one of my baseballs and give me a quarter, I was doing my job. I always said that I was doing the same thing with Pong, only I was putting myself in the box. The things that I had learned about getting you to spend a quarter on me in one of my games in real life, I put those sales pitches in my automated box."

NOLAN BUSHNELL

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Eventually he moved to an in-park pinball and electro-mechancial game arcade. There he watched customers play games like *Chicago Speedway*. He helped maintain the machinery and learned how it worked. Most importantly, he further honed his philosophy on how the game business operates. Back at college, he discovered the computer lab. By this time, U of U had emerged as one of the top schools for computer science.

"In the late '60s **if you wanted to connect a computer up to a telephone or to a video screen, you only did it three places in the world** or in the known universe — the University of Utah, MIT, or Stanford. And it was just serendipity that I went to school there."

NOLAN BUSHNELL

Spending more and more time in the lab, Bushnell learned about computer games. His favorite was *Spacewar*, Steve Russell's pioneering two-man combat game. Bushnell played it incessantly. He also created some games of his own. Naturally charismatic, Bushnell talked senior students into helping him. He made computerized tic-tac-toe and 3D tic-tac-toe. His best invention was a game called *Fox and Geese*.

"*Fox and Geese* was a very primitive game in which there were, it was either 4 or 6 Xs which **represented the geese and one 0 which was the fox. And if the geese completely surrounded the fox, they could kill the fox. But if the fox got any of the geese off by himself, he could kill the geese. So the idea was to have three geese touch the fox at the same time. And they were actually run by the computer. And they just had a very simple algorithm. They looked to see whether the fox was to the left of them or to the right, and they'd click one space toward that side in both the X and Y. So they'd constantly be converging on him.**

You were driving the fox around trying to go after a goose and isolate it."

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Though the students at the University of Utah teamed up to write seven computer games, *Spacewar* remained Bushnell's favorite. He continued his late night *Spacewar* sessions all the way through school. By the time he graduated, in 1968, he had committed the game and its many nuances to memory.

In 1969, a Northern Californian engineering firm called Ampex Corporation hired Bushnell as a research design engineer for $10,000 a year. As a salaried employee working on a new type of recording device, Bushnell felt stifled. Looking back on his double-track education, he decided to combine engineering and arcade games.

In the strongest entrepreneurial tradition, he turned his daughter's bedroom into a workshop. For the next few months, during evenings and weekends Bushnell worked on a coin-operated version of Steve Russell's computer game, *Spacewar*. His two-year-old daughter, Britta, slept in the living room.

Bushnell originally tried to build his game using a new Texas Instruments minicomputer, but found that it was too expensive and lacked the processing power to run a compelling game. The space ships had no shape, and the game moved too slowly. But rather than abandon his dreams, Bushnell found a way to improvise. Instead of building a computer, a device capable of performing many kinds of tasks, he designed a machine capable of only one thing — playing his game.

The trick worked. Though it lacked the crisp graphics Russell had created on the $120,000 PDP-1, Bushnell's game, *Computer Space*, retained all of the basic play value. It had the star and gravity field, the hyperspace jump, and the same outer space physics.

Once he created the circuit board, Bushnell found other ways to save money. He used a $75 Zenith black and white television for a monitor, and the coin-drop emptied quarters into a bread pan. Since the coin-operated videogame industry did not exist, and most of the electro-mechancial amusement industry was in distant Chicago, Bushnell had to constantly invent solutions.

Having created a working prototype, Bushnell now looked for a partner to help manufacture it. He found that partner in Bill Nutting, founder of Nutting Associates. Nutting, who had already begun dabbling in the coin-op business, hired Bushnell and licensed his game.

Because of its complex gameplay, *Computer Space* had pages of instructions explaining how to maneuver the ships, steer clear of gravity, and jump into hyperspace. Nutting installed the first unit at The Dutch Goose, a bar just off the Stanford University campus that Nutting used as a test site. No one in the bar had ever seen such a thing. While *Computer Space* attracted some curious stares, it did not attract many players.

When Nutting hawked the cabinet around trade shows, there was curiosity but no real commercial interest. The concept was too highbrow, the execution too complicated. As Bushnell himself later admitted "It would have earned no money in a working man's bar."

Nutting never sold all of the 1,500 machines it manufactured.

Bushnell knew the most off-putting thing about *Computer Space* was the complex instructions. "Nobody wants to read an encyclopedia to play a game." He also blames Nutting for mis-marketing the game.

"Nutting was literally about to go bankrupt. I mean, they **really had some problems. And *Computer Space* did okay, but it really didn't do nearly as well as it could have. Companies that are in trouble... When you get inside them then you figure out why they're in trouble.**

In some ways it was a blessing to have worked for Nutting. It didn't take very long to figure out that I couldn't possibly screw things up more then these guys did. Seeing their mistakes gave me confidence to do better on my own."

NOLAN BUSHNELL

Bushnell decided to start his own company. He formed a three-way partnership with Ted Dabney, an Ampex engineer he brought with him to Nutting Associates, and Larry Bryan, also from Ampex. Each partner agreed to contribute $100. Bryan later dropped out of the partnership before contributing.

The first step for creating the new company was to select a name. Looking through a dictionary, Bryan came up with the name "Syzygy," a word describing the straight-line configuration of three celestial


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bodies — a solar eclipse is the syzygy of the earth, moon, and sun. Unfortunately, when Bushnell applied for the name, the sate of California said it was already in use.

Bushnell turned to a word from a Japanese strategy game called "Go." He chose a word that was the rough equivalent of the Chess term "check." He named his company "Atari."

My kid came home from school one day and said **that Nolan Bushnell's daughter told the teacher that her father invented *Pong*. Well, I told him to go to Nolan's daughter and say "If your daddy invented Pong,** how come he had to ask my daddy to come fix his machine when it broke down?"

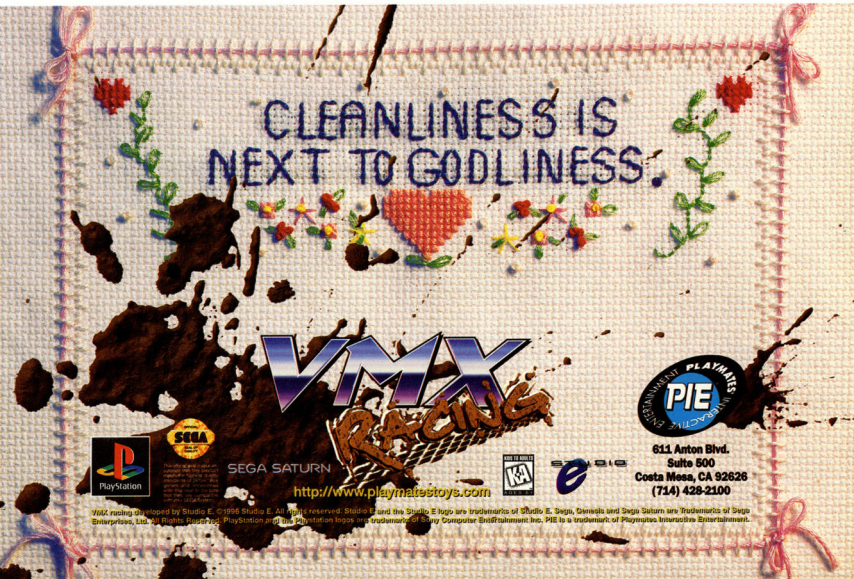
AL ALCORN, FORMER "SORT OF" VP OF ENGINEERING, ATARI CORPORATION

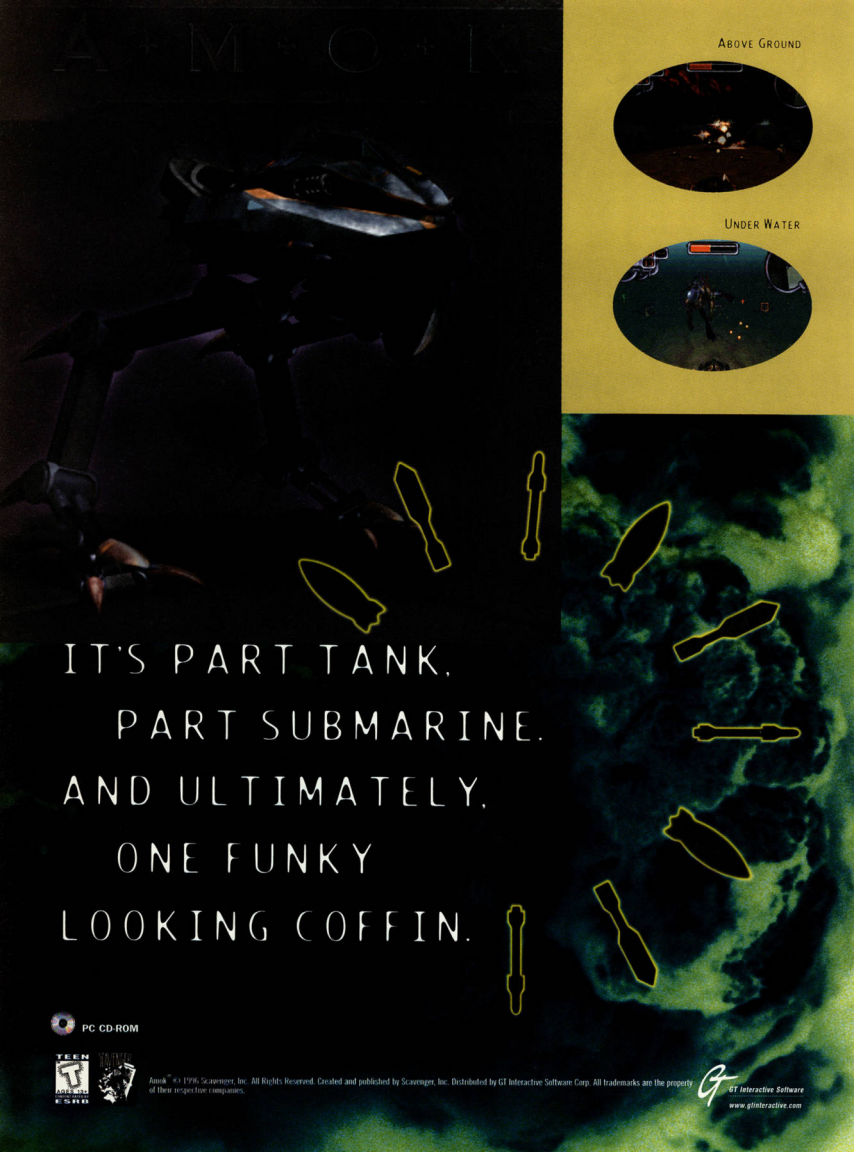
On June 27, 1972, Nolan Bushnell and Ted Dabney applied to have Atari incorporated. They founded their company with an initial investment of $500 each. Within ten years, it would grow into a $2 billion-a-year entertainment giant, making it the fastest growing company in the history of the United States.

Atari's first office was located in an industrial zone in Santa Clara, a crude 2,000-square-foot space in an inexpensive concrete building made to house start-up companies. These were lean times for the company. It existed on a few small contracts and the limited royalties Bushnell received from *Computer Space*.

Bally, now a very successful pinball and amusement manufacturer, became one of Atari's first customers, signing a contract for Bushnell to develop new extra-wide pinball tables. Bushnell also continued working on a multiplayer version of *Computer Space*, which he hoped to sell to his old employers at Nutting Associates.

To create steadier income, Bushnell and Dabney started a pinball route that included a local bar, some coffee shops, and the Student Union building at Stanford University. Because they bought the pinball tables cheaply and had the knowledge to maintain them, the route became a




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profitable asset. It eventually became so lucrative, in fact, that when Dabney left the company, he accepted the route as part of his settlement.

The first full-time employee of Atari Corporation was Cynthia Villanueva, a 17-year-old girl who used to babysit Bushnell's children. She needed a summer job, so Bushnell hired her as a receptionist. He instructed her to "put on the show" — give callers the impression that Atari was an established organization rather than a start-up company with more owners than employees.

"Nolan didn't want to answer the phone, he wanted **to have somebody else answer it. So he hired a secretary, Cynthia. And when someone would call, she would make them wait, put them on hold, and yell "It's for you Nolan!" We'd wait a certain amount of time to make it sound like it was a bigger company, you know, it would take longer to go get him."**

AL ALCORN

Villanueva's responsibilities did not stop with answering telephones. Because of the company's limited budget, she was called upon to do everything from running errands to wrapping wire around electrical components and placing parts in cabinets. She stayed with Atari for over a decade, remaining long after Bushnell and Dabney left.

Atari's second employee was a young engineer named Al Alcorn whom Ted Dabney first met while working at Ampex. Short and sturdy, Alcorn was once a member of the same all-city high school football team as O.J. Simpson. He was a naturally gifted engineer. When Nolan Bushnell offered him a job working for Atari, Alcorn agreed.

Shortly after hiring Alcorn, Bushnell gave him his first project. He told Alcorn that he had just signed a contract with General Electric to design a home electronic game based on Ping-Pong. The game should be very simple to play – "one ball, two paddles, and a score... Nothing else on the screen."

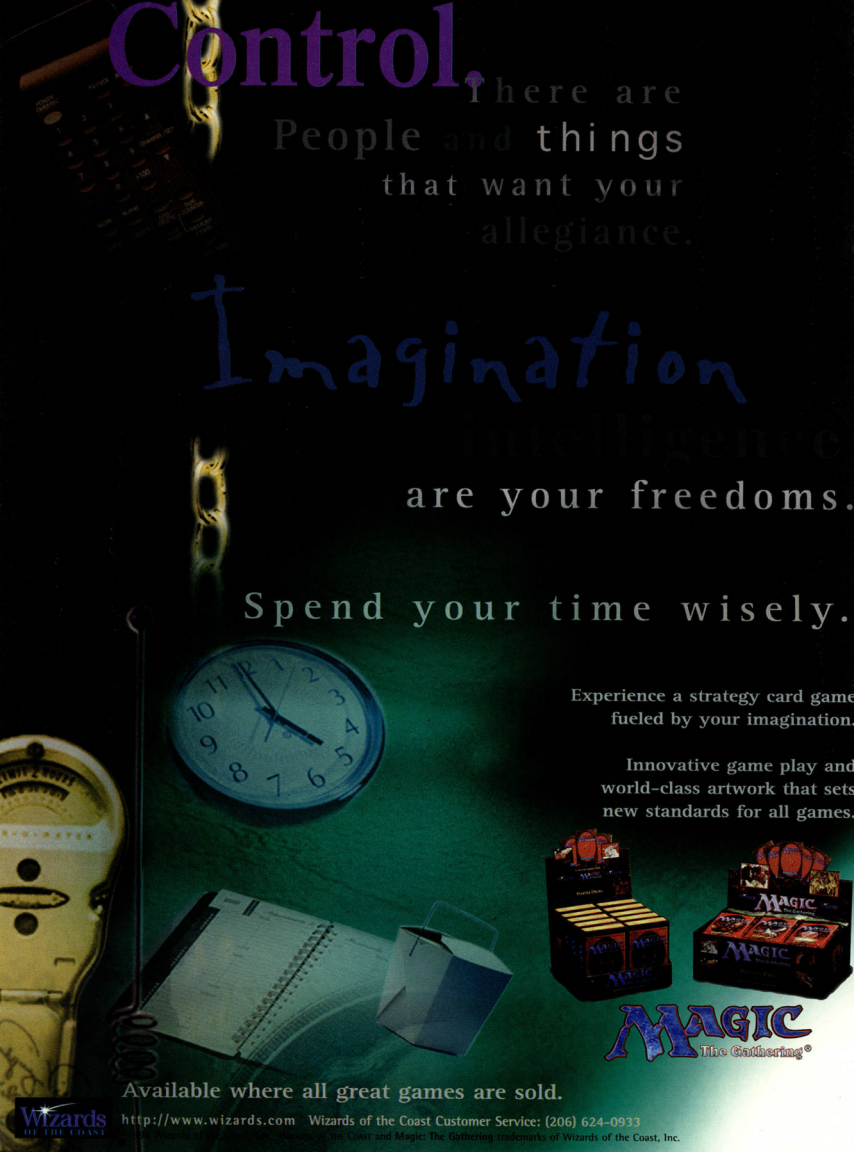
Bushnell had lied. He had not signed a contract with General Electric or even entered into any kind of discussions with the appliance company. In truth, he wanted to get Alcorn familiar with the process of making games while he designed a more substantial project. Bushnell had recently sold Bally executives on a concept for an outer space game that combined the true-life physics of *Computer Space* with a race track.

"I found out later this was simply an exercise that **Nolan gave me because it was the simplest game that he could think of. He didn't think it had any play value. He believed that the next winning game was going to be something more complex than Computer Space,** not something simpler. **Nolan didn't want to tell me that because it wouldn't motivate me to try hard. He was just going to dispose of it anyway."**

AL ALCORN

Initially Alcorn tried to work from the schematic diagrams used in the creation of




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Computer Space and a rough design for a ping-pong game that Bushnell had layed out.

As he worked, however, Alcorn forged his own path, adding enhancements that Bushnell had never envisioned. He replaced the expensive components with much less expensive parts. Bushnell's original vision included paddles that simply batted the ball in the direction it had come from. Feeling that this was inadequate, Alcorn devised a way to add English to the game.

Instead of using solid lines to represent paddles, Alcorn broke the paddles into eight segments. If the ball hit the two center segments of the paddle, it flew straight back at a 180 degree angle. If the ball hit the next segments, it ricocheted off at a shallow angle. Hitting the ball with the outer edges of the paddle would send the ball back at a 45-degree angle.

Alcorn also added ball acceleration. The original game simply buzzed along at the same speed until someone finally missed the ball. Alcorn found the game dull and thought that speeding the ball during extended rallies might lend some excitement. He wrote the game so that after the ball had been hit a certain number of times, it would automatically fly faster.

***Pong* played more** like squash than Ping-Pong. Thanks to Alcorn's segmented paddle, it had become a game of angles in which banking shots against walls was an important strategy. Players controlled inch-long white lines that represented racquets, which they used to bat the small white square that represented the ball. The background was black.

The game was streamed through a $75 Motorola black and white television that Alcorn picked up at a nearby Payless store. He set the television in a four-foot tall wooden cabinet that looked vaguely like a mailbox. Since the final circuits hadn't been made, Alcorn had to hard-wire everything himself. The inside of the cabinet had hundreds of wires soldered into small boards and looked like the back of a telephone operator's switchboard.

It took Alcorn nearly three months to build a working prototype. His finished project surprised Bushnell and Dabney. Instead of giving them an interesting exercise, he had created a fun game that became their flagship product. Bushnell named the game *Pong* and made a few changes, including a milk jug for collecting quarters and an instruction card that read simply, "Avoid missing ball for high score." To test the game's marketability, Bushnell and Alcorn installed it in one of the locations along the Atari pinball route.

Once, when feeling particularly generous, Bushnell described Andy Capp's Tavern, the location where Atari first tested *Pong*, as a "rustic location." It was a shabby bar located in Sunnyvale, a much smaller town in the pre-high technology days of the early 70s. Alcorn, who visited the bar while running the pinball route, remembers it as having four or five pinball tables, a juke box, and a *Computer Space* machine.

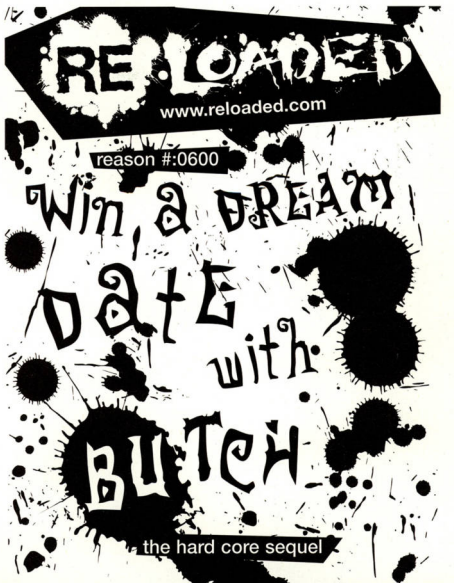
Alcorn and Bushnell installed Pong in the bar in late September 1972.

One of the legends of video games is that two days after installing Pong in Andy Capp's Tavern, Alcorn got an angry late night call from Bill Geddes, the manager of the tavern. According to the story, the machine had stopped working, and Geddes wanted it hauled out of his bar.

In truth, Alcorn received the call from Geddes two weeks after installing the machine. It was a friendly call in which the bartender suggested that they fix the machine quickly since it had developed quite a following. Alcorn frequently visited Andy Capp's while making maintenance runs on Atari's pinball route. He and Bushnell had selected the bar as a good test site because Geddes had always been cooperative.

"He said to me, 'Al, this is the weirdest thing. **When I opened the bar this morning, there were two-or-three people at the door waiting to get in. They walked in and played that machine. They didn't buy anything. I've never seen anything like this before.'** "

AL ALCORN





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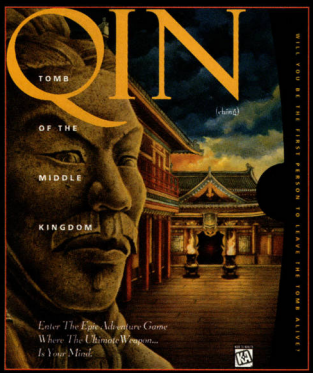
—STEVEN GREENLEE, COMPUTER GAME REVIEW

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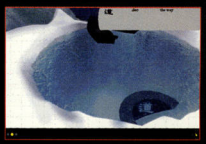
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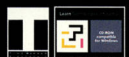
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"I went to fix the machine, not knowing what to expect. I opened the coin box to give myself a free game and low and behold, this money gushed out. I grabbed handfuls of it, put in my pockets, gave the manager my business card, and said, "Next time this happens you call me at home right away. I can always fix this one."

AL ALCORN

Surprised by *Pong*'s success, Bushnell decided that he should manufacture the game himself rather than sell it to an established game maker. The problem was, he had discussed the game with executives at Bally and Midway and stirred up some interest. Now he had to find a way to steer them away from *Pong* while keeping the door open for future projects.

In the end, Bushnell played one side against the other.

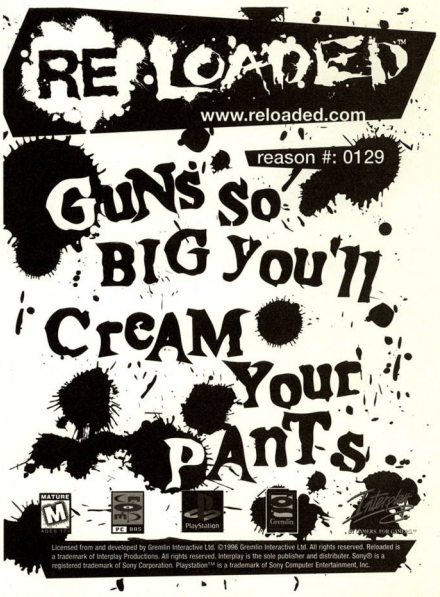
"Nolan decided he didn't really want Bally **to take *Pong* because he knew it was too good. So he met with Bally and Midway and decided to tell Bally that the Midway guys didn't want it. And so the Bally guys decided that they didn't want it. Then he told the Midway guys that the Bally guys didn't want it. He got them convinced that it was no good. Once they heard Bally didn't want it, it didn't take much convincing."**

AL ALCORN

There are unanswered questions in the history of video games. One question involves Ralph Baer, the designer of the Magnavox Odyssey, and Nolan Bushnell. It is a question of ownership.

In 1972, while Nutting Associates tried to market *Computer Space* as the beginning of a new generation of arcade games, Magnavox quietly circulated the Odyssey television game around the country, taking it to dealers and distributors. Most of these demonstrations took place in private showings, but the new device was also displayed at a few trade shows.

The first show began on May 3, 1972, in Phoenix, Arizona. Three weeks later, the Odyssey came to the San Francisco area in a large trade show that was held in the town of Burlingame. It began on May 23 and lasted through the 25th. According to Magnavox, a Nutting Associates employee named Nolan Bushnell attended the show on May 24, four months before the prototype *Pong* was installed in Andy Capp's Tavern. Depositions taken from Magnavox witnesses claimed that while at the show, Bushnell tested the Odyssey.



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Some time after Atari began marketing *Pong*, in 1973, Magnavox took the California start-up to court. *Pong*, they argued, violated several of Baer's patents. It infringed upon his patents for projecting electronic games on a television screen, and, more importantly, it infringed on his concept of electronic Ping-Pong.

"What they've always alleged **was that there was a meeting or a distributor show somewhere in the valley, and I should have, would have, could have been there. So it's one of those pissing matches."**

NOLAN BUSHNELL

Atari was up against a stacked deck. First of all, the methodical Ralph Baer considered filing for patents an integral part of the invention process. During his life, Baer was awarded more than 70 patents and was once named "inventor of the year" by the state of New York. He documented everything.

By comparison, Bushnell, with his haphazard style, let the mundane details of invention and legal filing escape him. Even when he created schematics, like the one he had made for *Computer Space*, they were often illegible.

More importantly, whether Bushnell attended the Magnavox show or missed it, there had been a show. Magnavox could prove that they had demonstrated the Odyssey playing "hockey" in Burlingame prior to creation of *Pong*, or even the incorporation of Atari. Magnavox also had Baer's patents and notes, all of which clearly predated *Pong* and *Computer Space*. It also had more lawyers and richer resources than Atari could ever hope to accrue. With costs estimated at $1.5 million, Atari couldn't afford to fight, let alone lose.

In order for his company to survive, Bushnell sought a settlement. Magnavox offered a very inexpensive proposal enabling Bushnell to continue manufacturing *Pong*, while paying a license to Magnavox. Bushnell even managed to insert a few special terms in the agreement.

"It was all settled outside, and **Nolan and Atari got extremely favorable terms. They paid very little. He got away with a very, very, very small, paid-up license up front. Atari became a licensee**



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under a prepaid arrangement. Atari paid some fixed sum, some ridiculous number like a few hundred grand. I don't remember the details. But he had an extremely advantageous, nonburdensome license from us. And as far as we were concerned, that was the end of our problems with Atari.

If anybody had had any inkling of what was going to happen to this business at Atari, they would never have gotten those terms."

RALPH BAER



Bushnell played the legal action like a chess game. In exchange for settling, Atari became Magnavox's sole licensee. By this time other companies had begun making similar games. While Atari had paid its licensing fees, future competitors would have to pay stiff royalties to Magnavox. In several later litigations, Magnavox would zealously prosecute all violators.

"I helped negotiate that deal. We paid so little money, and yet we agreed that **they would go after, as part of the settlement, all our other competitors.** Well, we were the dominant people, and all of a sudden Magnavox said, "We'll help, we'll give you a sweetheart deal, and we'll beat up on everybody else."

NOLAN BUSHNELL

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With the settlement signed, the case never went to court, and the question of who actually invented *Pong*, and the multibillion dollar business it spawned, was swept under the carpet.

Bushnell and Baer met in Chicago, on the steps of a court house, the day that settlement was sealed. Baer remembered being introduced to Bushnell and shaking hands. They exchanged pleasantries, then went in different directions.

Over the years, Bushnell became a national celebrity as the "father of videogames." In the late '70s, as he prepared to retire, Ralph Baer finally told his story to the press.

"I got tired of being a shrinking lily, and I started **tooting my horn a little bit. But it didn't have any financial effect because it was all over by then. I also didn't open up my mouth, didn't make any loud press for myself, because guys like Nolan were clients. He was a licensee. He put the business on the map. In fact, without him there would never have been any money in the till. I wasn't going to...**

If Nolan wants to say he was the great inventor, then hooray Nolan — you're a nice guy, you made a lot of money for us, say anything you want to."

RALPH BAER

Years later, Baer would run into Nolan Bushnell and Gene Lipkin, Atari director of marketing, on the floor of CES. According to Baer, Bushnell introduced him as "the father of videogames."

ng

"THE GREAT VIDEOGAME SWINDLE?"

This feature was based on the first four chapters of the book *Electronic Nation*, written by **Next Generation** contributor Steven L. Kent. Some of Mr. Kent's work has been edited for the purposes of this feature, but the vast majority of the research and writing is his own. We thank him for providing access to his work, and for those of you interested in reading more of *Electronic Nation*, stay tuned — **Next Generation** will provide details of the book's publication in a later issue.

ELECTRONIC NATION

Thirty five years have passed since Steve Russell created *Spacewar*, the first computer game. Twenty five years have passed since Nolan Bushnell attached a coin slot to Russell's game, changed its name to *Computer Space*, and introduced it as the first videogame. It has also be 25 years since Ralph Baer created what would become the Magnovox Odyssey, the first game console. Frankly, none of these guys are getting any younger. To date, no one has interviewed the pioneers that created the videogame industry and compiled their stories into a single work.

In the early days, before video games became big business, the industry was populated by crazy kids, wild-eyed visionaries, and over-aged hippies. *Electronic Nation* contains the first person accounts of Russell, Baer, Bushnell, and other pioneers of the videogame industry.

STEVEN L. KENT



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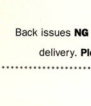
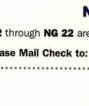



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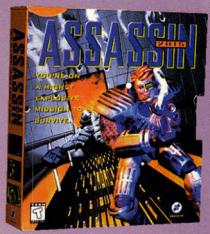
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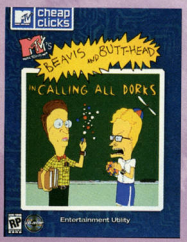
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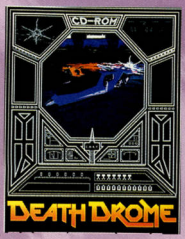
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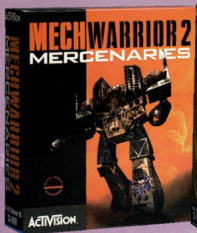
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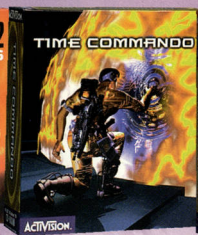
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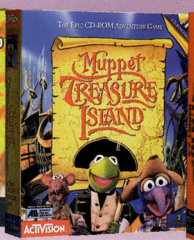
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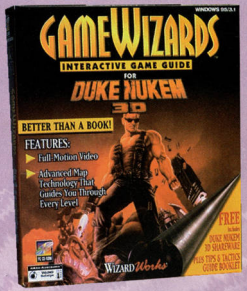
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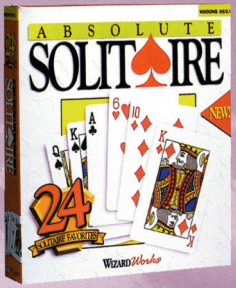
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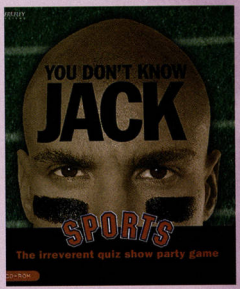
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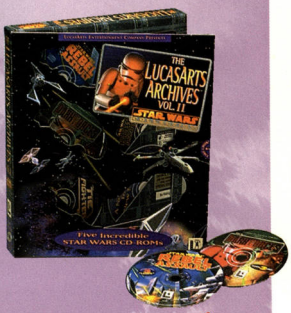
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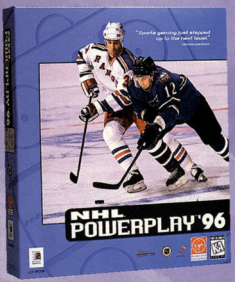
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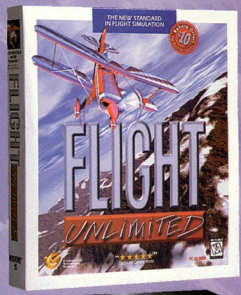
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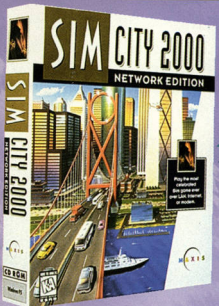
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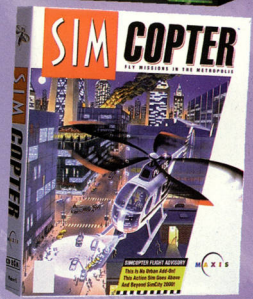
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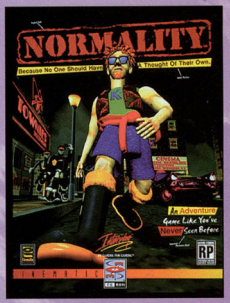
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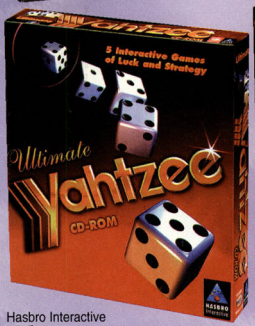
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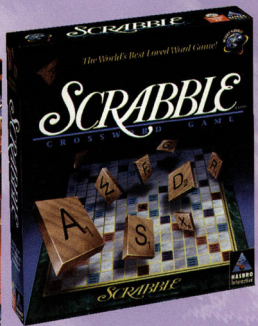
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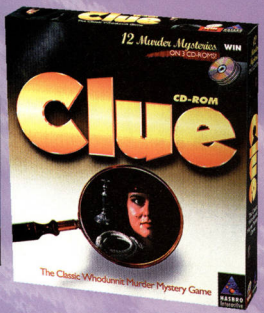
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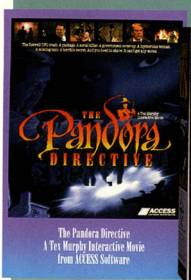
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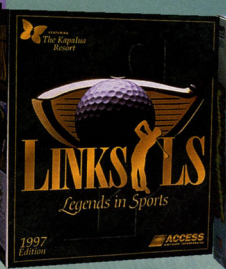
Rocket Jockey

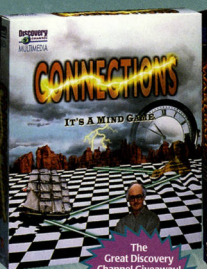


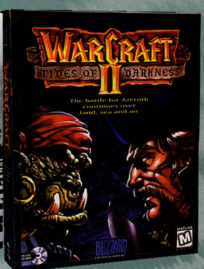
Rocket Jockey



The Pandora Directive
A Tex Murphy Interactive Movie
from ACCESS Software







The Great Discovery Channel Giveaway! FREE game inside box. Plus enter to win a '97 LandRover Discovery!

Access
The Pandora Directive
What really happened at Roswell, New Mexico in 1947? Unravel the conspiracy behind a mysterious package, a serial killer and a government cover-up to discover a terrible secret in the most playable interactive movie to date. Follow any of 3 paths leading to 7 different endings.
DOS CD-ROM
$49.99

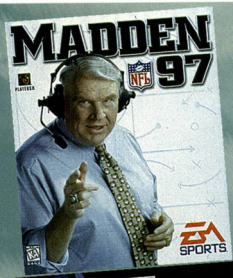
Access
Links LS: Legends in Sports
Tee off with legend Arnold Palmer at Latrobe, or in Hawaii at Kapalua. Features course fly-bys with tips from Arnie on how to play each hole. Plus, experience new modes of play, more colors, modem/network play, and realism so true to life that you can watch the divets fly!
DOS CD-ROM
$49.99

Discovery Communications
Connections
Based on the award-winning work of James Burke, this is the ultimate gaming challenge for the quizzical mind. Travel from one environment to the next, looking for the clues that will explain how you entered this world - and how you can escape.
Windows 95/Mac CD-ROM **$39.99**

Blizzard Entertainment
WarCraft II: Tides of Darkness
Continue the quest for domination of Azeroth within six all-new battle scenarios. Play as commander of either the Orc or Human forces. Pit yourself against an artificial intelligence that learns, adapts and responds to your every action.
DOS CD-ROM
$49.99

Call 1-800-800-5166 for the store nearest you!

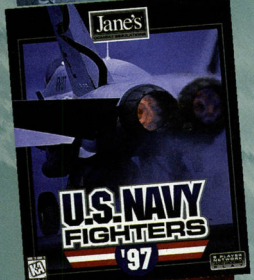
Electronic Arts



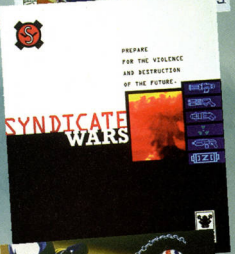
Electronic Arts
Madden 97
Immerse yourself into a world of interactive football so real it puts you in the huddle! Create your own NFL superstars or draft a team from over 100 current, all-time, Super Bowl, and secret teams.
DOS CD-ROM
$54.99



Electronic Arts
NHL 97
Everything a hockey fan could want and more. Features over 600 NHL players with updated trades, statistics and team logos. Advanced artificial intelligence enhance the logic on both offense and defense making this the most competitive PC sports game available.
DOS CD-ROM
$54.99



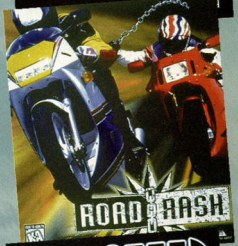
Electronic Arts
U.S. Navy Fighters 97
Experience some of the toughest air combat in modern history as you provide cover for BUFF raids, make precision strikes with the first generation of "smart" weapons, or splash MiG 17's in vicious air-to-air encounters. Features New Vietnam missions.
Windows 95
$54.99



Electronic Arts
Syndicate Wars
Megacorporations, fanatical religious cults, and sadistic biker gangs battle in the streets for world dominance. Command one of these groups as you fight within living, fully rotational cities.
Windows 95/DOS CD-ROM
$54.99



Nova Logic
Comanche 3
The flight is simulated. The adventure is real. This all new version of the best-selling helicopter simulation will outfly, outmaneuver and overtake all other helicopter simulations.
DOS CD-ROM
$54.99



Electronic Arts
Road Rash
The most aggressive motorcycle racing/combat game ever. Dodge traffic, outrace cops, and thrash pedestrians on your way to winning the Cup and becoming the menace to society your mother always worried about.
DOS CD-ROM
$49.99



Nova Logic
F-22: Lightning II
Consider the envelope broken! The Air Force's next generation air superiority fighter delivers realism, stunning graphics, multiplayer capabilities and unmatched gameplay.
DOS CD-ROM
$54.99



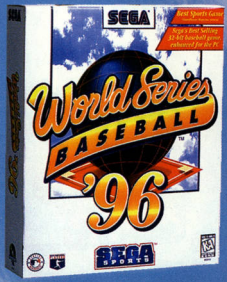
Electronic Arts
Privateer 2: The Darkening
Sophisticated gameplay includes a never-routine mission system in which you take on hundreds of different types of missions. Choose for yourself whether you're in the mood to trade goods, be a scout, bounty hunter, or reconnaissance agent.
DOS CD-ROM
$59.99

electronics EB boutique

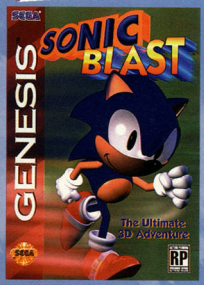
CDROM Entertainment



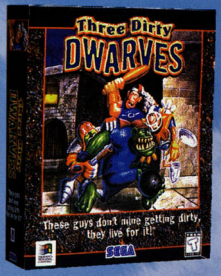
Sega
Virtua Fighter
Experience the real-time 3-D martial arts thriller now available for your PC! All the original fighters including Jackie, Sarah, Pai and all their killer moves are included in this awesome fighting tournament.
Windows 95
$49.99



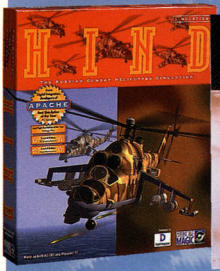
Sega
World Series Baseball 96
This amazing sports title is packed full with updated stats, amazing baseball gameplay, real teams, and real players! Play in the World Series, All Star Game, or practice your swing in the Home Run Derby!
Windows 95
$49.99



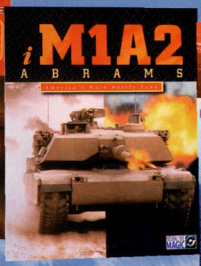
Sega
Sonic Blast
Everyone's favorite Hedgehog is now on the PC! Sonic embarks on an important mission: rescue his friend Amy and retrieve the Time Stones before Robotnik can!
Windows 95
$32.99



Sega
Three Dirty Dwarves
A trio of heroic (and slightly dirty) dwarves land in another world. Their quest: Defeat the evil Orc armies and free the four children who brought the dwarves into this world.
Windows 95
$42.99



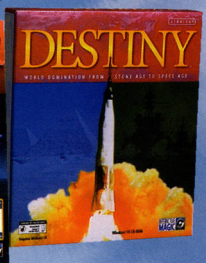
Interactive Magic
Hind
The follow-up to the acclaimed Apache helicopter simulation, now you can fly the Hind head-to-head with Apache! Jump into the cockpit and experience fast action and stunning 3-D effects.
DOS CD-ROM
$52.99



Interactive Magic
M1A2 Abrams Tank
Using the latest US Army battle tank, the latest in 3-D graphics technology, and the latest in world trouble-spots for a state-of-the-art simulator of modern tank battles.
DOS CD-ROM
$49.99



Interactive Magic
Harpoon 97
One of the most sophisticated and realistic contemporary wargames available. Features new displays, updated and added scenarios and a more intuitive approach!
DOS CD-ROM
$49.99



Interactive Magic
Destiny
Make all the decisions that affect your destiny. Play from traditional top down 2-D maps or go into real 3-D worlds to command your forces. You control the development of mankind.
Windows 95
$52.99

Call 1-800-800-5166 for the store nearest you!



GT Interactive

Bedlam

You control a team of up to 3 biobots as they embark on pre-determined strategic missions to rid mankind of hostile aliens.

DOS CD-ROM

$54.99

GT Interactive

Return Fire

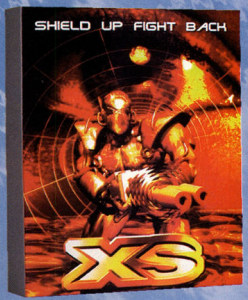
Firepower is key, but strategy is what keeps you alive. Your mission is to disable enemy forces, blow your way into hostile territory and retrieve the flag. But this is no one-sided killfest. Your enemy is in your face trying to do the same thing to you!

Windows 95

$42.99



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GT Interactive

XS

Four players enter an enclosed combat pit in 20 different arenas and let rip with whatever weaponry they have on hand. The last one left standing gets to do battle with another 3 contenders.

DOS CD-ROM

$52.99

GT Interactive

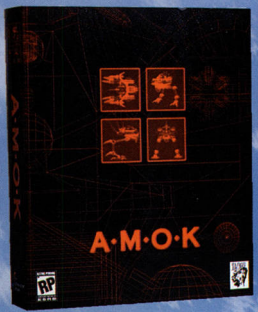
Area 51

All of the action-packed gameplay from the arcade game are translated faithfully into this breakthrough sci-fi adventure shooting game. New special effects and features have been added to the home game, including bizarre "alien vision" mode, in which gamers can play through the eyes of the "Kronn Hunter," which gives the game a wild, infra-red look.

Windows 95

$54.99





GT Interactive

Amok

With the best graphics, fastest gameplay and most diverse replayability, this 3-D shooter puts you in control of a hi-tech battle mech on one of many suicide missions. Cutting-edge settings occur on land, underground and even underwater!

DOS CD-ROM

$54.99

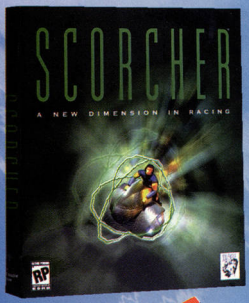
GT Interactive

Scorcher

This graphically advanced, futuristic cyber-cycle racing game enables you to bounce off every loop and turn. You must pit your skills against a pack of high-speed rivals where only one will survive.

Windows 95

$54.99



CDROM Entertainment



Acclaim

Space Jam

Mega Star Michael Jordan and all of your favorite Loony Tunes characters go 3-on-3 against the alien Monstars in a intergalactic hoopfest! Bugs shoots! Daffy dunks! Jordan Jams!

DOS CD-ROM

$29.99



Acclaim

NBA Jam Extreme

An all-new 3D Jam for a new generation! Ultra-realistic polygon action, over 30 new rim-rocking dunks and 170 motion-captured NBA superstars. This time we've gone too far!

Windows 95

$47.99



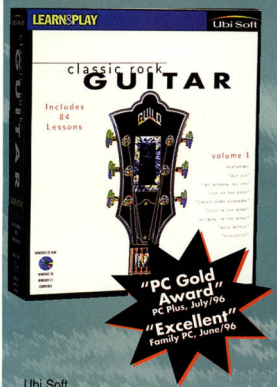
Acclaim

WWF: In Your House

The most mayhem-packed wrestling game ever! 10 sensational WWF superstars, including Shawn Michaels, Ahmed Johnson, and The Undertaker, wreak havoc with all new ultra-devastating moves and super-pins to finish the job!

DOS CD-ROM

$47.99



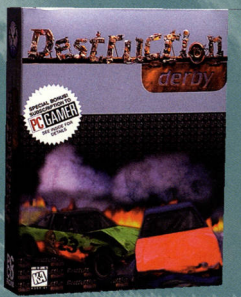
Ubi Soft

Learn & Play: Classic Rock Guitar, Volume 1

Learn to play guitar like the legends! Master essential techniques through songs made famous by artists like Jimi Hendrix, Stevie Ray Vaughan, and the Beatles. It's like having a private teacher at your fingertips for a fraction of the cost!

DOS CD-ROM

$39.99



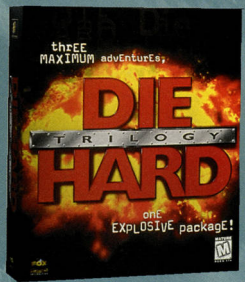
Psygnosis

Destruction Derby

With no rules, no limits and no pit stopping, anything goes in this collision course of crumple zones. Take on the rigours of a full Championship season and pit your wits against a motley crew of psychowaster racers such as the Suicide Squaddies, Skum and The Optician as you storm up the rankings from Rookie to Pro.

DOS CD-ROM

$44.99



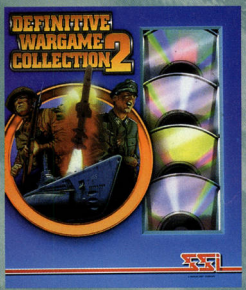
Fox

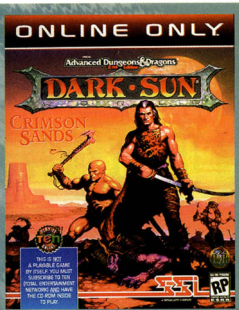
Die Hard Trilogy

Three times the action! You're at the center of three totally different, thrill-packed adventures. Every adventure you choose delivers amazing depth, palm-sweating realism and fully-rendered detail with over thirty incredible levels.

Windows 95

$54.99





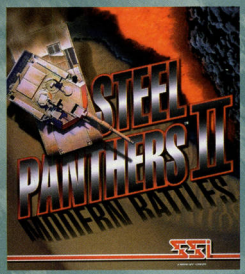
Mindscape

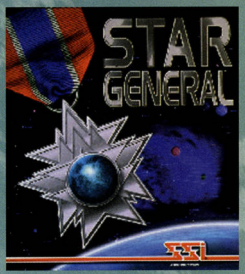
Dark Sun Online: Crimson Sands

Welcome to the biggest game in this series yet! All new regions guarantee months and months of exploration. Now you can deal with the meanest and most devious creatures of all - real opponents!

Windows 95

$14.99





Mindscape

Wargame Collection: Volume II

Wargamers can choose from a dozen strategic and tactical wargames spanning 8 centuries. Features award-winning games such as Panzer General, Steel Panthers, Genghis Kahn II: Clan of the Grey Wolf, and more!

DOS CD-ROM

$39.99

Mindscape

Steel Panthers II: Modern Battles

It's tank vs tank in this modern-day version of one of the most successful wargames ever! Set in Europe, Korea and the Middle East from 1950 to 1999. Command a single squad or an entire battalion. Super VGA graphics and intense animation help you feel the destruction raging all around you!

Windows 95

$49.99

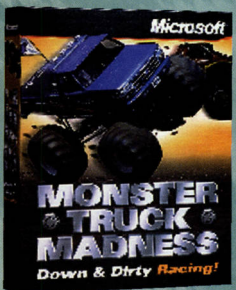
Mindscape

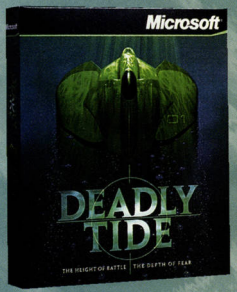
Star General

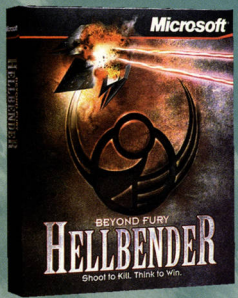
You are in control of a multi-planetary force to take back the galaxy from six steadily encroaching races. Experience stunning SVGA graphics with over 90 fully rendered 3-D starships and hundreds of ground units.

DOS CD-ROM

$49.99







Microsoft

Monster Truck Madness

The radical racing simulation that puts you in the untamed, high-speed, dirt-kicking, car-crushing world of monster trucks. Features 3 different types of racing and 3 skill levels keep the action fresh and the challenge real. Plus, all vehicle mechanics, course action, and terrain effects are modeled on actual monster trucks!

Windows 95

$44.99

Microsoft

Deadly Tide

Immerse yourself in a high-energy, all-out war in the eerie otherworld of the abyss, where you are the only hope against aliens plotting to submerge the planet. The cinematic graphics and CD-quality sound plunge you into action at the helm of the lethal Hydra craft.

Windows 95

$54.99

Microsoft

Hellbender

Trust your wits and your air combat skills because you alone can prevent the destruction of all that you know. Experience stunning sound and graphics as you uncover secret new worlds and hidden objects every time you play.

Windows 95

$44.99

CDROM Entertainment

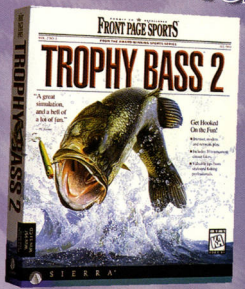
Sierra

Trophy Bass 2

Challenge friends from around the world on any of 10 lakes, each featuring accurate photographical and topographical maps, depth readings, weed beds, lily pads...the works. Track your wins and losses against simulated pros. Plus, get tips from professional anglers.

Windows 95

$54.99



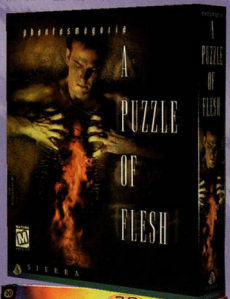
Sierra

Phantasmagoria: A Puzzle of Flesh

Out of the mental hospital for exactly one year, Curtis Craig wants a normal life, but something seems to have other plans. Curtis breaks into the hidden lower levels of WynTech, discovering a secret so bizarre it is beyond human comprehension. Features challenging, thought-provoking gameplay, and more!

Windows 95

$57.99



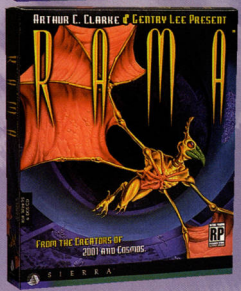
Sierra

RAMA

You are a replacement astronaut sent to enter and explore this artificial world...to discover its purpose and reveal its secrets for humankind. Decipher a series of complex alien puzzles, avoid unseen dangers and reveal tantalizing clues - you may even survive to report your mysterious finding.

Windows 3.1/Windows 95

$54.99



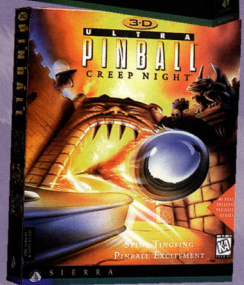
Sierra

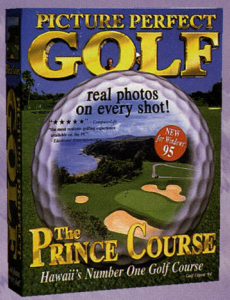
3D Pinball: Creep Night

Only furious flipper-action and lightning-quick bank shots can vanquish the ghosts as you warp between the castle courtyard, mad scientist's lab, and dungeon catacombs. If you're good enough to uncover the bonus table, you'll face the Goblin King in a ghoulish grand finale!

Windows 95

$47.99





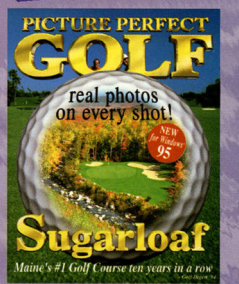
Enteractive

Picture Perfect Golf: The Prince Course

Experience the thrill of playing the most challenging course in Hawaii! Features thousands of real photographs and incorporates deep ravines, a tropical jungle, streams and a waterfall. The resulting par 4 is as challenging as it is beautiful.

Windows 3.1/Windows 95

$29.99



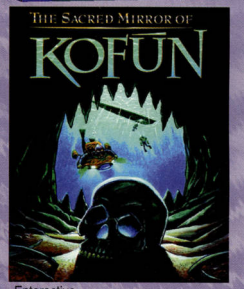
Enteractive

Picture Perfect Golf: Sugarloaf

The most realistic golf experience on your PC. Experience the thrill of playing the worlds finest golf courses. Features the Sugarloaf course, voted #1 in Maine by Golf Digest for 10 straight years.

Windows 95

$29.99



Enteractive

The Sacred Mirror of Kofun

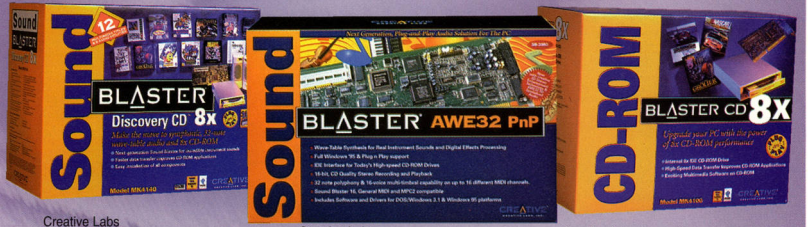
You control the outcome in this first-person game, traveling through three fully explorable 3-D environments. Help uncover clues gathered on spectacular underwater dives and in lush tropical jungles. This adventure game offers hours of exploration and fun!

Windows 95

$49.99

Call 1-800-800-5166 for the store nearest you!

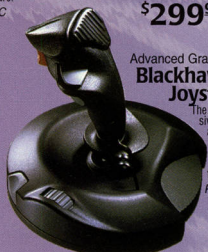
PC Accessories



Creative Labs
Sound Blaster Discovery CD 8x
Discover again the excitement of multimedia with this complete multimedia package. Combines 32-voice, wave-table stereo audio, 3-D stereo sound, Plug-and-Play compatibility, and a high-performance 8x CD-ROM drive with entertaining multimedia software.
PC
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Creative Labs
Sound Blaster AWE32 Plug and Play
The next-generation wave-table synthesis sound card turbocharged with real instruments, sounds and real-time digital systems effects processing. Upgradeable E-MU Systems' SoundFont Technology allows new instruments and sounds.
MPC/Mac
$199.99

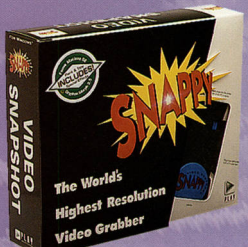
Creative Labs
Blaster CD 8x
Transform your PC into a multimedia powerhouse! Features IDE interface for enhanced performance, 1,200 KB/second data transfer rate, 230 ms access time, multi-session photo CD compatible, CD-ROM XA ready, CD-Plus support and front-loading tray mechanism.
PC
$159.99



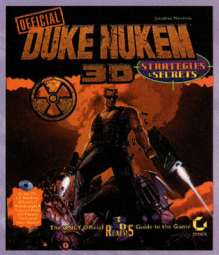
Advanced Gravis
Blackhawk PC Joystick
The look and feel of an expensive flight stick at a comfortable price. Enjoy the stability of the weighted base and the control and precision of its responsive stick and throttle.
PC
$29.99

ThrustMaster
Phazer Pad
Out-perform, out-maneuver and out-score every opponent with the ultimate combination of advanced functions and total programmability. Includes dozens of instant setups for the hottest games or configure each button to take advantage of your personal gameplay technique.
PC
$59.99

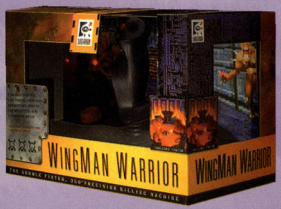




Minolta
Snappy
Bring stunning images from video into your PC! Imagine taking a scene from your favorite movie or TV show! Just a click of a button and the image you pick will turn into a high resolution still - perfect for thousands of uses at work, at home, or at school!
IBM PC
$179.99



Sybex
Official Duke Nukem 3D Strategies and Secrets
Packed with every hint and trick you need to kill aliens and find the loot. Plus discover the best online lairs of fellow Duke Nukem 3D fanatics, or learn how to run Duke Nukem 3D on networks and play it through a modem.
Book
$17.99



Logitech
WingMan Warrior
This is the first double-fisted control system for Doom-style games which offers 360-degree independent aiming and intuitive movement. You maneuver realistically and get off shots with terminal accuracy in Doom, Hexen, and other hot 3D action games.
PC
$59.99

PC Accessories

Buy any Iomega drive and get personal organizer FREE! $99 Value.
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Iomega
Zip Drives and Disks

The new Iomega storage solution that's 3 drives in 1. You get hard drive-like performance with unlimited storage potential, convenient backup with quick data access, and unprecedented portability.

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Memorex
3.5" HD Computer Disks

Formatted for IBM PCs and compatibles. Includes lifetime warranty plus a FREE file box!

PC Pack of 40 $21.99



Mad Catz
Analog Steering Wheel

Designed especially for driving and flight games that utilize analog input. Compatible with analog games designed for PCs and compatibles. Features easy to follow instructions inside, true analog steering, accelerator, and brake, and 8 digital action buttons with 8-way directional hat switch.

PC With foot pedals $69.99

Digicom Systems
Digicom Internal Fax/Modem 33600 bps

Move up to true V.34! This modem is twice as fast as V.32bis modems and supports V.Fast Class Specifications. Includes award-winning Fax Software. Windows 95 compatible.

PC $139.99



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Upgrade your performance, easily! Adding computer memory is easy and affordable with this kit! Your system will be noticeably quicker and more powerful. Guaranteed to be 100% compatible with your brand of computer. Includes a lifetime warranty and toll-free technical support!

PC

4MB Parity Chips $39.99

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It's so easy, it's so easy with PNY to add memory to your PC

Affordable Memory PNY "The Memory Leader... Worldwide."

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Nintendo

Nintendo 64 is HERE!



Nintendo
Super Mario 64
A quantum leap in software and hardware guarantees that Mario is set to revolutionize the world of video games once again! Sound, color and clarity that completely immerses players in worlds filled with details, puzzles, enemies, traps and obstacles!
Nintendo 64
$69.99



Nintendo
PilotWings 64
Go beyond mere simulation! For the first time, in real time, players can climb, dive, spin and soar through completely realistic, limitless space! No matter which direction they turn!
Nintendo 64
$69.99





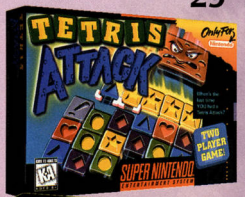
Nintendo
Super NES Killer Instinct Set
We brought the arcade home with the amazing moves and graphics of Killer Instinct. More ACM graphics, more speed and more moves make this bundle a winner! Includes: Killer Instinct game pak, Killer Cats music CD, one controller, RF switch and AC adapter.
Super NES
$99.99



Nintendo
Nintendo 64 Hardware System
The world's first true 64-bit home video game system that has the power and speed to create stunning and realistic 3-D graphics and gameplay performance that is not only superior to every other home system, but technologically impossible for other systems to approach, let alone match! Features Tri linear Mip Map Interpolation, real-time 3-D, real-time Z-buffering, and more!
Nintendo 64
$199.99

Nintendo
Controller 64
The advanced N64 controller is available as an accessory in 5 hot colors! Choose from black, red, yellow, green, or blue. Standard grey is also available separately. Each controller has the full function joystick, memory back-up and data transfer capability!
Nintendo 64
Each **$29.99**

Nintendo
Tetris Attack
The Tetris tradition continues with another mind-boggling set of challenges that require skill, strategy and speed! Plus an incredible head-to-head two-player mode that multiplies the possibilities!
Super NES
$39.99



Nintendo
Kirby Superstar
32 megs in a single cartridge gives players 8 different Kirby games! Kirby can use the abilities of 24 different high powered characters!
Super NES
$69.99

Nintendo
Tetris 2
Tease your brain with a tougher Tetris that has more shapes, more components and 30 levels! Features two-player fun with split-screen action!
Super NES
$39.99





Nintendo
Super Mario Kart
Exciting go-kart racing game, featuring Mario and his friends! Features split-screen, one or two-player simultaneous action! Choose from 20 crazy race courses! Rated K-A for kids ages 6 to adult.
Super NES
$39.99

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Sony





PlayStation™

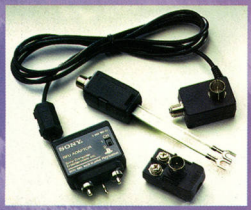
Sony
PlayStation Core System
Breakthru 32-bit processor. Stereo CD-quality sound. Full frame video at 30 frames per second. 16.8 million simultaneous colors. Custom ports for up to 2 controllers and 2 memory cards. Includes one controller.
PlayStation
$199.99

Sony
Memory Card
Store high scores, custom settings, special pickups and more on this memory card featuring 8 Megs of backup memory - twice the capacity of other cards!
PlayStation
$24.99





PlayStation with Toshinden Bundle
$229.99



Sony
RFU Adaptor
No video input on your TV? No problem. Adaptor attaches easily to the back of the TV set. Includes RF converter, automatic TV-game switch and cable.
PlayStation
$29.99



Sony
Analog Joystick
Get a grip on arcade play! Bring the arcade home with this innovative peripheral device. Use the digital mode for intense arcade play or switch to analog mode and drop into the ultimate cockpit experience. Dual stick design gives you four different axis's for tighter control. Eight buttons on both base and stick provide more options during gameplay. Plus, unique "Hat" directional pad on joystick allows you to easily select right, left, up and down.
PlayStation
$69.99



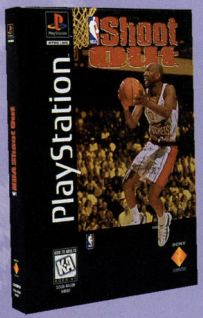
Sony
Multi-Tap
Now you can add even more control pads and memory cards to the PlayStation game console. Plug in one Multi-Tap for four players and for real intense gameplay, plug in two Multi-Taps for eight players!
PlayStation
$49.99

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PlayStation







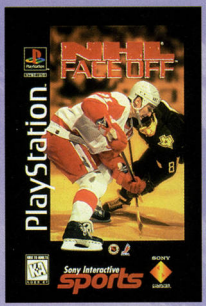
Sony
NBA Shoot Out
The ultimate NBA challenge! Jam with all 29 NBA teams and over 300 players. Use five types of dunks including 360° jams and tomahawk slams. Real NBA attributes, three levels of difficulty, seven dynamic playing perspectives and announcer Dick Callahan add to your NBA experience!

PlayStation **$59.99**

Sony
Twisted Metal
You are what you drive. Big and tough, fast and deadly, or just plain crazy! Take your pick. Insane 3D combat! Onto sidewalks, off ramps, into pedestrians! Brake and swerve, fishtail around corners! Last one to survive wins!

PlayStation **$39.99**





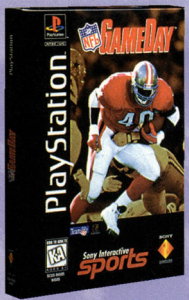
Sony
NHL Face Off
The ultimate hockey simulation featuring full NHL season play, multiple playing perspectives, realistic hockey animations, and fully interactive 3D environment. Plus, players' abilities all based upon their actual NHL player stats.

PlayStation **$39.99**

Sony
Mortal Kombat 3
Grab the third tidal wave of karnage and mystery! All new fatalities, animalities, and babalities! Krack the Kombat Kodes and MK3 unlocks mysterious kombatants and grants even deadlier powers!

PlayStation **$59.99**





Sony
NFL GameDay
All 30 NFL teams and over 1,500 real NFL players. Select Preseason, Regular Season, Playoffs or Super Bowl gameplay. Trade players and sign free agents. Also features realistic NFL action, player attributes, and complete stat tracking.

PlayStation **$39.99**

Sony
MLB Pennant Race
Provides the most exciting and realistic baseball experience ever. With all 28 Major League teams, all 28 stadiums rendered in true 3D, 700 real players, beautiful TV-style presentation, incredible graphics and realistic gameplay.

PlayStation **$59.99**

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New From Sony

Sony
Epidemic
Your mission is to overthrow the tyrannical regime and to find a cure for a destructive disease. Goes way beyond Kileak with advanced 3-D rendered graphics, increased A-I and faster character movement.
PlayStation
$59.99



Epidemic

Sony
Project: Horned Owl
Fear the future! Metalica, a terrorist force of cyber-mechs, is attacking the city. You and a squad of mech-suited cops hit the ground, transformed into deadly defense units. The city is buckling, street by street. Can you stop a total mech takeover?
PlayStation
$59.99



Sony
NFL GameDay 97
The NFL sim that defined Next Generation Sports Games is back. All new playbooks, animations, and strategy. Every team, player, and stadium including the all new Baltimore Ravens. Trade and create players and even sign free agents.
PlayStation
$59.99



Sony
NHL Face Off 97
All 26 NHL teams including the all new Phoenix Coyotes and 650+ top NHLPA players playing to the actual skills. All new animations and unprecedented strategy. Exhibition, Season, Stanley Cup Playoffs, and real NHL awards.
PlayStation
$59.99



Sony
Twisted Metal 2
3-D car combat that reaches new heights from around the world. Eight new levels in all. Bigger, more interactive, more twisted than ever. Rearmed with new killer combo-attacks and wicked new cars. It's a whole new world to blow away!
PlayStation
$59.99



Call 1-800-800-5166 for the store nearest you!





Sony
King of Fighters 95
Unleash the ultimate one-on-one arcade fighter bringing together the largest selection of playable characters assembled in a video game. Choose from 26 warriors including characters from Fatal Fury and Art of Fighting to build your own dream team.
PlayStation
$59.99

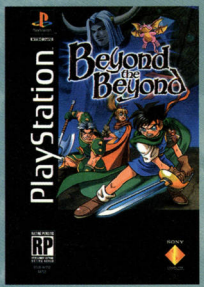
Sony
Crash Bandicoot
Travel across more than 30 beautifully rendered levels with solid controls and all the "best of the best" features of a platform game. Filled with hidden bonus levels, secret pathways and shortcuts, hordes of enemies, moving platforms and fiendish traps - only now you'll have to face the challenge of maneuvering in all 3-Dimensions!
PlayStation
$59.99



Sony
2 Xtreme
Enjoy 4 Xtreme sporting venues that include 12 new courses! Includes all new vehicle specific manuevers including "rail slides" and "ollie-air" on the skateboard and "backside and front-side rail grabs" on the snowboard.
PlayStation
$59.99



Sony
Bogey: Dead 6
This isn't a Red Flag exercise - it's the real thing. You are a Navy fighter pilot - team member of an elite air squadron - and assigned to respond to special, classified, international missions. Enjoy exhilarating dogfights with unequaled special effects, 360° movement and powerfully immersive sound effects. Feel the intensity with two different modes of play. Plus, three different types of combat: air-to-air, air-to-sea and air-to-ground assaults.
PlayStation
$59.99



Sony
Beyond the Beyond
Young Fynn and his dragon, Stiner, face trials almost beyond endurance as they hunt down Evil in their quest to save the Land of Canaan. Journey through ever-evolving landscapes in top-down, isometric view. Experience intense battle scenes in revolving 360° 3D clashes. Gain increasingly powerful hit points with every combat win.
PlayStation
$59.99



NCAA Football
GameBreaker

Sony
NCAA Football GameBreaker
All 111 Divison I-A and top Division I-AA teams, all 10 Conferences including the newly upgraded BIG 12 and WAC. Features players with NFL 1st round draft pick characteristics and capabilities. Race for awards like the Doak Walker, Jim Thorpe, and even the Heisman Trophy!
PlayStation
$59.99

PlayStation





Mad Catz
Mad Catz Analog Steering Wheel
Comes with true analog steering, accelerator, brake, eight digital action buttons plus 8-way directional pad. Compatible with analog and most digital games designed for PlayStation.
PlayStation $59.99



Namco
Museum Volume 1
Remember the good old days? When a game was a game and the only tough choices were one-or-two player mode? Well those days are back and better than ever. A series of five video game compendiums comprised of the world's most famous arcade classics.
PlayStation $49.99



Namco
Ridge Racer Revolution
This game has more of what you want. More cars. More speed. More precise handling. More challenging tracks. More of everything that made Ridge Racer one of the top selling titles in the world.
PlayStation $49.99



Namco
Tekken 2
Arcade Perfect: refined, and ready to contest its title as the undisputed world champion of 3D fighting games. Features 3D new gameplay moves, new characters and more stages!
PlayStation $49.99



Playmates
Burning Road
Choose from 3 specially modified custom muscle cars or a monster truck to tear down the road as you make your way to the checkered flag. Ram opponents off the road or into embankments as a viable strategy!
PlayStation $54.99



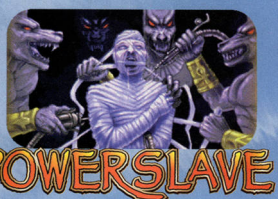
Playmates
VMX Racing
Fully articulated players and bikes compete in a unique, fully 3-D real-time racing game that sets the standard for Motocross simulations! Special throttle settings allow players to perform maneuvers and tricks just like the pros!
PlayStation $54.99

Coming Soon!



Playmates
Battle Arena Toshinden 2
Choose your weapon and do battle against the greatest warriors of the world! Your favorite characters are back in the arena with new moves and special attacks. Two mysterious new contenders also join the battle!
PlayStation $54.99

Playmates
PowerSlave
Your mission is to infiltrate Karnak, the ancient Egyptian city that has been sealed off by enemy forces. You have trained for all forms of enemy contact, but nothing can prepare you for the modern-day nightmare you are about to enter.
PlayStation $54.99
Saturn $54.99



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Electronic Arts



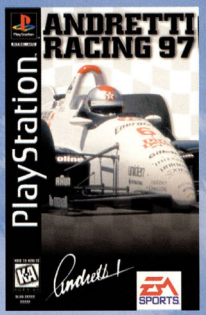
Electronic Arts

The Need for Speed

Intense realism puts you in the seat of real exotics. Features new and improved 32-bit rendering engine, two player support through split screen and link-up features, seven tracks, cars modeled after the real thing with Road & Track's performance data, and four race types.

PlayStation $59.99

Saturn $59.99



Electronic Arts

Andretti Racing 97

Blazing fast gameplay and head-to-head competition that features split screen and link up action for up to 4 players simultaneously. Immerse yourself in a racing world with authentic TV-style presentation from racing's leading broadcast authorities. All the end over end flips, death-defying spin-outs and flying car parts that come with racing action blast onto this ultimate speedway!

PlayStation $57.99

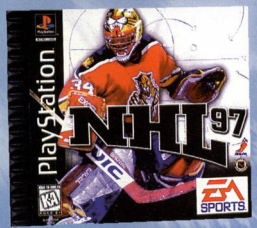


Electronic Arts

Soviet Strike

This challenging action/simulation game takes all of the classic gameplay of the original and brings it to the forefront of 32-bit technology with photo-realistic action and superfast gameplay.

PlayStation $57.99



Electronic Arts

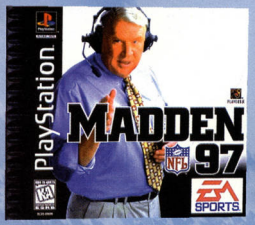
NHL 97

Play as one of the more than 600 real NHL players or create your own player for your favorite team. With signature moves from NHL superstars. Get ready to drop the puck and experience hard-hitting action.

PlayStation $57.99

Saturn $57.99

Also available for Genesis.



Electronic Arts

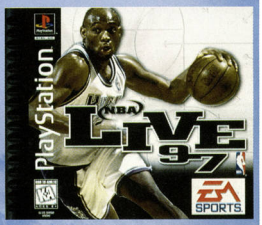
Madden 97

Madden's fingerprints are all over this game! From player and team ratings to play design and strategy, no detail has been overlooked. Tournament tested gameplay, motion captured animations of real NFL players, modeled 3D stadiums, TV-style presentation, plus the genius of Madden.

PlayStation $59.99

Saturn $59.99

Also available for Genesis and Super NES.



Electronic Arts

NBA Live 97

The perennial superstar of interactive hoops comes back strong with updated teams, rosters, all 29 NBA teams and over 800 NBA players with full stats and ratings. All-new SGI animations deliver devastating dunks, pinpoint passing, stylin' dribbling, and deadly jumpers.

PlayStation $57.99

Saturn $57.99

Also available for Genesis and Super NES.

electronics boutique

Video Games

Interplay

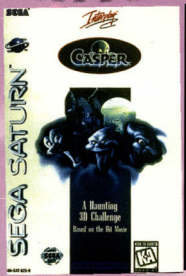
Casper

This puzzle-solving challenge features 3D modeled graphics and frightfully intriguing gameplay. Morph into a host of objects, explore secret passageways and discover hidden clues while waging a battle of wits with Casper's hilarious uncles.

Saturn $59.99

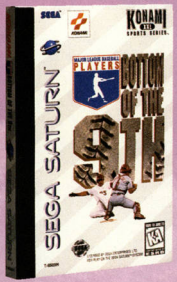
PlayStation $59.99

3DO $59.99









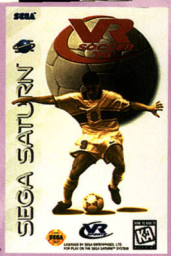
Konami

MLBA Bottom of the 9th

It's a whole new ballgame! Big League play starts with Big League players. Enjoy 3-D animations of the real pitching and batting styles of several players - like Belle, Gwynn, Bonds, Rodriguez and others! Plus, an intuitive batting system that mimics real life!

PlayStation $49.99

Saturn $49.99



Interplay

VR Soccer 96

Goooooal! Featuring motion capture of the greatest players in international soccer, and Virtual FieldVision. Has it all, windmills, headers, dives, commentary by Barry Davies, the voice of the BBC, 44 real international teams - including Brazil - 94 World Cup winner! Build a soccer dream team with skill factor editing.

Saturn $59.99



Interplay

Loaded

As fall guys for F.U.B., the evil Elvis impersonator with a black hole in his belly, you've got to escape from a prison planet. Once you've succeeded, "seek and destroy" is all you need to know.

Saturn $59.99

Also available for PlayStation.



Konami

NFL Full Contact

This action-packed game features 3-D SGI graphics and motion capture with multi-views and instant replay.

PlayStation $49.99



Konami

Project Overkill

Choose to play any of four powerful mercenaries, armed to the teeth with multiple weapons as you face over 20 different types of inhuman adversaries.

PlayStation $49.99



Konami

Contra: Legacy of War

New, 32-bit update of the megahit! Includes all new 3-D texture mapped environments, beefed up weaponry, and 3 levels of difficulty. Plus, 4 unique Contra fighters to choose from including female cyborg and paramilitary robot.

PlayStation $54.99



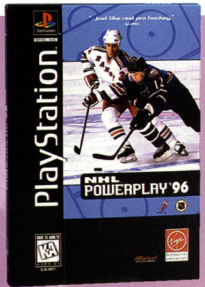
Konami

International Track and Field

Let the games begin! Motion capture ensures authentic Olympic-style action. And 3D texture-mapped polygon graphics give it that "live" look. Enjoy simultaneous competition by up to four players. Plus, a full selection of the most popular track and field events.

PlayStation $49.99

Call 1-800-800-5166 for the store nearest you!



Virgin Interactive

NHL Powerplay '96

Just a friendly game of ice-grinding, teeth rattling hockey. The only game that gives you the whole arsenal of offensive and defensive plays plus advanced artificial intelligence propels motion-captured players to strategize and react just like the pros!

PlayStation $59.99

Saturn $59.99



Virgin Interactive

Spot Goes To Hollywood

Guide the ever-cool Spot through a hilarious spoof of Hollywood's greatest film genres! Venture from film world to film world and discover countless secret passages, hidden laboratories, unknown bonuses and exotic locations. Super-slick hand drawn and 3-D animation, combined with four star action, make this the coolest blockbuster you've ever played.

Saturn $59.99

PlayStation $59.99



Virgin Interactive

F1 Challenge

Amazing 3-D graphics and tight control for gameplay so intense you can almost feel your head rattle. Six action-packed tracks including Monte Carlo, Suzuka and Hockenheim. Customizable-player settings for greater control of your car's performance including mid-race pit row changes.

Saturn $54.99



ASCII

King's Field

An action-adventure game with complex characters, exciting gameplay and stunning graphics. Completely rendered in beautiful 3-D polygon graphics, and fully controllable 360° viewing. Enter a world of forgotten lore, where mighty dragons power the will of the evil Necron.

PlayStation $59.99

Working Designs

Dragon Force

The world of Legendra has fallen prey to the frightening reign of Madurk. Eight different storylines follow your quest to command a myriad of generals. Each battle bursts onscreen with up to 200 warriors running, hacking, and slashing their way to victory in real-time!

Saturn $59.99

Working Designs

Shining Wisdom

When evil ascends, and darkness consumes, wisdom will light the way, and bravery will make it shine. With 10,000 frames of SGI animation! 40+ hours of intense gameplay! Cool secret zones and items.

Saturn $59.99





Maxis

SimCity 2000

Create and rule the city of your dreams - or your nightmares. You start by designing a city in which your resident Sims can live. As the city grows in population and wealth, you are presented with a myriad of options for improvement. But beware of the various disasters that can strike your city!

PlayStation $49.99

American Laser Games

Shining Sword

For centuries, legends have told of a mystical sword with untold power. In a medieval fantasy world of swords and sorcery, assume the role of one of four characters who search for the fabled Shining Sword.

PlayStation $54.99

electronics EB boutique

Sega Saturn



Sega
Controller
You haven't experienced pure control until you've held this baby in your hands. Ergonomic design enables unparalleled "gripability" and control. Six standard buttons make combination moves easier and faster to initiate. Left and right Shift Buttons included.
Saturn
$34.99



Sega
Saturn System with Sega Rally
Three raging 32-bit processors work overtime to match the unbridled speed and visual intensity found only in the hollows of the arcade. Comes with Sega Rally!
Saturn
$229.99

Saturn Core System $199.99



Sega
Sonic X-Treme
New characters, new special moves and an incredible 3-D playing environment combine to make this the most extreme game in Hedgehog history!
Saturn
$54.99



Sega
Mr. Bones
Silicon Graphics technology delivers mind boggling animation, AI-based control algorithms, never-before-seen character animations - all set to a marrow-tingling acid jazz soundtrack.
Saturn
$54.99



Sega
Fighting Vipers
You've never fought in these neighborhoods...in barb wire cages and on air strips. Skate punks, Rollerbladers, and Rockers whip you over the head with their Flying V. This is fighting game perfection.
Saturn
$54.99



Sega
World Series Baseball II
League-leading graphics and gameplay. Four game modes. Brand new batting views. Injury tracking. Stat tracking. Continuous play-by-play announcing. Chase Cam. You can even draft your own expansion teams.
Saturn
$59.99



Sega
Three Dirty Dwarves
Four genius kids, genetically altered in a bizarre military experiment, stay sane by playing a fantasy role-playing board game.
Saturn
$49.99

Sega
Nights with 3-D Control Pad
Combines the dynamics of a flight simulator with the speed of a racing game! Gamers are propelled into a truly amazing virtual dream land filled with real-time worlds and psychedelic characters. Comes with 3-D control pad!
Saturn
$69.99

Without Control Pad **$49.99**

Call 1-800-800-5166 for the store nearest you!

Sega Pico



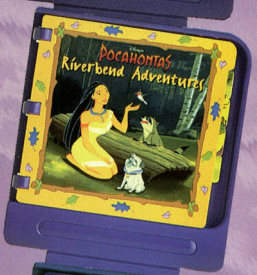
Sega
Pico System with Huckle and Lowly's Busiest Day Ever

A revolutionary new way for children 3-7 to learn basic developmental skills, explore new worlds and educate themselves while also having fun!

Pico

$139.99



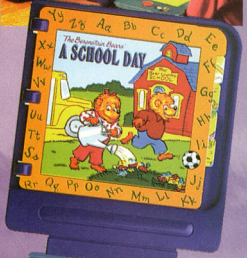


Sega
Disney's The Lion King: Adventures at Pride Rock

This delightful learning adventure features Simba, Nala and other classic Disney characters from one of the most popular animated films of all times as they discover the alphabet, hidden pictures and mazes. For ages 4 to 7.

Pico

$49.99



Sega
The Berenstain Bears: A School Day

Join the Berenstain Bears for a busy day at school. Children will learn the alphabet and create words by recognizing letters. Objects and animals will come to life as your children match and learn shapes and put them in their place.

Pico

$49.99

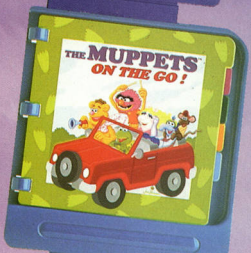
Sega
Disney's Pocahontas: Riverbend Adventures

Children have a lot to learn from the characters in this great new Pico title based on the Disney adaptation of America's favorite story...and they'll have fun doing it! It's rich in lessons about nature, logic and memory. For ages 5-7.

Pico

$49.99





Sega
The Muppets On The Go!

Join the Muppets and enjoy a grand day out in their all-terrain jeep. Children will develop their problem solving, matching, creative and memory skills in five different environments, such as the Forest Tailgate Party! Ages 3-6.

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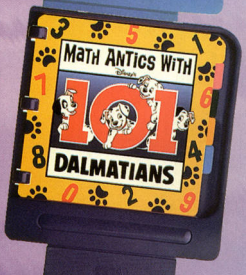
Sega
Sonic The Hedgehog's GameWorld

Let's go to the fair and visit Sonic's GameWorld! Children uncover hidden talents while playing Hoops, Skeeball, Robotnik-Bash and 10 more fun games and activities.

Pico

$39.99





Sega
Math Antics with 101 Dalmatians

Join Pongo and Perdita on exciting adventures when their lovable pups are kidnapped from their happy home. Children solve number problems while helping rescue the puppies from evil Cruella De Vil.

Pico

$49.99

Sega
A Year at Pooh Corner

Spend winter, spring, summer and fall with Winnie the Pooh and his friends as they teach children how to recognize shapes, numbers, and letters. Develop dexterity as you help Pooh travel the maze to the honey pot.

Pico

$39.99

Genesis & Game Gear

GENESIS



Sega
Nomad

Portable Genesis video game system which is fully compatible with over 500 available Sega Genesis game cartridges. Also adaptable for use on a TV. Supports 64 colors. Includes fully integrated 6-button control pad and additional controller port for two player gameplay.

Nomad **$179.99**



Sega
6 Button Control Pad

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Genesis **$19.99**



Sega
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Sega
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Sega
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Sega
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Three explosive games on one action-packed disc! Only you can save the day in Die Hard with over a dozen levels in a thrilling, fully navigational 3D environment!

PlayStation **$59.99**

Also available for Saturn and Windows 95.

Capcom

Darkstalkers

Based on the #1 arcade sensation! Soon to be released as a syndicated weekly TV series from Capcom and Groz Entertainment.

PlayStation ~~$59.99~~

Now **$39.99**

Mindscape

Steel Harbinger

In the year 2069, bizarre oblong meteorites rain from the sky. Innocent people transform into mechanized wrecking machines. The fate of the Earth rests on one young woman, whose body itself is infected.

PlayStation **$54.99**



Williams

Ultimate Mortal Kombat 3

You decide the ending in this ultimate fighting game. Contains new characters, tons of different artwork, numerous hidden characters plus new, lethal moves!

Saturn **$59.99**

Fox

Independence Day

Fight your way past waves of attackers to destroy the alien mothership and save the planet, city by city. Experience hyper-realistic plane handling in full 3-D graphics in this outrageous flight-simulated action game.

PlayStation **Coming Soon in 97.**



Williams

Mortal Kombat Trilogy

Let the vendetta begin! All 3 previous MKs crammed together in one hellish apocalypse. Features radical new characters along with all the old nemeses.

PlayStation **$59.99**



Capcom

Street Fighter Alpha 2

Introducing the most original attack ever - the custom combo. Now you can create your own super combos with a rapid-fire assault. Features more incredibly smooth animation, vibrant backgrounds and a collection of 18 fighters.

PlayStation **$59.99**



Mindscape

Necrodome

You are at the wheel of an incredibly powerful armored vehicle, bristling with high-tech weaponry. This 3-D, real-time action-shooter features a super-realistic environment, and more gut-wrenching action than you can handle!

PlayStation **$49.99**

electronics EB boutique

Video Games



Activision

Time Commando

History is your battlefield. The future you must defend. A deadly virus has invaded the military's top secret super computer. If core memory cannot be restored in time, the future will be ruled by chaos...and the virus will mean the world's collapse.

PlayStation $54.99



Activision

Blast Chamber

You're trapped in a chamber with a time-bomb strapped to your chest. The countdown begins as you and 3 others scramble madly through a lethal obstacle course for the one thing that can save you.

PlayStation $57.99

Saturn $57.99



Jaleco

Tetris Plus

Experience Tetris in the puzzle mode where a chamber fills with blocks that are tumbling from above and where a viciously spiked ceiling ominously decends upon the brave hero. Each chamber has a pattern of blocks that must be cleared in order to find the hidden treasure.

Saturn $49.99



Seta

Nosferatu

Kyle must save his fair maiden Erin before the evil clutches of Nosferatu can sway her fate forever! Dungeons and graveyards are only a few obstacles in his path, littered with traps and beasts of unspeakable nature.

Super NES $39.99

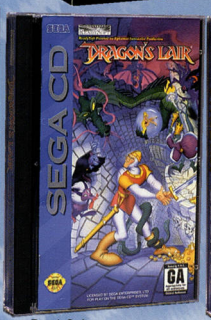


Philips Media

Burn:Cycle

The original cinematic adventure game where engrossing gameplay meets Blade Runner-style cinematic action. Plunge into this surrealistic world where you have two hours to neutralize the deadly Burn:Cycle virus residing in your brain. Or you'll be history.

Saturn $59.99



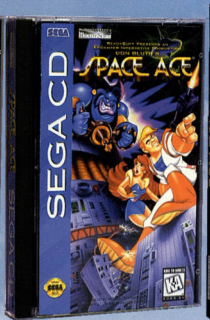
ReadySoft

Dragon's Lair

Now you're in control of Dirk the Daring armed with a sword and an attitude. Slash your way through the castle of the dark wizard and rescue Princess Daphne from the clutches of Singe the Evil Dragon!

Sega CD $19.99

3DO $9.99



ReadySoft

Space Ace

The evil commander Borf has kidnapped Ace's girlfriend and is plotting to enslave the Earth using his "Infanto Ray" that changes everyone into a helpless baby. Armed with only a laser gun, you must find and destroy the Infanto Ray, rescue Kimberly and save the Earth. Features full screen animation and crisp, powerful sound. This is arcade action at its most addictive!

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Sega Saturn Maximizer Joystick
Compatible with use of all Saturn games. Features individual Speed Auto Fire and Slow Motion. Fire buttons LED indicators, Arcade Micro Switch technology with 8-way directional stick.
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PlayStation
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Kodiak/Nyko
Sony PlayStation TransPlay Pad
Transparent material, compatible with use of Memory Cards, raised 8 way directional thumb pad, Slow Motion, LED indicators, duel top mounted left & right with Fire buttons on back.
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The only control system a serious PlayStation gamer will ever need! With four specialized modes of play, there's a perfect setting for any type of game from fast-action flight sims to quick-reflex shoofers.
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Interact
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The ultimate PlayStation enhancer lets you dominate the game with built-in codes for the hottest titles! Easily programmable and menu driven, it stores up to 9999 codes for all your favorite games.
PlayStation
$59.99

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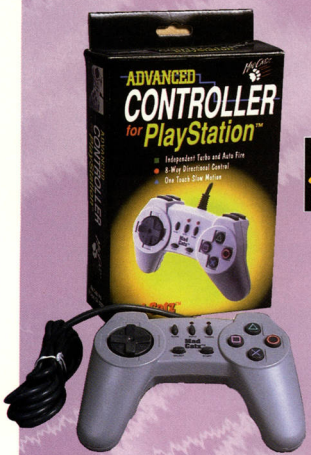
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Experience excellent stereo sound that will take your gaming adventures to a new dimension. This ultimate gaming peripheral connects easily to all video-game systems and to video sources such as TVs and VCRs.
Accessory
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Going crazy memorizing special moves and combos? Then it's time to get this HYPER programmable 10 in 1 game pad! Features 12 HYPER programmable buttons, 4-speed autofire. Plus, you can watch the devastation in slo-mo!
PlayStation
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Also available for Saturn and Super Nintendo.

Mad Catz
Advanced Controller
Features an 8-way directional control that allows you to perform special moves in fight and flight games. Plus, buttons can be independently programmed for turbo and auto fire. Uniquely designed to provide a custom fit for all ages.
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This deluxe game pad features start and select buttons, 8 fire buttons, rapid fire and slow motion buttons, 8-direction thumb control pad, ergonomical hand grips, 8-foot cord. Plus, a three year warranty!
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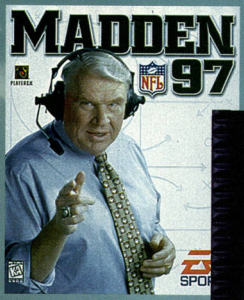
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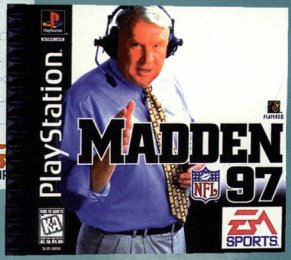
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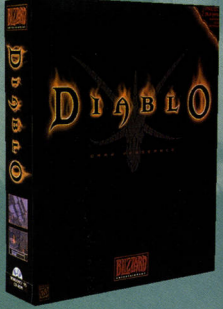
Hot New Titles!

Electronic Arts
Madden 97
Immerse yourself into a world of interactive football so real it puts you in the huddle! Create your own NFL superstars or draft a team from over 100 current, all-time, Super Bowl, and secret teams.
DOS CD-ROM
$54.99

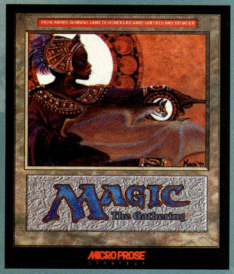


Electronic Arts
Madden 97
Madden's fingerprints are all over this game! From player and team ratings to play design and strategy, no detail has been overlooked. Tournament tested gameplay, motion captured animations of real NFL players, modeled 3D stadiums, TV-style presentation, plus the genius of Madden.
PlayStation
$59.99





Blizzard Entertainment
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Enter into a world where evil has corrupted the land and shackled humanity into unholy slavery. Vengeance, power, intellect and magic, these are the tools you will need to battle the Lord of all Evil.
Windows 95
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Spectrum HoloByte
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PlayStation

MATURE M AGES 17+



Black Dawn PlayStation **Crash Bandicoot** PlayStation **Die Hard Trilogy** PlayStation **VF Kids** Saturn
Albion PC **Indiana Jones' Desktop Adventures** Macintosh **Z** PC **NHL '97** Genesis **Tekken 2** arcade

finals

Every new game played, reviewed, and then rated

258	PlayStation
263	Saturn
267	3DO
267	PC
273	Macintosh
273	Genesis
273	Nintendo 64
273	Jaguar
273	Virtual Boy
273	Neo-Geo
273	Arcade

Each month, **Next Generation**'s team of reviewers plays, reviews, and then rates the month's new game releases. Our opinion as to each game's merits is expounded in the text, but as a rough guide to a game's worth (or lack of it) then refer the following ratings.

★★★★★ **Revolutionary**
Brilliantly conceived and flawlessly executed; a new high-water mark.

★★★★ **Excellent**
A high-quality and inventive new game. Either a step forward for an existing genre, or a successful attempt at creating a new one.

★★★ **Good**
A solid and competitive example of an established game style.

★★ **Average**
Perhaps competent; certainly uninspired.

★ **Bad**
Crucially flawed in design or application.

PlayStation

Beyond the Beyond
Publisher: SCEA
Developer: Camelot

Unless you're below the age of 12, prepare to be yawned by *Beyond the Beyond*. As the first



Looks good, but is *Beyond the Beyond* good enough for 32-bit?

Japanese-style RPG available for PlayStation, it doesn't bode well — it's painfully derivitive, plodding, and not even a terribly challenging adventure.

The story follows a youngster named Finn, roaming the great lands of Marion on a quest to save the world from the evil Bandore forces. The visuals are woefully lacking, relying on the usual squat, superdeformed characters with few new wrinkles or even interesting special effects. There are some concessions made to new technology when Finn and friends are thrown into fighting mode — the view becomes 3D — but unfortunately, the fighting itself is none too exciting, and it happens way too often. It's no wonder the Age of Chivalry is over: they all died of boredom. A fight breaks out every 10 seconds, and it gets old real fast.

To its credit, *Beyond the Beyond* has a long, fairly interesting story, which should please some RPG enthusiasts. But as with many RPGs, the story is extremely linear, and when you've gone through it once, it's over. And as the first RPG from SCEA for the PSX, it has to be considered a weak entry (especially given the wondrous new approach taken by Square for *Final Fantasy VII*, or

PlayStation

RISING FUN

Black Dawn
Publisher: Virgin
Developer: Black Ops

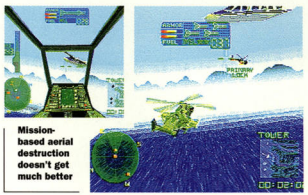
Here's a nice surprise. Black Ops was the development house responsible for *Agile Warrior*, a flight sim whose one outstanding quality was an impressive set of explosions. Otherwise, the game failed to excite on any meaningful level.

Black Dawn — an assault chopper sim — is its latest offering, and while the explosions aren't as impressive as in *Agile Warrior*, their removal seems to have been worth the sacrifice, because as a game, *Black Dawn* is top stuff. Indeed, compared to its immediate competition — the totally disappointing *Gunship* — it's a pleasing combination of excellent graphics and dead-on game play.

Strapped into the cockpit of a heavy-armed chopper, players are thrust into a series of seven missions, each with multiple objectives. The approach is mildly reminiscent of EA's *Strike* series, although with less of a strategy component. Objectives range from destroying SAM installations or enemy Hind helicopters to saving navy SEALs that have gotten caught behind enemy lines and safely returning them to base. Destroyed enemies yield numerous power-ups in the form of better missiles, cannon upgrades, armor, and, of course, fuel. As with *Agile Warrior*, these items are left magically floating in the air for pick-up — and some may question this strange feature in an otherwise realistic environment.

Graphically speaking, every object in *Black Dawn* has an impressively high level of detail, and explosions, while not as "Oooh! Aaah!" as those in *Agile Warrior*, can still rank among the best seen on the PlayStation to date. Backing the action is a heavy-duty Redbook audio soundtrack that would be at home in a major motion picture.

Despite all of these positives, *Black Dawn* is a little disappointing in terms of the number of missions — seven just isn't that many — and while the game is initially quite challenging, with a little experience players can run right through. A split-screen, two-player option adds to the longevity, but more levels would have been better. Still, while it lasts, *Black Dawn* is a hell of a ride.
Rating: ★★★★



Mission-based aerial destruction doesn't get much better

PlayStation



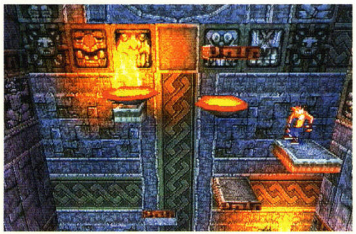
Spin dashes and platform jumping — sure it's glossy, and it does play well, but we've all seen this a hundred times before

NO NEW TRICKS

Crash Bandicoot
Publisher: SCEA
Developer: Naughty Dog

OK. Nintendo wouldn't be anywhere without *Mario*. Sega wouldn't have had a chance in the 16-bit wars without *Sonic*. However, in the 32-bit age, newcomer Sony seems to be doing pretty well without a definable mascot to lead the way. Apparently it wants to try anyhow. Enter one bandicoot with an attitude (once more, and for the record, bandicoots, family Peramelidae, are a type of small marsupial indigenous to Australia, Tasmania, and New Guinea — just read "miscellaneous mammal"). And without a doubt, *Crash* has attitude by the bucketload. The game has humor, it's bright and colorful, includes a lot of impressive graphic flourishes, controls well, and, in the strictest sense, uses a 3D environment to good effect without a hint of draw-in.

It's also, without a doubt, the single most derivative game to ever hit a console.



Some stages are even played from the side — look familiar?

It's not as if the developer, Naughty Dog, has much of a track record — *Way of the Warrior* is in the running with *Kasumi Ninja* and *SHADOW: War of Succession* for the title of worst fighting game ever made — but anyone who's played even one side-scrolling action game could have come up with every single game element found in *Crash*. See Crash jump over pits! Watch Crash kill enemies by jumping on their heads! Marvel as Crash collects 100 fruit for an extra life! Gasp as Crash leaps across collapsing platforms! Be amazed as Crash dodges fireballs! And it's all in Amazing 3D™! Give us a break. The only thing missing is an underwater stage.

In the interest of fairness, it is worth pointing out that, technically, the game is executed very well. Unlike *Mario 64*, players aren't free to roam just anywhere — in fact, you're restricted to a narrow track — but the characters are true polygon-based models, and the simplistic environment puts so little demand on the PlayStation's 3D capability that everything onscreen is rock solid. It's challenging without being frustrating, and *Crash's* twitchy-eyed antics are amusing in their own way. With even an ounce of creativity, this could have been a classic, but you've seen — and played — all this before.

Rating: ★★★

even to a lesser extent SCEA itself in the *King's Field* series).
Rating: ★★

Gridrunner
Publisher: Virgin Interactive
Developer: Radical

Gridrunner is a futuristic cross between capture the flag and tag — in fact, it's original working title was *Eurit* ("You're it," geddit?). Players run around a series of catwalks, collecting flags until the quota has been met for that level. The tricky part of the game, however, isn't grabbing flags, it's the tag element, in that you can only collect flags if you are not "it." So, most of the time the object is to run into the other player(s), thereby making them "it."

In addition to just running about, players have the ability to create bridges to span gaps and shoot projectiles to slow opponents and clear mines. Bonus stages in the single-player mode enable your character to increase agility, speed, and weapon power. Multiplayer options include split screen and



Slow as a single player game, *Gridrunner* is multiplayer fun

link-up, which greatly expand the game's replay value. While not particularly innovative, *Gridrunner* offers its share of fun, especially in multiplayer modes.
Rating: ★★★

Project Overkill
Publisher: Konami
Developer: Konami

Flying out of the gate in the More Gore sweepstakes, here comes Konami's *Project Overkill*, one mother of a shooter played from an isometric perspective. Don't worry about the story, don't even worry about mission objectives, just get in there and kill. A lot. Indeed, there's little to this apart from the violence: There's some strategy involved to avoid getting nailed yourself, of course, and some of the levels are constructed with vaguely puzzle-like elements, but none of this ever rises above what you'd find in, say, *Doom*.

Which ain't exactly a bad thing. In fact, *Project Overkill* is rather neatly constructed. In general, the missions are long enough to make you feel like you're accomplishing something without becoming tedious, and the level of difficulty, while high, keeps you on your toes. There's also a plethora of neat details: walls go transparent when you step behind them; bodies explode when shot; walk over a dead body and not only is there a nice squishy sound, but the character leaves bloody footprints.

On the other hand, there are problems. For one, in areas where there are two levels with rooms on top of each other the combination of transparent walls and isometric perspective can be



Fast paced and violent in the extreme, *Overkill* almost makes you hate yourself for liking it

confusing. The controls — set up *Robotron*-style, moving the character with the direction pad and shooting with the buttons — is intuitive enough, but the perspective requires a lot of shooting along the diagonals, which means a lot of time spent trying to hit two buttons at once. While there are four characters to choose from, each with different weapons, there isn't much variety to them and you'll never find a really *big* gun.

Despite this, *Project Overkill* is oddly compulsive, never

PlayStation

STAYIN' ALIVE

Die Hard Trilogy
Publisher: Fox Interactive
Developer: Probe

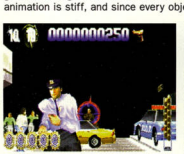
This is no small achievement. *Die Hard Trilogy* is nothing less than three entirely separate and completely different games that follow the exploits of the unluckiest cop ever to walk the Earth, John MacClane, all wrapped up in one package (and printed on one disk, just to clear that up). As such, it varies somewhat in quality among the three "episodes," but overall it's well worth the investment.

The first section, patterned after the first *Die Hard* film, is a 3D shooter, using the second-person, over-the-shoulder perspective that seems to be gaining in popularity these days. This is easily the best of the three sections of the game — fast-paced, challenging, and gory, with very responsive control. Rather than have the camera view zoom in when the character's back is to a wall, as in *Mario 64* or *Tomb Raider*, the designers have opted for a different solution: make the walls transparent. It works, and in fact it's kind of impressive.



Windshield wipers are handy for pedestrian spills

The next section, based on *Die Harder*, is a first-person shooter patterned somewhat after *Virtua Cop*, in which the player is shuttled through a terrorist-riddled airport blasting everything in sight. It's compatible with the light gun Konami released with *Horned Owl*, and it's a good idea to get one. Without it, controlled using the joypad, it's a real pain. With a gun, it's a lot of fun, if flawed in as much as the animation is stiff, and since every object in the background can be shot up and damaged, the frame rate occasionally slows to a crawl to accomodate it.





Three very different games in one package — that's *Die Hard Trilogy*

The last section is a driving game set in New York. As in *Die Hard with a Vengeance*, MacClane is chasing down bombs, following the on-screen compass to each bomb and smashing it before it goes off. This one is played much like Gametek's *Quarantine*, except that you're not supposed to hit pedestrians — well, maybe mimes. This is the weakest entry on the disk, and not much of a note to end on, but enjoyable enough.

None of the three sections is especially original or even that deep. However, taken as a whole, with each section ending just before it has a chance to get tiresome, you're given a lot of varied game play that's lightweight, but entertaining; Probe is to be commended for trying something this different.
Rating: ★★★★

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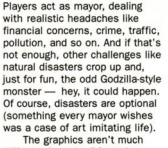
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promising anything more than the straight-up action which it delivers in spades. If you just feel like turning off your brain and blasting everything around you into meaty puddles, it works.
Rating: ★★★★

SimCity 2000
Publisher: Maxis
Developer: Maxis
Since Maxis released the original *SimCity* in early '89 and won a gazillion awards, a whole slew of SimSomethings have come along (anyone remember *SimAnt*?), but few are as satisfying as the original. This latest incarnation for PlayStation is a true, if uninspired, descendant.

For the sake of those who have been trapped in a closet for the last few years, the challenge is to build and manage a city, hoping that your design will attract millions of SimCitizens. Players act as mayor, dealing with realistic headaches like financial concerns, crime, traffic, pollution, and so on. And if that's not enough, other challenges like natural disasters crop up and, just for fun, the odd Godzilla-style monster — hey, it could happen. Of course, disasters are optional (something every mayor wishes was a case of art imitating life).

The graphics aren't much different from the PC version except for one new feature, a 3D



It Sim-business as usual in *Sim City 2000* for PlayStation

"ride-through" mode, offering a cruise through town in a limo. There are no hot tubs and champagne, but it is a fun use of the PlayStation's 3D capabilities (even though the city is creepily devoid of any inhabitants).

One caveat about the interface: it's more than a little clunky controlling the game with a PlayStation joypad. The menu layout and icon selection system just screams for a mouse, especially for anyone used to playing it on a PC. In fact, it appears to be the same layout as the PC version. But for those new to the *Sim* line or who lack the funds for a $3,000 machine, the joypad is a minor inconvenience in an otherwise solid game.
Rating: ★★★

Saturn

Alien Trilogy
Publisher: Acclaim
Developer: Probe
Released a few months ago on the PlayStation, *Alien Trilogy* is another in the growing list of third-party titles developed for the PlayStation then ported to the Saturn. In the past, such games have been less than flattering to the Saturn hardware, resulting in products that accurately depict



***Alien Trilogy* proves that *Alien* is the perfect movie license to translate into a videogame**

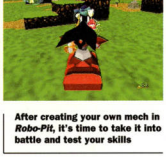
the original gameplay design but don't quite live-up to the PlayStation's graphic prowess (nor that of the Saturn's first-party titles). However, Acclaim can now claim to have shocked and surprised us not just once with *Alien Trilogy* for PlayStation (an "Acclaim game based on a movie license that was actually good" shock/horror), but also with the Saturn version.

A very close match in every way, *Alien Trilogy* is as good a game on the Saturn as it ever was on the PlayStation — and if you missed the original version, that means this game is very good indeed.

Built around solid gameplay elements such as explosive action and light puzzle-solving, *Alien Trilogy* doesn't do that much in the way of fancy gimmicks (or even anything you'd call noticeably innovative) but with several intricate levels of intense — and at times quite eerie — action, it just feels right all the way through. Face-huggers scuttle through the corridors, and that Alien queen is a challenge to kill. Also, the game offers everything you'd need from maps to mega-weapons and never leaves you wanting for anything except the next level.

Alien Trilogy is one of a precious few movie-licensed titles that actually holds its own as a game. Who would have thought it would come from Acclaim?
Rating: ★★★★

Robo-Pit
Publisher: Kokopelli
Developer: Altron
This is another title that originally hit the PlayStation and has now been ported to Saturn. It's also one of a handful that's nearly identical for both systems. Falling under the "You don't see that everyday" heading, *Robo-Pit* is a bizarre little battle game in which two mechs battle it out in a 3D arena filled with various obstacles and potential weapons. What makes it so bizarre is the process of building your own mech before going into battle, in that the player can choose everything



After creating your own mech in *Robo-Pit*, it's time to take it into battle and test your skills

from body type and color, to weapons and even the shape of the eyes. It's interesting, and there's certainly enough options, but no matter how carefully constructed, the mech always comes out like some nightmarish Mr Potato Head, more likely to be found flailing on its side at a ninth-grade science fair than in a battle to the death.

Goofy appearances aside, however, the light-hearted approach belies the undeniable grace and efficiency with which the mechs move. As with the PlayStation version, one-player mode consists of working your way up through 100 computer-controlled competitors. This gives the game a substantial lifespan, but the level of challenge isn't quite up to the task — 100 levels become mildly tedious. The two-player, split-screen option adds a lot but also comes up short due to the reduced field of vision of split-screen. *Robo-Pit* will never rank with the best of 'em, but it requires a fair amount of strategy and undeniably provides hours of goofy gaming fun.
Rating: ★★★

Saturn Bomberman
Publisher: Hudson (Japan)
Developer: Hudson
The basic formula has been the same for years, and it's not likely to change much any time soon. Much like earlier *Bomberman* games, the one-player game on offer here consists of a quest mode that leads players through several different mazes, facing many different foes. Drop bombs, gain power-ups, and avoid various deadly obstacles — it's not the greatest game, but it's not bad.

Everyone knows, however, that the best part of any *Bomberman* game is the multiplayer battle mode, and *Saturn Bomberman* manages to go beyond any other *Bomberman* in one very crucial area: it can accomodate up to 10 players at a time (via two multi-taps), which simply puts it over the top.

Included in the battle mode (2 to 10 player mode) are all of the best items from *Bomberman* past, such as the boot, glove, skate, and those dreaded curses. You'll also find some of the lesser known elements from games like *Super Bomberman 3*, such as the



Proof that more really is merrier, the 10-player option in *Saturn Bomberman* is truly the game's defining, and most oustanding, feature

kangaroos. For the most part, if it's part of the *Bomberman* heritage, it's in this game.

Of course, to take advantage of the 10-player mode, you'll need a Saturn, two multi-taps, 10 controllers, and a television big enough to keep players from going blind (the last time Hudson took a stab at *Bomberman* on such a huge multiplayer scale, it resorted to using a custom HDTV set-up and limiting the game to appearances at trade shows)

Unfortunately, while *Saturn Bomberman* is undoubtedly fun, it does in many ways go to prove the old adage that less is often more: the new power-ups and plethora of returning old ones only serve to distract slightly from the dead-on gameplay of *Super Bomberman 2*. And while ten players is a phenomenal achievement, this latest version is different without being significantly better. It should be pointed out, however, that even a mediocre *Bomberman* game is still worth checking out, and a must for gregarious Saturn fans.
Rating: ★★★★

Tetris Plus

Publisher: Jaleco
Developer: The Tetris Company

The original game of *Tetris* is as near as anyone's ever got to



The new puzzle mode in *Tetris Plus* is a nice diversion for fans, but no match for the original

videogame perfection. It's a simple classic of design, and coming across a new title that monkeys around with the formula to create a "new and exciting" puzzle game warrants immediate attention and investigation.

Which leads us to *Tetris Plus*. Of course, you can't have *Tetris Plus* without first having *Tetris*, and, thankfully, the original version is included in the game for the one or two people reading this who have somehow managed to avoid it. The *Plus* part consists primarily of a puzzle option and a two-player vs. mode. The two-player mode is great for competitive players anxious to show off their expertise but not much more. The puzzle option, however, strays even further from the traditional game. Backed up with an adventure storyline, the puzzle mode has the player arranging blocks to create paths through which a trapped adventurer can escape the screen. The concept is interesting and not without its hooks, but in the end, it barely approaches the level of appeal of just playing just the simple, original *Tetris*.
Rating: ★★★

Three Dirty Dwarves

Publisher: Sega
Developer: Sega Soft

The side-scrolling action game has become a severely tired formula over the past few years, especially since the advent of 32- and 64-bit power. Every once in a while, however, a game comes along that manages to exist within the constraints of the formula, yet still push beyond it. Make no mistake, *Three Dirty Dwarves* (*TDD*), a game in which



***Three Dirty Dwarves* combines traditional action elements with creative and enjoyable twists**

you are in control of, well, three dirty dwarves, is, for the most part, a side-scrolling action game. But it offers just enough new spins on the tradition to make it a worthwhile venture.

Three Dirty Dwarves is the first offering from splinter Sega development group Sega Soft,

Saturn

THE KIDS ARE ALL RIGHT

Virtua Fighter Kids

Publisher: Sega
Developer: Sega

Released first on Sega's ST-V (Titan) arcade board, *Virtua Fighter Kids* (*VF Kids*) is an excellent fighting game. Unfortunately, it was a better game the first time around when it was called *Virtua Fighter 2*. Yes, the gameplay is changed slightly by shortening each character's reach but only enough to throw off your timing a little. Yes, the characters are cute, although the argument could be made they're less cute than disturbing — it turns out that anime-style, superdeformed characters look especially freaky in three dimensions. Plus, although the characters look and sound like they're about 10 years old, Shun Di is still totally bald, and even more worrisome, Sara is still no less, um, well-developed in the chest.



The characters are far from threatening, and the graphics may scream "kid's game," but *VF Kids* is every bit as sophisticated as its "older" counterpart

Nonetheless, the result is a brighter, more comical version of the game you bought last Christmas, and taken on its own, it must be said that everything great about the *Virtua Fighter* series is still great in *VF Kids*. The key features are superior character balance, lightning-fast response, and enough strategic depth built into the realistic fighting styles to keep you digging out new combos for months. It can also be said that Sega went all out when it came to creating a home version — extras such as a ranking mode, camera control, extremely funny movies, and custom play controls represent only a few of the nuggets designed to increase the lifespan of a game meant to entertain for only a few minutes at a time in the arcade.

Finally, while the graphics are simplistic, they're certainly not unsophisticated. The first thing you're likely to notice is how vibrant it all seems. Considering the game is supposed to evoke feelings of youth and jubilation, the design and colors are dead-on. Second, the game is full of tiny, telling details, like the many different facial expressions or the advanced head-dodging added since *Virtua Fighter 2*. It's little things like this that keep the game from being written off totally as a gimmick. In the end, *VF Kids* is a very solid game which will, unfortunately, likely appeal to a relatively small audience (no pun intended).
Rating: ★★★★



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and while the game isn't terribly innovative, it still follows many of the rules for excellence within its chosen form. The first rule is variety, and although a quick glance at the game may have you convinced you've seen it all before, you haven't. The developers have put quite a bit of work into making sure the player is surprised on a regular basis, with an odd stage that plays more like baseball and another that is basically a high-tech version of whack-a-mole.

Another rule is constant challenge: As soon as one obstacle is overcome, another is already on its way down the pike.

One final guideline, if not exactly a rule, is to throw in plenty of humor, and *TDD* is chock full of comedy, genuinely likable characters, and plenty of bizarre background details. When the day is through, *Three Dirty Dwarves* is short of genius and certainly isn't innovative by any stretch, but it's well above average and a bright spot in an otherwise overworked genre.
Rating: ★★★

3DO

Olympic Soccer
Publisher: U.S. Gold
Developer: Silicon Dreams

Beyond the admittedly substandard graphics of *Olympic Soccer* lies a silky-smooth arcade-style soccer engine that really puts the player in the game. The polygonal players aren't much to look at, but the motion-captured animation has an undeniable grace. On the pitch, the game sets a feverish pace of goal-scoring that is sure to make hard-core sim fans wince. However, approaching *Olympic Soccer* as an arcade game and ignoring a certain amount of realism lets you in for an extremely entertaining time.

An Olympic license is usually the kiss of death for a game, but Silicon Dreams managed to inject some top-notch gameplay and avoids the fate so common to other sports games. It still can't compete with *FIFA*, especially given they're both available for 3DO, but for a fast-paced, exciting one- or two-player game, the 3DO doesn't have many games of this caliber.
Rating: ★★★



Smooth animation and gameplay make up for some not-so-nice graphics in *Olympic Soccer*

Olympic Summer Games
Publisher: U.S. Gold
Developer: Silicon Dreams

With the glut of track & field games out for the 32-bit systems, *Olympic Summer Games* is the only one coming to the 3DO and probably the only one that could make the transition without losing much in graphics. The unique part of *Olympic Summer Games* is the two different play modes: In arcade mode the gameplay is traditional button mashing straight to the finish line, but in the olympic mode timing is the key to victory.



New events like fencing offer some variations from the norm, making *OSG* a noteable title

Either way, the game offers some great competition, and the usual events (100m dash, pole vault, javelin, long jump, triple jump, high jump, discus, 400m, swimming, and hammer toss) along with some new events (archery, skeet, fencing, and rapid fire pistol) spice things up a little and set it apart. The graphics can't even come close to Konami's *International Track & Field* or Sega's *Decathlete*, but the varied gameplay is enough to make *OSG* a fine addition to any dusty 3DO collection.
Rating: ★★★

PC

Afterlife
Publisher: LucasArts
Developer: LucasArts

Afterlife is a simulation of, well, the afterlife. You manage both Heaven and Hell in a *SimCity 2000*-style environment, and your goals are to keep the flow of souls into your realms high, keep them happy (or in the case of



Running Hell like a business: No, it's not a sim of the Republican convention, it's *Afterlife*

Hell, miserable), and keep your economy strong.

The economy depends on a steady influx of new souls (you receive one penny for each soul that enters the afterlife). Your expenses come from paying a large staff of demons and angels to keep the hereafter running and from building new punishments and rewards, which must become larger and more elaborate (angelic or demonic) over time.

Heaven and Hell are run pretty similarly, but there are subtle differences. The roads in Hell, for example, function better when convoluted and crowded (nothing in Hell should be comfortable) while the roads in Heaven should be straight, smooth, and efficient.

Although imaginative and filled with delightful humor, *Afterlife* doesn't go too far beyond the *SimCity* style of management. It is more involved though, since there are two cities to manage, and it's also possible to intervene directly on Earth, pushing the population in directions that will benefit your realms. There's also a great deal of complexity underlying the belief systems of the populations, a complexity that has a great deal of impact.

Afterlife is an imaginative, entertaining simulation that, if not exactly groundbreaking, at least provides hours of solid entertainment to the dedicated simulation fan.
Rating: ★★★

Normality
Publisher: Interplay
Developer: Gremlin

In a strange, alternate future the Norm Police control society, imposing a rigid regimen of conformity, boredom, and mundanity on a passive and

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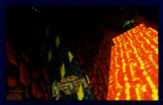


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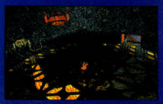
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TEEN T AGES 13+

Descent II Developed by Parallax Software

PC

RPG TREASURE

Albion

Publisher: Blue Byte
Developer: Blue Byte

Good role-playing games are in short supply nowadays. However, *Albion* is a bright spot in the desert and has a lot to offer any RPG fan. The game begins far in the future and aboard a starship where players find themselves cast as a shuttle pilot with the name of Tom Driscoll. After a short time spent exploring the ship, Tom gets called to make a shuttle flight to the surface of a mineral-rich planet. He crash lands with government inspector Rainer Hofstedt, and the fun begins.

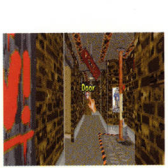
The game is played from two perspectives: third person, where the characters follow the lead character single file, and first person, usually reserved for exploring large cities or dungeons. Both views use the mouse for control, and although it would have been nice to incorporate more intuitive keyboard control in the first-person perspective sequences (perhaps based on a *Doom* or *Duke Nukem* model) it works well. You can have up to six members in your party, and there are several different forms of magic for the players who like to experiment. Turn-based combat is resolved on a grid: Tasks are assigned to each character, the round of battle is resolved, and so on until the battle ends. Sounds fairly standard on paper, but it's a lot more refreshing than, say, *Battle at Krondor*, with quite a bit of flexibility, and playing it on a grid introduces an almost chess-like element of strategy.

The graphics are aren't too sophisticated, although they're certainly colorful and clear, and since the visuals aren't that demanding, it plays well even on slower machines. The story is complex, with lots of twists and turns. On the whole, the game is well thought-out and definitely worth checking out, especially in the RPG drought of late.
Rating: ★★★★





The most common view is the top-down perspective, where the characters follow the mouse when you hold down the mouse button. RPG fans will have no problem with *Albion*'s interface



Investigate this sofa factory to expose the Norm Police's secret

compliant populace. Such is the setting for *Normality*, a new graphic adventure from Gremlin.

You play the role of Kent, an obnoxious "grunge" character with a goatee, baggy shorts, and a voice left over from the Bill & Ted films. And although the character may be annoying, some of the things he says are pretty funny. Well-rendered cut /scenes, which are at least brief and relevant to the action, also appear at intervals, helping to flesh out the character.

Most of *Normality's* action takes place in a first-person, true 3D world with complete freedom of movement which is something of a departure for graphic adventures. But unlike *Under a Killing Moon* where the character moved like a drunken sailor, looking around and moving in *Normality* is as smooth as in *Doom*, and the texture maps are of about the same quality.

But the drawback with *Normality's* environment is that as much as you can run around and explore, almost nothing happens. Other characters simply stand in their places and wait for you to click on them so you can climb up the dialogue tree. A better idea would have been to make the environment truly interactive or to at least include some roving Norm Police patrols to hide from. However, this is a graphic adventure, 3D *Doom*-style movement notwithstanding, and so this static world fits into the structure of other 2D entries in the genre — it's just odd to see it in a free 3D context.

The puzzles are logical and not absurdly difficult and involve the common-sense use of inventory objects. Veteran graphic adventurers are likely to find things too easy, though. In short, *Normality* is a well-

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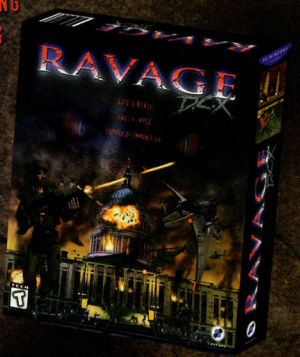






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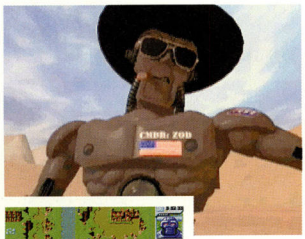
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PC

ZPLENDID





Tanks and talkative robots clash in *Z*, an engaging and funny new strategy game from Virgin and the Bitmap Bros.

Z

Developer: Bitmap Brothers
Publisher: Virgin

Z is a real-time strategy game, like *Command & Conquer* or *WarCraft II*, but with enough differences to set it apart. In an interesting twist, there are no resources to manage. Instead, there are a dozen or so territories on each map you must capture. The strategy is simple: the more territory a player holds, the more units can be cranked out in each territory's factories. How fast a player can react to a rapidly changing situation while still retaining the semblance of an overall plan, rather than carefully managing commodities, is what gives the game its appeal — action, not economics.

The AI in *Z* is also commendable — units left idle will automatically pick up flags, vehicles, and extra grenades in their vicinity. Another excellent feature is the ability to click directly on alert messages — soldiers yelling or factories completing equipment — and instantly snap to the appropriate spot. And the soldiers do yell, a lot, both in combat and cutscenes, even screaming obscenities at you as you lose.

There are five different terrain types to fight in, from deserts to jungles, but only about 20 missions. This is way too few and one of the game's only drawbacks. You can finish *Z* in about half the time it took you to finish playing one side of *Command & Conquer or WarCraft II*, and unlike these other games, *Z* has only one side to play: both your side and the opposition use the same units.

On the other hand, as with other real time wargames, multiplayer options greatly enhance the game. Up to four players can compete on the same map, making for a very fast-paced, back-and-forth battle, very different in feel from *C&C* and *Warcraft II*. Since the multiplayer aspect is such a blast, and the length of the games are relatively short, *Z* is a prime candidate for the burgeoning online gaming services.

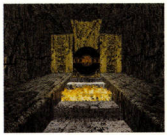
Although it's in no danger of knocking either *C&C* or *WarCraft II* from the real-time strategy throne, *Z* is a very good, original game that's enjoyable in its own right.
Rating: ★★★★

executed, amusing graphic adventure, which, while not breaking any new ground — despite a new twist on movement, is at least mildly fun and entertaining.
Rating: ★★★

Qin: Tomb of the Middle Kingdom

Publisher: Learn Technologies
Developer: Learn Technologies

We've seen it all before: Thrust into a photorealistic world, the player wanders through high-resolution artwork, solving puzzles. *Myst* has procreated once again, asexually budding off another offspring with little more interest than the others, although at least in *Qin* you can learn a few things. As an archeologist sent to uncover the tomb of the first Chinese Emperor, not only do players get to look at the pretty pictures but also apply history to the puzzles they have to solve. So in order to get very far, get used to reading the online encyclopedia — a *lot*. It's not so bad for those into ancient Chinese mythology, but if you're looking for an actual game to play, it's damn dull stuff.



The pictures are nice, and some of the puzzles are tricky, but *Qin* isn't much of a game

Although *Qin* might draw in a few truly susceptible people or brain-damaged *Myst* freaks, most gamers will find it an incredible bore within minutes, pretty pictures or no.
Rating: ★

Shell Shock

Publisher: Eidos Interactive
Developer: Core Design

Starting out as a new recruit for "Da Wardenz," an elite commando group, this game is about how well you can handle a tank in the heat of battle. In other words, aside from some rendered cutscenes and some

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NEXT GENERATION

communication with your fellow commandos, *Shell Shock* is a new and improved *Battle Tank*.

To be fair, the game has been ported from consoles, which tend to favor immediate, "jump into it" action, and the battle engine



***Shell Shock's* graphics aren't that great, but at least it runs well on slow computers**

works well, even on slower computers. The graphics aren't much to talk about, but that's not always a bad thing in a game like this. Although the keys are configurable, it's awkward to set things up exactly right, so turning the turret of the tank while driving isn't exactly simple. There's also an automap to help out when things get tight.

But overall, this game shows its console roots by focusing exclusively on riding around and blowing up other tanks. It does have an intriguing storyline, and the characters are well fleshed out and entertaining, but it's just not enough for the sophisticated gamer to come back for more. However, on the pure action level, this might whet some appetites. It's not a hit, but it might be enough to entertain you as long as it's purchased in the ever-helpful bargain bin.
Rating: ★★

MacIntosh

Indiana Jones and his Desktop Adventures
Publisher: LucasArts
Developer: LucasArts

The idea for this game is excellent: graphic adventures that can be solved in under an hour. By using a random scenerio generator, billions of possible game combinations can be achieved. Unfortunately, this lends itself to pretty repetitive gameplay — "Indy, go get that AMAZONIAN CODEC back from the Nazis!" — and fairly simplistic puzzles. The whole game involves fighting past (killing) Nazis or super stereotypical (don't say racist) depictions of Mexicans and Indians to get some object which you need to get past some barrier —"I'm sorry, Jones, you



***Desktop Adventures* ain't long or good-looking, but it is cheap**

cannot cross this bridge 'til you bring me an INCAN POT." And then, of course, beyond this there lies some other object needed to get past another barrier and so on until you recover the main object, at which point the game ends. Oh yeah, there are also some mazes and "push things together" puzzles too. Oh, and the game is set on a grid, and you can't shoot diagonally, although your enemies can. Which sucks.

All this said, however, the game only costs around 12 bucks and if you don't expect too much, it is pretty fun. The underlying idea is sound, and if you don't mind repitition, check it out.
Rating: ★★★

Genesis

NHL '97
Publisher: EA Sports
Developer: High Score Productions

The most successful and best-playing hockey series continues to roll on with a *'97* edition, its sixth — count 'em, sixth — incarnation on the Genesis. The graphics and engine are almost identical to last year's game, but some of the bugs of *'96* have been cleaned up. The most noteable differences from *'96* are the signature moves, the updated



Look familiar? The one-timers, the crushing checks, and the fights are all back

players, and the improved AI. Now each team has one player who has a signature deke or shot instead of the standard spin-O-rama. Not a signifigant change, but it does add to the two-player game. The improved AI makes your automatic one-timers in the corner tougher to pull off, but without a doubt, after a couple of weeks experienced players should find new ways to score at will.

Even with all the enhancements this game has undergone on 32-bit systems, the feel of a humble Genesis pad controlling all-out NHL action is unsurpassed. Moves like racing into the corner and laying off a pass in front of the crease or upending a speedy center at the blue line are as natural as breathing to any true fan of the series, and it's this familiarity that makes *NHL '97* so playable. It just keeps getting better, no matter what system it's on.

If you know the *NHL* series, then you know exactly what to expect from *NHL '97*. This is a classic arcade hockey game with addictive gameplay, real teams, and everything else a hockey fan could want from a videogame.
Rating: ★★★★

SORRY!

No new games were made available for review this month on the following systems

Nintendo 64

Jaguar

Virtual Boy

Neo-Geo

Super NES

Arcade

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Next Generation gamers guide

Every new "next-generation" game, rated for your purusal

The following list is a round-up of all the *final review* scores given to next generation console games. Titles with the suffix (Japan) are not available in the U.S. Happy hunting...

Title	Publisher	NG Rating
Nintendo 64		
Super Mario 64	Nintendo	★★★★★
Pilot Wings	Nintendo	★★★★★
PlayStation		
Adidas Power Soccer	Psygnosis	★★★
Agile Warrior	Virgin	★★
Alien Trilogy	Acclaim	★★★★
A-Train	SCE	★★★
Aquanaut's Holiday (Japan)	ArtDink	★★★★
Arc The Lad (Japan)	SCE	★★★★
Battle Arena Toshinden	SCE	★★★★
Battle Arena Toshinden 2	SCE	★★★★
Beyond the Beyond	SCE	★★
Black Dawn	Virgin	★★★★
Bogey Dead 6	Sony	★★★
Bottom of the Ninth	Konami	★★★★
Boxer's Road (Japan)	New Corp	★★★
Cosmic Race (Japan)	Neorex	★
Crash Bandicoot	SCE	★★★
Crime Crackers (Japan)	Sony Entertainment	★★
Criticom	Vic Tokai	★★
Cyberia	Interplay	★★★
Cyberspeed	Mindscape	★★★
Cyber Sled	Namco	★★
CyberWar (Japan)	Coco Nuts	★★
Defcom 5	Data East	★★★★
Dark Stalkers	Capcom	★★★
Descent	Interplay	★★★★
Destruction Derby	Psygnosis	★★★★
Die Hard Trilogy	Fox Interactive	★★★★
Doom	Williams	★★★★
Dragon Ball Z (Japan)	Bandai	★★
Fade to Black	Electronic Arts	★★★★
Gex	Crystal Dynamics	★★★
Goal Storm	Konami	★★★★
Gridrunner	Virgin	★★★
Gunner's Heaven (Japan)	Media Vision	★★★★
Gunship	Microprose	★★
Hardball 5	Accolade	★★
In the Hunt	Xing	★
In the Zone	Konami	★★★
Jumping Flash!	SCE	★★★★
Jumping Flash! 2	Sony	★★★★
Jupiter Strike	Acclaim	★
Kileak The DNA Imperative	SME	★★★
Kileak The Blood 2	SME	★★
Killing Time	Naxat Soft	★
King's Field	Asciiware	★★★★
Krazy Ivan	Psygnosis	★★★
Loaded	Interplay	★★★★
Metal Jacket (Japan)	Solan	★
Mobile Suit Gundam (Japan)	Bandai	★★
Mortal Kombat 3	Publisher	★★★
Motor Toon GP (Japan)	SCE	★★
Namco Museum vol. 1	Namco	★★★★
NBA Jam Tournament Ed'	Acclaim	★★★★
NBA Live '96	Electronic Arts	★★★★
NBA Shoot Out	Sony Interactive	★★★
NFL Gameday	Sony Interactive	★★★★★
NHL Face Off	Sony Interactive	★★★★★
Olympic Soccer	U.S. Gold	★★★
PGA Tour Invitational '96	Electronic Arts	★★★
Philosoma	SCE	★★
Po'ed	Accolade	★★★★
Power Serve 3-D Tennis	Ocean	★★★
Power Baseball (Japan)	Konami	★
Project: Horned Owl	Sony	★★★
Project Overkill	Konami	★★★★
Raiden	Seibu	★★
Rayman	UbiSoft	★★★★
Return Fire	Time Warner Int.	★★★★
Resident Evil	Capcom	★★★★★
Ridge Racer	Namco	★★★★
Ridge Racer Revolution	Namco	★★
Road Rash	Electronic Arts	★★★
Robo Pit	T-HQ	★★★
Romance of the 3 King' IV	Koei	★★★
Shellshock	U.S. Gold	★★★★
Shockwave Assault	Electronic Arts	★★
Sidewinder	Asmic	★★★
Silverload	Vic Tokai	★★★★
SimCity 2000	Maxis	★★★
Slam 'n' Jam	Crystal Dynamics	★★★
Space Griffon	Atlus	★★
Space Hulk	Electronic Arts	★★★
Tekken	Namco	★★★★
Tekken 2	Namco	★★★★★
Tokyo Highway Battle	Jaleco	★★★
Top Gun	Spectrum Holobyte	★★
Total Eclipse Turbo	Crystal Dynamics	★★
Toukon Retsuden (Japan)	Tomy	★★★★
Twisted Metal	SIE	★★★★
Viewpoint	Electronic Arts	★
Warhawk	Sony Interactive	★★★★
Wipeout	Psygnosis	★★★★★
Worms	Ocean of America	★★★★
WWF Wrestlemania	Acclaim	★★★★
X-Com: UFO Defense	Microprose	★★★★★
Zero Divide	Zoom	★★★
Saturn		
Alien Trilogy	Acclaim	★★★★
Alone in the Dark	T+HQ	★★★
Astal	Sega	★★★
Battle Arena Toshi' Remix	Sega	★★★
Battle Monster (Japan)	Naxat Soft	★★
Blackfire	Sega	★★★
Bug!	Sega	★★★
Clockwork Knight	Sega	★★★
Clockwork Knight 2 (Japan)	Sega	★★★
Congo the Movie	Sega	★★
Cyberspeed	Mindscape	★★★
D	Acclaim	★★★
Dark Legends (Japan)	Data East	★★
Daytona USA	Sega	★★★★
Deadalus (Japan)	Sega	★★★
Decadent	Sega	★★★★
Double Switch	Digital Pictures	★★
Earthworm Jim 2	Playmates	★★★
FIFA Soccer	Electronic Arts	★★★★★
F-1 Live Information	Sega	★★★★
Frank Thomas Baseball	Acclaim	★★★
Galactic Attack	Acclaim	★★★
Gekkamyugentan-Torico (Japan)	Sega-Japan	★★★★
Ghen War	Sega	★★★
Golden Axe: The Duel	Sega	★★★
Gotha (Japan)	Sega	★★★
Guardi an Heroes (Japan)	Sega	★★★
Hang-On GP '95	Sega	★★★
Hi-Octane	EA	★★
High Velocity	Atlus	★★★
Iron Storm	Working Designs	★★★★
Johnny Bazookatone	US Gold	★★★
Last Gladiators (Japan)	Kaze Co	★★★★
Legend of Oasis	Sega	★★★★
Loaded	Interplay	★★★
Mansion of Hidden Souls	Sega	★★★
Mortal Kombat II	Acclaim	★★★
Myst	SunSoft	★★★
NHL All-Star Hockey '96	Sega	★★
NHL Powerplay '96	Virgin Interactive	★★★★★
Night Warriors	Capcom	★★★
Nights	Sega	★★★★★
Off-World Interceptor	Crystal Dynamics	★★★
Panzer Dragoon	Sega	★★★★
Panzer Dragoon II Zwei	Sega	★★★★
Pebble Beach Golf Links	Sega	★★★
Rigloid Saga (Japan)	Sega	★★★
Robo-Pit	Kokopelli	★★★
Quarterback Attack	Digital Pictures	★★★
Saturn Bomberman	Hudson (Japan)	★★★★
Sega Rally Championship	Sega	★★★★★
Shellshock	U.S. Gold	★★★
Shinobi Legions	Sega	★★★
Shining Force	Working Designs	★★★
Shining Wisdom	Working Designs	★★★
SimCity	Maxis	★★★
Skeleton Warriors	Playmates	★★★
SteamGear Mash	Takara (Japan)	★★
Street Fighter: The Movie	Acclaim	★★★
Striker	Acclaim	★
Tama (Japan)	Tengen	★★
Tetris Plus	Jaleco	★★★
Theme Park	Electronic Arts	★★★
Three Dirty Dwarves	Sega	★★★
ThunderStrike 2	US Gold	★★★★
True Pinball	Ocean	★★★
Ultimate Mortal Kombat 3	Williams	★★★
Virtua Cop	Sega	★★★★
Virtua Fighter	Sega	★★★★
Virtua Fighter Kids	Sega	★★★★
Virtua Fighter Remix	Sega	★★★★★
Virtua Fighter 2	Sega	★★★★★
Virtua Racing	Time Warner	★★★
Virtual Hydlide	Atlus	★★
Virtual Open Tennis	Acclaim	★★★
Virtual Volleyball (Japan)	Imagineer	★
Wicked 18	Vic Tokai	★★★
Wing Arms	Sega	★★★
Wipeout	Sega	★★★★
World Cup Golf: Pro' Edition	US Gold	★★★
World Series Baseball	Sega	★★★★
Worldwide Soccer	Sega	★★★
Worms	Ocean of America	★★★★
X-Men: Child' of the Atom	Capcom	★★★

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Here's what the ratings signify:

★★★★★ Revolutionary
★★★★ Excellent
★★★ Good
★★ Average
★ Bad

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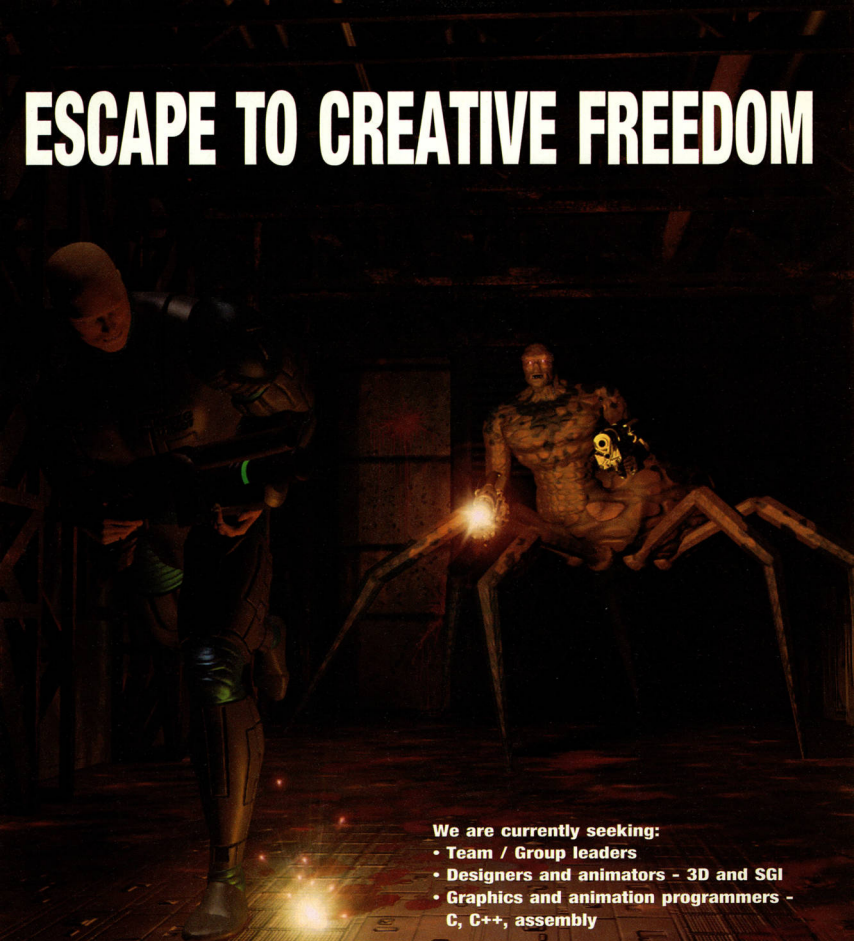
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Swing to the write

Eugene Jarvis comes across as nothing short of brilliant in **NG 21**'s interview. It's so very surprising that a man with such insight had anything to do with the mediocrity that is *Cruis'n USA*.

Camp Murphy
lumbia@sprynet.com

Eugene Jarvis says that gamers are not interested in realism and 3D games because reality stinks. So how does he explain the success of *Daytona USA*, *Sega Rally*, or *Virtua Fighter 2*?

ZSWP31B@prodigy.com

Eugene didn't argue that all 3D games are bad, but rather that putting a player into a 3D world doesn't automatically make a great game. And you know what? We agree with him.

I feel that the entire gaming world has lost touch with what it really means to be a gamer. I have found myself longing more and more for the days of old, namely the golden age of gaming, the 8-bit era. A time when all games had going for them was gameplay, and the only reason to play was for fun.

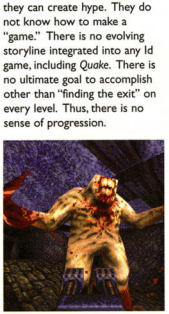
This is why **NG 20**'s interview with Brian Moriarty bothered me. I don't want games to make an important social impact. I don't want to be the hands of an abortion doctor or the person who pulls the lever for the gas chamber. I don't want the medium to be one where important changes happen. If I want real life, I'll step out my front door.

This type of stuff is not what gaming is about. Gaming should be about enjoying yourself, relaxing, and having a good time.

Kazin@aol.com

But so far all gaming is simply about enjoying yourself. Isn't there room for a small genre of games that deal with bigger issues and offer a more substantial intellectual challenge?

Id Software only does two things: they can create 3D engines and they can create hype. They do not know how to make a "game." There is no evolving storyline integrated into any Id game, including *Quake*. There is no ultimate goal to accomplish other than "finding the exit" on every level. Thus, there is no sense of progression.



Is *Quake* really a step forward or just the same old game?

In fact Id games have the game-design sophistication of *Space Invaders*. All they do is put flash into crap, and because everyone remembered *Doom* it turns into something good that sells like crazy.

NG simply buys into this hype. In a previous issue you gave *Terminator: Future Shock* a two-star rating. Yet, *TFS* has an excellent evolving storyline, varying objectives, and an ultimate goal — to save humankind from SkyNet. It also has every single feature of *Quake*'s 3D Engine, including true floors above floors, slanted walls, polygonal enemies, lighting — heck it even runs nicely on a 486 (*Quake* doesn't). It also pioneered the Mouse Aiming concept which *Duke* incorporated (and were kind enough to acknowledge it) as well as *Quake* (who renamed it "mlook" and now the average American gamer credits Id software for it). There are also levels in which players can drive a jeep or an HK.

Two-Stars huh? *Quake* is inferior to *TFS* in all aspects.

Terry Lin
tlin@cyber1

Many cars for under $15,000 have electric windows, sun roofs, leather upholstery, and all manner of sophisticated-sounding gadgets. But all this doesn't make such a car equal to a $100,000 Ferrari or Porche. And saying that a game is bad because it has no evolving storyline is bogus. Do you really play a game just for the story? If so, you're no gamer.

Doom was transcendental, revolutionary, primal, and subversive. *Quake* is not. Am I the only one who will come out and say this? The emperor has no clothes, folks.

John Weston
frisco@earthlink.net

Without wishing to open a can of worms, what does everyone else think? Obviously, it would be impossible for *Quake* to live up to the hype, but is it a better game than *Doom*?

In **NG19**'s Getting Connected article the author states that "it wasn't until late 1994, with the introduction of Catapult's XBand… that a console modem was introduced in the U.S."

Not true. There was a service called Gameline back in 1984 which used a Master Module by Control Video Corp that was actually a 300-baud modem that allowed users to download Atari 2600 games. Before Gameline died in the crash, they were testing email and stocklines and also running high score contests.

Russ Perry Jr
slapdash@athenet.net

Thanks. The author has been suspended from the ceiling with telephone cable.

In **NG 21** I came across a letter from Sebastion Ulyn who said that a souped-up PC is the best game machine around. You guys said that a PC costs too much for most people, which is true, and that you can't play PC games from your couch.

Recently, I bought a Gateway 2000 Destination, which can be used from the couch, since it uses a TV and IR remotes. How do you think this changes the state of PC gaming?

Terry & Mary Ellen Foust
75630.3235@compuserve.com

Gateway's initiative certainly

corresponding

helps the PC's cause, but the cost issue remains a problem.

In the article entitled Nintendo, Sega, & Sony Under One Roof in **NG 20**, the big three discussed "Topic 3: Nintendo 64." Unsurprisingly, Sega & Sony blasted and bemoaned the Nintendo 64's cartridge format. The gist of their argument seems to be that cartridges are less of a financial risk than CDs, and third-party companies are deathly afraid of going back to cartridges. Howard Lincoln responds that any third-party company that has made a quality game on a Nintendo machine has made a lot of money. The inference is that only the big, successful companies will make games for the system.

This brings me to my point: I'm glad that second-rate, third-party publishers won't be making games for the Nintendo 64, and that there won't be all the second-rate software that cluttered the 16-bit market.

Dan Gonzalez
elendil@surfnetinc.com

Your point is valid, but you neglect to mention the flip side of the coin. Often the best games come from the small, new companies, and large successful game publishers are more likely to stick to formulaic, "safe" games — instead of breaking new ground.

After reading Sony, Sega, and Nintendo trying to out-soundbite each other in **NG 20** while talking about CDs versus cartridges, it occurs to me that by emphasizing the low production costs of CD-ROMs, Sega and Sony merely illustrated to me how much they are willing to screw the consumer.

Sega and Sony don't have to charge anywhere near what they do in order to make a decent profit on games.

Andy Leicher
L.A.

You raise an interesting point, and you can expect to see PlayStation and Saturn software dropping in price if and when Nintendo 64 starts to seriously threaten them.

I'm writing in responce to Thearrel W. McKinney Jr.'s letter in **NG 20** in which he claimed that he had "cracked the puzzle behind Sony's mysterious 'Enos Lives' ads" using the biblical character Enos and PlayStation's launch date on September 12.

Next Generation agreed that his analysis was "fascinating" except, of course, that PlayStation was released on September 9.

I, too, thought it was fascinating, until I looked up Genisis 5:6 and found that the character that Mr. McKinney refers to is actually Enosh, not Enos. There's an extra H in the name. So you were close, Thearrel, but no cigar.

XbandEG15@aol.com

And for one glorious minute, we thought we had it.

I read Timothy Kish's letter in **NG 21** concerning swearing in videogames. I agree and disagree with him in this way: Language, Nudity, Viloence, Humor, Music, Story, Cuteness, and so on, are all tools of the videogame trade — but only if they are used appropriately, and where it makes most sense. Then it only adds to the game.

I agree that Mega Man yelling "Damn" could be seen as not being appropriate, because it's a platform game with a "cutsey" character in it. But if you're in another, more adult game environment, and you find that, say, a zombie has eaten your girlfriend, "Oh dear" or "What a shame!" would seem equally innappropriate, no?

Jack Caliber
MarvellT2@aol.com

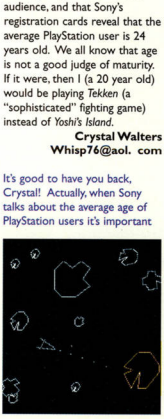
Agreed.

In an attempt to avoid sounding like a broken record, I'll drop my previous topics and focus on some other things that have been bugging me lately.

1) Sequels. Is it just me or are sequels coming out less than a year apart these days? I mean it's ridiculous. I remember back in the old days a new *Mario* game was such a big thing because they came out only every few years. Nowadays, often (but not always) there's little but a graphical upgrade. 2) 2D fighters will never die, because 3D fighters (even *VF2*) seem slow and clunky in comparison. It amazes me how a few years ago a 2D fighting game would get a lower rating because it had no turbo mode, yet nowadays games that respond painfully slow (due to the implementation of "realistic" motion capture) get five stars! 3) People say that Sega and Sony are targeting a more "mature" audience, and that Sony's registration cards reveal that the average PlayStation user is 24 years old. We all know that age is not a good judge of maturity. If it were, then I (a 20 year old) would be playing *Tekken* (a "sophisticated" fighting game) instead of *Yoshi's Island*.

Crystal Walters
Whisp76@aol. com

It's good to have you back, Crystal! Actually, when Sony talks about the average age of PlayStation users it's important



One of the best games ever, but is this the real *Asteroids*?

to notice that the company still cites "the first batch of returned registration cards" as the source of its data. Of course, since the original launch, the price of PlayStation has dropped drastically, and the average user age has fallen also. Sony probably won't acknowledge this, but the average PlayStation buyer today is probably less than 18 years of age.

I still have a great-working 8-bit NES that is used by my youngest son. Unfortunately, I can't find any new games for him. Do you know of any companies that still sell regular 8-bit Nintendo games? Oh, and since I am stationed in Korea with the USAF, could you confine your response to companies that do business via mail order?

MSgt Marty Caudle
Osan Air Base, Korea
caudlem@emh.osan.af.mil

Can anyone help this guy out?

Howdy! I was slightly miffed to read the complaints made by a few women in **NG 20**. I find using sex in advertising to be an inoffensive and highly effective form of advertising. When I see a semi-naked picture of a man or woman in a magazine, I feel excitement in a way that is very enjoyable. I admire their bodies.

Simply put, the vast majority of people playing videogames are male youths. Thus, advertisers target them. What's the best way to target them? Semi-nude pics of bodies and blood! The whole reason I started playing *KI2* was because of the female characters and their great butts. Sex works! You could give a game a terrible review, but as long as it's filled with sex, young males would buy it like crazy. I would.

davidl@branson.org

You're a brave man, David. But we respect your honesty.

You've finally crossed the line this time! Using an imitation *Asteroids* screen shot on page 1 of NG 21. Sacrilege!

Timothy Wojnar
tim@marinar. com

Guilty as charged.



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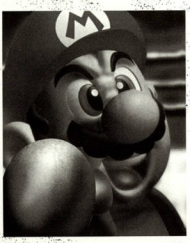
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Next Month

THE MAIN EVENT



Nintendo 64

The Miyamoto Mawler (backed up by the ever-faithful Lincoln Lynch-Mob) returns to champion the world's first true 64-bit game console. But will its controversial use of cartridges be its downfall or a powerful weapon?

VS



Sega Saturn

With Tom Kalinske missing, *Sonic Extreme* on the injury list and still no sign of *Virtua Fighter 3* as a back-up, can the Sega Saturn camp come out fighting? Or is it all over by a a technical knockout before round one?

VS



PlayStation

The early favorite is still the number-one contender, but does PlayStation have the stamina to go the distance? Looking for a decisive early victory, the Ken Kutagari Krusher is facing its toughest opponent yet.

Which videogame system should *you* buy? Which console does Next Generation recommend? Next month, the gloves come off in the ultimate gaming grudge match: Nintendo 64 versus Sega Saturn versus PlayStation. It's controversial, it's something only Next Generation dares to do, and it's happening next month.

NOV. 19th 1996

Next Generation #24

on sale November 19, 1996.

Smart readers have already subscribed. To find out how you, too, can save money and guarantee your copy, turn to the insert between pages 32 and 33.

N64™

LADIES AND GENTLEMEN, START YOUR EYEBALLS

The waiting is over. Nintendo 64® is finally here, on the shelf, waiting for you to snatch it up. But what's the big deal, you're probably asking yourself. It took long enough. Was the wait worth it? You bet, and here's why.

SO MANY



If you're going to invest your hard-earned (or mooched) cash in a video game system, you want to be sure you can play plenty of great games on it. Not an issue. There are over 50 titles in development for N64 covering all gaming categories, from action to role-playing, sports, fighting, simulation, puzzles, you name it. Furthermore, these are not titles that will wind up in the bargain bin after a month, because Nintendo and the exclusive N64 Dream Team developers are dedicated to producing cutting-edge software that takes full advantage of the Nintendo 64's incredible technology. A few of the first wave of titles include Super Mario 64™, PilotWings 64™, Wave Race 64™, Killer Instinct® Gold,



The Nintendo 64 controller is the most revolutionary video game interaction device ever. It all starts with the analog Control Stick. Unlike the traditional all-or-nothing digital Control Pad (it's got one of those too), the analog Control Stick is sensitive to even the slightest movement. Move it a little to make Mario tiptoe. Crank on it and watch him take off in a full-tilt sprint. Best of all, the Control Stick gives you 360 degrees of control. The three grips on the controller let you hold the controller three different ways, depending on what works best for the game you are playing. For saving your records and high scores, the controller has a handy slot for your personal Memory Pak. Now when you go to your friend's house for some multi-player action, you can bring all your personal data with you, snug inside your favorite color controller (it comes in six stylin' colors).



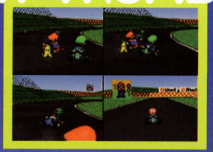
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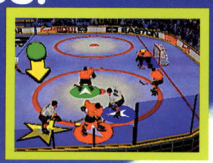
It gets better. Most new gaming technology looks cool when it first comes out, but by the time you get it home, something bigger and badder is on the way. Fortunately, the Nintendo 64 was designed with maximum capability for future upgrades in mind. Four controller ports mean four-player gaming from the get-go. Expansion ports allow for more system RAM and new peripherals (can you say readable-writable storage media?). The bottom line: The Nintendo 64 is currently the most advanced video game system ever, and it is the only system that is designed to change with technology.

GAMES... SO FEW THUMBS.









Super Mario Kart R™, Wayne Gretzky's 3-D Hockey™ and *Star Wars: Shadows of the Empire™*. Most importantly, these and the many other titles on the way all must meet Nintendo's high standards of fun and quality before they hit the shelf. What more do you need to know about the Nintendo 64 software library beyond that?

NINTENDO 64 SPORTS™

¿hablas N64?

Anti-aliasing Makes great transparency effects. For example, objects seen through water look different than objects seen through air.

CPU Central processing unit. 64 bits means fast and powerful. **Reality Co-processor** The heart and soul of the N64. A 64-bit custom chip from Silicon Graphics that performs all graphics and audio processing.

Trilinear MIP-map interpolation Subtly blends colors and patterns of texture maps to make objects more realistic even as they move closer to you. **Microcode** Custom CPU control instructions optimized for audio, lighting, graphic details and other ultrarealistic effects. **Texture mapping** Puts a bitmapped picture or texture onto a surface. In other words, a brick wall looks like a brick wall, not like a blank one. **Wavetable synthesis** Dynamic high-fidelity sounds. Found in pricey multimedia PCs. **Z-Buffer** Keeps stuff in the right place even if you're moving quickly. Objects maintain their true spatial relationships.



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